

# Determinations of adult financial literacy: A quantitative study and policy implications in Vietnam

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## Abstract

The purpose of this study is to investigate the factors influencing the financial literacy of adults in Vietnam. The Binary Logistic regressions were taken for dependent variables and independent variables derived from 692 respondents from 63 provinces in Vietnam; The regressions results show that "major in finance" and financial socialization agents have significantly positive impact on adult financial literacy. Moreover, the regressions also show that highly risk-taking has significantly associated with low financial literacy scores. Some implications for financial education through public media channels and school programs in Vietnam also discussed.

## 1. Introduction

According to the World Bank (WB) the terms financial literacy and financial capability are often used interchangeably. Financial capability (financial literacy) is becoming a priority for policymakers in both high-income and emerging economies since it is recognized as a contributing factor to financial stability, financial inclusion, and the effective functioning of financial markets. It is noted that people are required to take more responsibility for managing a variety of risks over the life cycle. People who make appropriate financial decisions and interact effectively with providers of financial services, therefore, are more likely to achieve their financial goals, improve their household's welfare, hedge

against financial risks and negative shocks, and support economic growth (WB, 2013).

Recent studies showed that the average score of adult financial literacy in Vietnam is slightly higher than that in Lao PDR but quite lagged behind that in many advanced economies, and the use of financial instruments is also at a low level compared to that in developing countries; financial inclusion indicator is at a modest level (ADBI, 2017, 2019a). In fact, the Government has made a great effort in developing the national master strategy for financial inclusion improvement, with the aim of deepening the financial sector and ensuring financial services accessible to everyone. However, there has been a lack of research-based solutions to overcome challenges confronting policymakers. In the above-said context, the current study is

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investigating factors influencing adult financial literacy in Vietnam and trying to propose some policy recommendations to concerned governmental organizations of Vietnam. It should be initially made clear that, the “adults” are the individuals, who are above 18 years of age and treated as adult learner by researchers (Cercone, 2008; Kapur, 2019; Myers, Conte, & Rubenson, 2014; TEAL, 2011).

## 2. Literature Review

According to the literacy review by ADBI (ADBI, 2019a), the literature on financial literacy focuses on two main areas: (i) the determinants of financial literacy, including age, gender, level of education, and occupation; and (ii) the effects of financial knowledge on financial behavior, including saving, the use of credit, and preparation for retirement. However, for the purpose of harmonization, there should be brief concepts, measurements, frameworks, methodologies on financial literacy research, as follows:

### 2.1. Conceptual and defining financial literacy

It is admitted among researchers that core concepts should be clearly defined to enhance the comparability and consistency across the evidence base. In fact, in some researches, different researchers and organizations have defined financial literacy in many different ways. It is therefore the study should capture the breadth of existing conceptual and operational financial literacy definitions, compare financial literacy to other related but distinct concepts, and conclude with a discussion of the applicable domain of financial literacy (Hung, Parker, & Yoog, 2009).

The US President’s Advisory Council on Financial Literacy (PACFL) (PACFL, 2009) recommended a “consensus” definition, convened to “improve financial literacy among all Americans”. According to the PACFL, financial literacy was defined as “*the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being*”;

while financial education was described as “*...a process by which people improve their understanding of financial products, services, and concepts, so they are empowered to make informed choices, avoid pitfalls, know where to go for help and take other actions to improve their present and long-term financial well-being*” (Hung et al., 2009).

It was reviewed that how widely the PACFL definition is accepted has been unclear. Surprisingly, in the literature, financial literacy has been variably defined as (i) a specific form of *knowledge*, (ii) the *ability* or skills to apply that knowledge, (iii) *perceived knowledge*, (iv) good financial *behavior*, and even (v) financial *experiences*.

It was also criticized that researchers often confused about financial literacy among other concepts. Many concepts, such as numeracy, share features with financial literacy. Take one example, financial literacy clearly benefits from being comfortable with numbers. It was argued that financial literacy involves skills, rather than just knowledge; these skills likely depend on the ability to work with numbers. In fact, numeracy applies much more broadly than just in financial matters and represents a much more basic skill set -one is more closely aligned to more general cognitive abilities. Some researchers argued that it was more productive to keep general numeracy distinct from financial literacy instead of treating it as a supporting construct (Hung et al., 2009).

The researcher also suggested that some concepts should be proposed in relationships with financial literacy, such as financial education. It is defined that financial education is a process through which financial knowledge and skills are gained rather than the knowledge and skills themselves. Thus, financial education should be considered a concept that promotes financial literacy. It is widely agreed among researchers that financial knowledge is central to financial literacy, it should be distinguished from general knowledge (Hung et al., 2009). A composite definition of financial literacy: It is interesting that while it is tempting to accept the definition of financial literacy introduced

by PACFL, it is arguable that the definition largely rests on the ability to use knowledge and skills towards achieving financial well-being, and is hence quite behaviorally based. While practically relevant, such a focus limits insight into mechanisms for impacting financial literacy. Others would argue that financial knowledge, skills, and behavior, as well as their mutual relationships, should all be taken into the conceptualization of financial literacy (Hung et al., 2009).

According to the World Bank (WB, 2013), the terms financial literacy and financial capability are often used interchangeably. Financial capability is the internal capacity to act in one's best financial interest, given socioeconomic and environmental conditions. It encompasses the knowledge (literacy), attitudes, skills, and behaviors of consumers with respect to understanding, selecting and using financial services, and the ability to access financial services that

fit their needs.

It could be summarized that the definition of financial literacy is likely different among various researchers because of study objectives. It is fortunate that the consensus definition of financial literacy introduced by the OECD could capture the financial literacy of people from very different backgrounds in a wide range of countries (OECD, 2012). Therefore, the OECD's definition of financial literacy would be applied in the current study. Hence, the financial literacy component of the questionnaire should reflect the definition of financial literacy as: "A combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing." The questions themselves are largely drawn from existing surveys and have all been validated and approved by OECD/INFE experts. They represent good practices in financial literacy

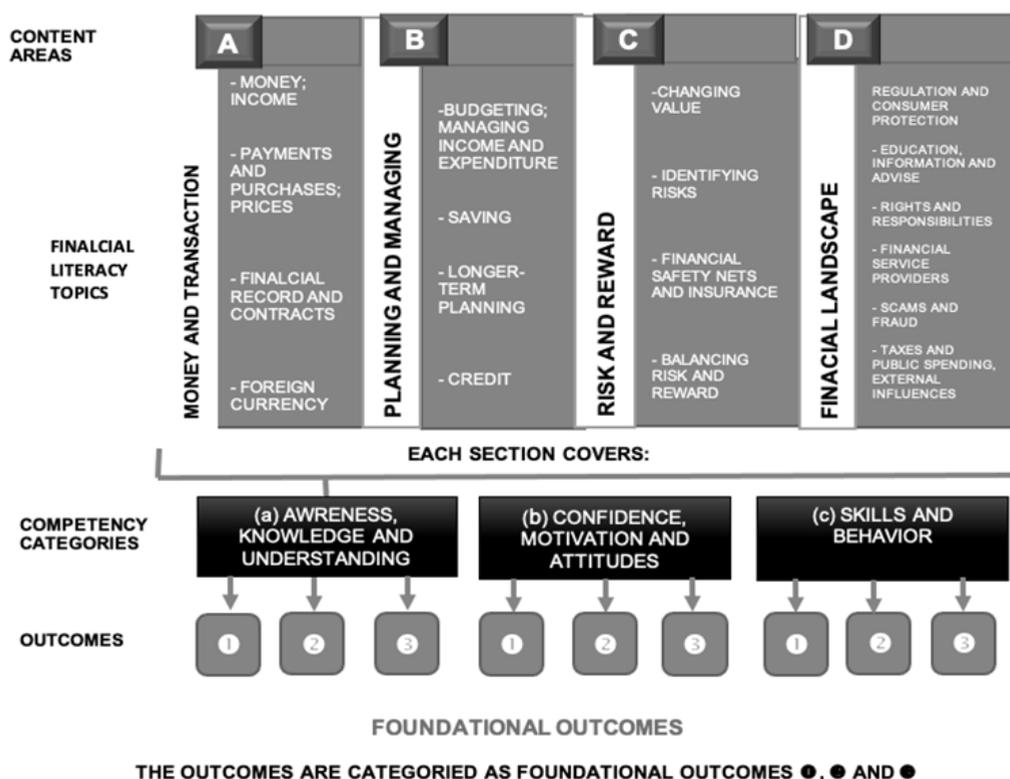


Figure 1. Overall Architecture of the Core Competencies Framework

Source: (OECD/INFE, 2015). As the above-mentioned composite definition of financial literacy, OECD (G20/OECD/INFE, 2016) and (OECD/INFE, 2015) has encompassed financial literacy of (a) Money and transactions; (b) Planning and managing finances; (c) Risk and reward; (d) Financial landscape

and financial inclusion measurement (OECD/ INFE, 2018).

## 2.2. Measurement of financial literacy

There has been a great effort to develop quantifiable measures of financial literacy based on surveys that can be subjected to empirical testing. There should be maintained the earliest and well-known example of the Jump\$tart Coalition for Personal Financial Literacy program for high school and college students in the US in 1997, introduced by Mandell (Mandell, 2009). Lusardi and Mitchell are well-known researchers through adding a set of financial literacy questions to the 2004 Health and Retirement Study (HRS), in a survey of US households of age 50 and older which has been used in a model for later surveys (ADBI, 2019b) (A. Lusardi & Mitchell, 2006). The three so-called “core questions” were initially designed to assess the understanding of some key financial concepts: compound interest, real rates of return, and risk diversification. Most later surveys, such as the Toolkit of OECD/ INFE (OECD/INFE, 2018), are based on that but also include questions for assessing financial attitudes, financial behaviors and financial experience.

As above-mentioned, financial literacy and financial capability are used interchangeably and according to WB, financial capability can be measured by assessing people’s financial knowledge, skills, attitudes, and behaviors. It is suggested that based on these measurements, meaningful indicators can be developed to effectively inform policy objectives (WB, 2013).

## 2.3. Factors influencing financial literacy

There are a number of researches investigating factors that determine financial literacy. There are some factors or group factors taken into research, namely: demography, financial socialization, and financial education. Some researchers, such as Firli, A (Firli, 2017) and especially Natalie Gallery (Gallery, Newton, & Palm, 2011) recommended the below diagram

which could capture the demographic and contextual factors that impact both financial literacy and the choice decision as shown in Figure 2.

As shown in the diagram (Figure 2), there are five group factors directly affecting the financial literacy, in particular: (i) Demographic characteristics (age, gender, education, religion, ethnicity), (ii) Socioeconomic factors (employment type, employment status, household income, investments held); (iii) Sources of advice and information (peers and family, financial experts, fund-provided info., external/general info.), (iv) Member’s risk preferences, and (v) Characteristics of investment choice (number of options, framing of options).

Generally, the above-mentioned diagram covers the same domain as other studies and it is also consistent with the so-called “*financial socialization agents*” framework introduced by Rostinah Supinah (Supinah, Japang, Amin, & Hwa, 2016).

A financial socialization agents framework proposed by Rostinah Supinah (Supinah et al., 2016) included family, friend, media, report, newspaper, magazine, extra work, living experience, course and other informal activities such as seminar, workshop as factors impacting financial attitudes and behaviors (Figure 3). All factors supposedly affect financial literacy (Supinah et al., 2016).

Research results by Rostinah Supinah of the role of financial socialization agents in financial literacy are remarkable and are as follows: respondents’ financial attitudes tend to be statistically significantly influenced by reading materials like books, magazines or newspapers, electronic media such as televisions and radios as well as self-development programs. Whereas, social media and school curriculum provide negative differences to respondent’s financial attitudes but introduce no significant differences in influencing respondent’s behaviors (Supinah et al., 2016). It was recognized that the study opened up discussion insight into the role of financial socialization agents on young adults’ current financial behaviors and attitudes that directly related to their future financial

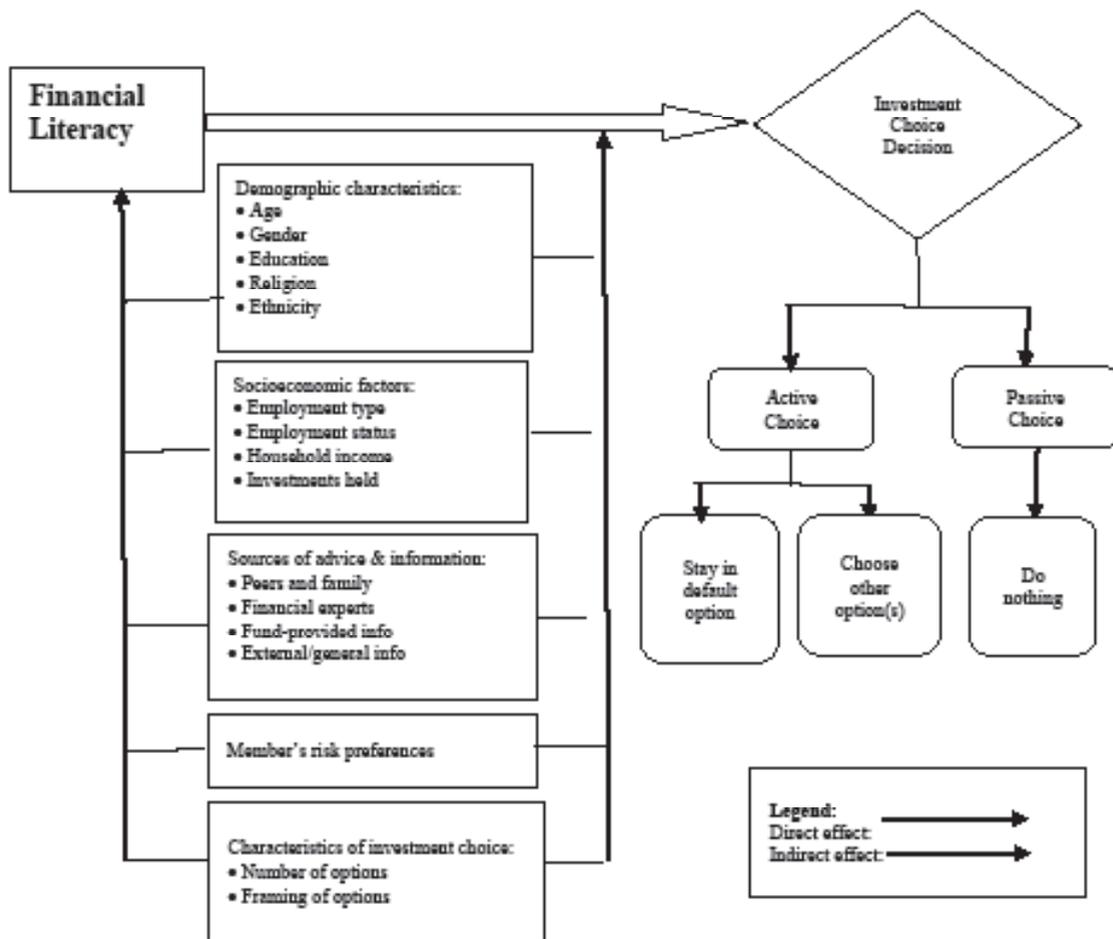


Figure 2. Financial literacy and investment choice decisions in the superannuation fund context

Source: Gallery et al., (2011)

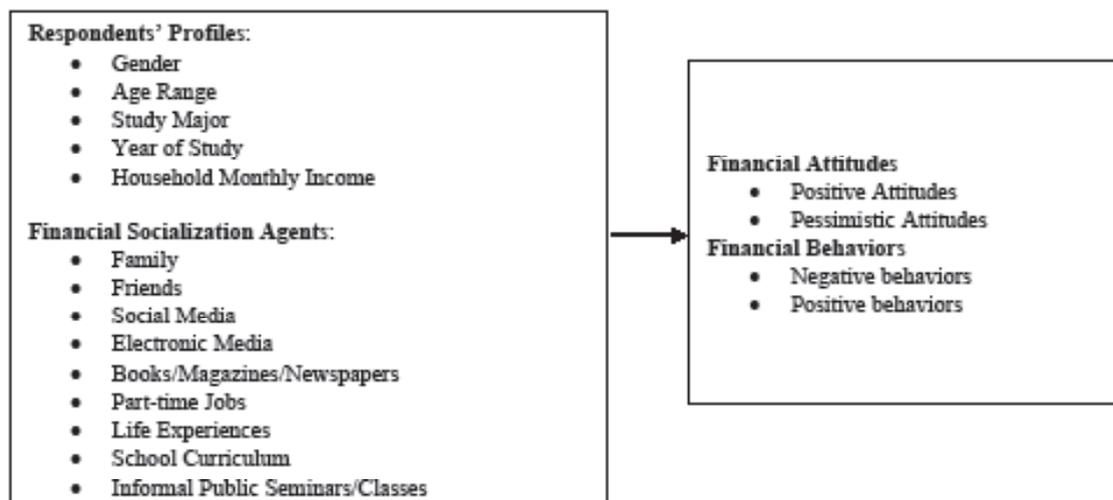


Figure 3. Financial socialization agents, financial attitudes and behaviors model

Source: Supinah et al., (2016)

well-being and decision-making. Albeerdy (Muhammad, Albeerdy, & Behrooz Gharlegghi, 2015) also included “financial socialization agents” in his study and found that there was a strong relationship between independent variables of education and money attitude towards the dependent variable of financial literacy while he found no relationship between financial socialization agents and financial literacy. It should be clarified that financial socialization agents are processes through which people acquire skills, knowledge, and attitude from the inside and outside environment to optimize their expenditure in financial markets (Eric Vincent Bindah, Scholar, & Othman, 2011).

**2.4. Evaluate financial literacy**

Financial literacy is usually assessed by survey. The type of question is “yes”/“no”, “multiple choices” or Likert scale (1 to 5); The content involves private finance (income, money management, saving, expenditure, etc.) and macroeconomy or financial markets (inflation, interest, diversify risk, bond, stock, etc.) The “objective” measures test respondents’ understanding of financial concepts and their ability to apply financial knowledge and numerical skills in particular financial situations. They have been found to be better than the self-assessment approach when it comes to assessing the financial knowledge of respondents (OECD/INFE, 2011). This test approach has been adopted by many authors: Lusardi & Mitchel (Annamaria Lusardi & Mitchell,

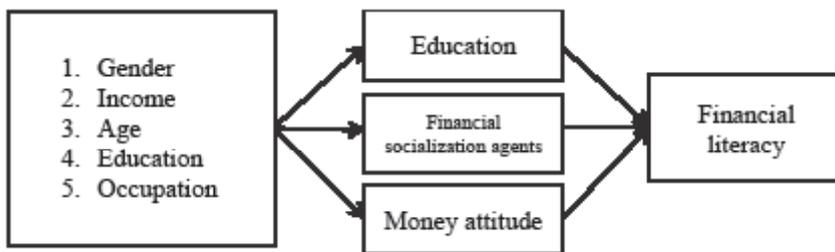
2005); Klapper & Panos (Leora & Panos., 2011), etc. The questionnaires standardized by OECD/INFE to measure financial literacy for adult has been used in research in Asian countries (ADBI, 2017).

**2.5. Financial literacy in Vietnam across research**

There are some studies of financial literacy in Vietnam, but they are insufficient and inadequate in providing research-based policy implications. However, the below-mentioned studies would be highly appreciated for their efforts. They are:

- *Financial literacy in Vietnam is low:* According to the OECD/INFE survey, the general financial literacy score in Vietnam is 12 (it is 11.5 in Cambodia), below the average score among 30 investigated countries. The research also found that “education, income, age, and occupational status are determinants of financial literacy” in both Vietnam and Cambodia. Both financial literacy and general education level have a positive correlation with saving and financial inclusion; This result didn’t change after the adjustment of financial literacy in case of a formal saving product in Vietnam. This research (conducted by Asian Development Bank Institute in 2017 (ADBI, 2017, 2019a) using the questionnaires standardized by OECD/INFE) reconfirmed previous findings in other countries and figured out some notable points:

- *Other findings on financial literacy in Vietnam:*



**Figure 4. Analytical framework to investigate the impact of education, financial socialization agents, and money attitude to financial literacy**

Source: Muhammad et al., (2015)

+ Financial behavior (preparing for retirement) in Vietnam is determined by basic financial literacy and pension knowledge. The probability of making investment choices for retirement (profitable) is determined by advanced financial literacy and financial advice from experts. This is the research conducted by Nguyen (T. A. N. Nguyen, 2018) on financial literacy and retirement plan in Vietnam with primary data collected from a survey of 427 respondents who are current employees in private and public sectors in Vietnam.

+ Vietnamese students in higher education are not financially literate, even at a basic level. Gender, place of residence, field of study, work experience, the financial dependence rate of students on their family, and the demand of students for financial education are found to significantly affect their financial literacy at all levels.

Otherwise, the financial literacy of students is not impacted by their year of study at a basic level. The findings also reveal that students' incomes and occupations of their parents are two predictors for students' financial literacy at a basic level, but not at an advanced and accumulative level. This research by Yen (Y. T. H. Nguyen) used a survey-based method with data collected by randomly selecting 435 students from various majors in colleges and universities in Vietnam;

There are some other studies on adult financial literacy in Vietnam but they are limited to Hanoi and Nghe An, for example, a study by Tue (Tue, 2017).

The above brief review shows that financial literacy has emerged globally as the subject of research. It could be generalized that, financial literacy includes financial knowledge, skills and financial attitudes or financial behavior. It is also noted that, in practice, financial literacy and personal financial capability have been used interchangeably; Therefore, improving financial literacy will enhance individuals participating effectively in financial activities that become more complex. That is why improving financial literacy will lead to better outcomes in terms of personal financial well-being,

household financial welfare and social welfare, broadly. In some countries, there have been studies on the determinants of financial literacy within this country. It would be realized that the financial socialization agents in relation to financial literacy, are also studied quite commonly in countries. Many governments have implemented national policies for improving financial literacy.

Based on the above review, it could be concluded that, currently, in Vietnam, the research gap on financial literacy is quite large. Specifically, there is a lack of quantitative research at the national level, while the level of financial literacy of population is relatively low. The above review also suggests that research-based recommendations are needed for financial literacy education as well as for improving financial inclusion.

### 3. Data and Methodology

#### 3.1. Research method

Based on the research objective, the research framework shown in Figure 4 (originated by Muhammad) is accepted for this study. The framework consists of variables like financial education, financial socialization agents, financial behavior and attitude, etc. Our questionnaire is designed based on this framework. With the view that a respondent who achieves at least 50% of the total score on the financial literacy assessment is considered "passed", otherwise it is considered "failed", therefore the Binary Logistic Model is applied. Correspondingly, Binary Logistic Regression is taken with dependent variables of (i) "*financial literacy*" (the value is "1" if the total score is above average (or  $\geq 13/2$ ), otherwise the value is "0"); and independent variables of demographic, financial education, financial socialization agents (These variables are coded, illustrated with explanations in the Appendix at the end of the paper).

#### 3.2. Data collection and processing

The objective- questionnaire was used to measure the financial literacy level of individual. In the section assessing the financial literacy, there are 13 questions; each correct answer will get 1 point; Therefore, the highest total financial literacy score is 13 points. Questionnaire surveys are conducted face-to-face and via email to individuals in early 2020; With data collection of 692 respondents from 63 provinces in Vietnam, the Binary regressions have been used in estimation with the dependent variable of financial literacy and independent variables of demographic and financial education or financial socialization agents. It should be noted that the Likert scale variables were mean-centered before regression by SPSS 23.

**3.3. Econometric model**

- The hypothesis:
  - + Which factors determine the financial literacy (by score)?
  - + How do financial education and other factors impact financial literacy in Vietnam?
  - Model (based on ADBI, 2017):
- $$FL_i = \alpha_0 + \alpha_1 Income_i + X_i \alpha_2 + \epsilon_i(1)$$
- Where:  
 FL<sub>i</sub> denotes financial literacy;

Income<sub>i</sub> denotes income (start from 5 million VND per month and the gap is 5 million VND per month, the base gauge is 20 million VND per month);  
 X<sub>i</sub> is a vector of control variables (including age, education, gender, occupation - mostly in the financial sector, number of children, years of study);  
 ε<sub>i</sub> is an error term.

**3.4. Results and discussion**

**3.4.1. Result of Binary Logistic Regressions**

The Binary Logistic regression was taken with SPSS.22 for “FL\_ps” (financial literacy) as a dependent variable and other independent variables. The results of the Regression are shown below; :

- Wald test illustrates that there are 10 variables (including: Major; Parents\_job; Parents\_Edu; Risk\_Behavior; Re\_Ch\_1; Re\_Ch\_2; Re\_Ch\_3; Re\_Ch\_4; Re\_Ch\_5; Re\_Ch\_6; Re\_Ch\_7) having significant correlation with “FL\_ps” (Sig<0,05). (Variable names, encoding, and values are shown in the appendix at the end of this article).
- In term of forecasting ability: The results regression show that the overall probability

**Table 1. Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Major	1.108	.228	23.680	1	.000	3.027
	Parents_job	-.763	.214	12.720	1	.000	.466
	Parents_Edu	.707	.208	11.532	1	.001	2.027
	Re_Ch_1	2.880	.579	24.764	1	.000	17.819
	Re_Ch_2	3.662	.632	33.625	1	.000	38.948
	Re_Ch_3	4.876	.581	70.540	1	.000	131.140
	Re_Ch_4	2.867	.623	21.208	1	.000	17.583
	Re_Ch_5	3.118	.644	23.415	1	.000	22.612
	Re_Ch_6	2.955	.564	27.438	1	.000	19.203
	Re_Ch_7	3.288	.614	28.729	1	.000	26.799
	Rsk_behavior	-.615	.202	9.267	1	.002	.541
	Constant	-3.056	.557	30.074	1	.000	.047

Source: Results of model test by authors

of precise forecasting is 87.4% in the case of financial literacy (at least reaching the average financial literacy score) while the precise probability is 55.7% in the case of financial illiteracy (the score is below the average financial literacy score). As a result, the precise probability has reached the Overall Percentage of 75.4%.

- Variable(s) entered on step 1: Major, Parents\_job, Parents\_Edu, Re\_Ch\_1, Re\_Ch\_2, Re\_Ch\_3, Re\_Ch\_4, Re\_Ch\_5, Re\_Ch\_6, Re\_Ch\_7, Rsk\_behavior.
- The result of the Omnibus Tests (Omnibus Tests of Model Coefficients, with sig<0.01) suggests that independent variables have linear correlations with the dependent variable.
- According to the model summary, Nagelkerke Rsquare = .424, meaning independent variables could explain 42.2% of the variations in the dependent variable.

It is also noted that, for variables measured by Likert scale such as financial attitude, risky behavior, all receive Cronbach’s Alpha values above 0.60 from the scale’s reliability test.

### 3.4.2. Discussion of Results

#### (i) Financial literacy probability prediction

In Table 1, Column “B” and [Exp(B) = e<sup>B</sup>], we could illustrate the scenarios corresponding to the probability of 10%, 20%, 30%, 40%, and 50%.

We denote: P<sub>0</sub>: Initial probability; P<sub>1</sub>: aftermath probability then:

$$P_1 = \frac{P_0 \times e^\beta}{1 - P_0(1 - e^\beta)}$$

We could predict the probability of “FL\_ps” when the probability of above-the-average financial literacy is 10%, 20%, 30%, 40%, or 50%. The results are presented in Table 2.

#### (ii) Financial literacy prediction

The model could help to predict the level of financial literacy as below:

Remove all variables that have no significant impact and use Binary Logistic regression; the result is presented in Table 1 (Variables in the Equation) with the equation:

$$\text{LogOdds} = b_0 + b_1\text{Major} + b_2\text{Parents}_{\text{job}} + b_3\text{Parents}_{\text{Edu}} + b_4\text{Re}_{\text{ch1}} + b_5\text{Re}_{\text{ch2}} + b_6\text{Re}_{\text{ch3}} + b_7\text{Re}_{\text{ch4}} + b_8\text{Re}_{\text{ch5}} + b_9\text{Re}_7 + b_{10}\text{Re}_{\text{Ch}_8} + b_{11}\text{Risk}_{\text{Behavior}}$$

Substitute the parameters in Table 1 ‘Variables in the Equation’ with the above equation, we get:

$$\text{LogOdds} = -3.056 + 1.108\text{Major} - 0.763\text{Parents}_{\text{job}} + 0.707\text{Parents}_{\text{Edu}} + 2.880\text{Re}_{\text{ch1}} + 3.662\text{Re}_{\text{ch2}} + 4.876\text{Re}_{\text{ch3}} + 2.876\text{Re}_{\text{ch4}} + 3.118\text{Re}_{\text{ch5}} + 2.955\text{Re}_{\text{ch6}} + 3.288\text{Re}_{\text{Ch}_7} - 0.615\text{Risk}_{\text{Behavior}}$$

The equation to forecast the probability of above-average financial literacy is:

**Table 2. Financial literacy probability prediction (FL)**

	B	Exp(B)	10%	20%	30%	40%	50%
Major	1.11	3.03	25.2%	43.1%	56.5%	66.9%	75.2%
Parents_job	(0.76)	0.47	4.9%	10.4%	16.6%	23.7%	31.8%
Parents_Edu	0.71	2.03	18.4%	33.6%	46.5%	57.5%	67.0%
Re_Ch_1	2.88	17.82	66.4%	81.7%	88.4%	92.2%	94.7%
Re_Ch_2	3.66	38.95	81.2%	90.7%	94.3%	96.3%	97.5%
Re_Ch_3	4.88	131.14	93.6%	97.0%	98.3%	98.9%	99.2%
Re_Ch_4	2.87	17.58	66.1%	81.5%	88.3%	92.1%	94.6%
Re_Ch_5	3.12	22.61	71.5%	85.0%	90.6%	93.8%	95.8%
Re_Ch_6	2.96	19.20	68.1%	82.8%	89.2%	92.8%	95.1%
Re_Ch_7	3.29	26.80	74.9%	87.0%	92.0%	94.7%	96.4%
Rsk_behavior	(0.62)	0.54	5.7%	11.9%	18.8%	26.5%	35.1%

Source: Results of model test by authors

$$E\left(\frac{Y}{X}\right) = \frac{e^{\text{LogOdds}}}{1 + e^{\text{LogOdds}}}$$

E(Y/X): probability for Y=1 with particular:  
We could predict how these factors impact financial literacy based on 2 scenarios (Table 3):

(+) Scenario 1 (KB1): if the variables get the “0” value, the probability of the respondent being financial literate is 29.80%.

(+) Scenario2 (KB2): if the variables get the “1” value, the probability of the respondent being financial literate is 99.94% (which is considerably high).

Some conclusions derived from our findings are as follows:

Firstly, it is noted that as exhibited in Figure 4 of our analytical framework, the expected demographic characteristics (such as age, gender, education, occupation, etc.), as well as income,

should have determined the financial literacy; unfortunately, the regressed results do not find these variables significantly influence the financial literacy in the context of Vietnam; To this matter, it is recommendable to have further study. However, the regressions have brought about some conclusions as follows:

Secondly, factors that determine financial literacy:

Financial study channels college/university (Re\_Ch\_3); Other financial study channels (Re\_Ch\_7); short-term financial study channels (Re\_Ch\_2); financial study channels are newspapers (Re\_Ch\_5); Major in college/university; financial study channels are magazines and documents (Re\_Ch\_6); financial study channels are schools (Re\_Ch\_1); financial study channels are radio and TV (Re\_Ch\_4); Parents’ education (Parents\_Edu).

**Table 3. Financial literacy prediction in two scenarios**

Variable	Parameter	KB1=0	KB2=1
Major (finance =1; otherwise=0)	1.108	0	1
Parents_job (finance =1; otherwise =0)	(0.763)	0	1
Parents_Edu (above bachelor =1; otherwise =0)	0.707	0	1
Re_Ch_1 (financial study channels are schools, if the FL score is above average then =1; otherwise =0) (*)	2.880	0	1
Re_Ch_2 (short-term financial study channels, if the FL score is above average then =1; otherwise =0) (*)	3.662	0	1
Re_Ch_3 (financial study channels are college/university, if the FL score is above average then=1; otherwise =0) (*)	4.876	0	1
Re_Ch_4 (financial study channels are radio and TV, if the FL score is above average then=1; otherwise =0) (*)	2.867	0	1
Re_Ch_5 (financial study channels are newspapers, if the FL score is above average then =1; else =0) (*)	3.118	0	1
Re_Ch_6 (financial study channels are magazines and documents, if the FL score is above average then =1; otherwise =0) (*)	2.955	0	1
Re_Ch_7 (Other financial study channels, if the FL score is above average then =1; otherwise =0) (*)	3.288	0	1
Risk_Behavior (if the risk appetite is above average =1; otherwise =0)	(0.615)	0	1
Constant	(3.056)		
(P(Y/X))		29.80%	99.94%

Source: Results of model test by authors

(\*) Respondents are required to recall knowledge from the corresponding channel; if they could and the FL score is above average then the variable is “1”, otherwise it is “0”

In reference to the financial-socialization-agents approach, the result shows that those factors have positive correlations with the financial literacy in Vietnam, including school, short-term courses, major in college/university, radio and TV, newspapers, magazines and documents, family (Parents' education), and other financial socialization agents.

*Thirdly*, factors that have a negative correlation with financial literacy:

+ Risk\_Behavior: people with low financial literacy often have more risky behavior than others;

+ Parents' occupation (Parents\_job) has a negative correlation with the financial literacy rate. This reflects the adverse effect especially when parents force their children to follow parents' career paths even the children want to choose their vocational field by themselves. However, we recommend specialized research on this subject.

#### 4. Conclusion and implications

The current research conducted the Binary Logistic regression with the data from 692 respondents in Vietnam and found that there are 11 factors determining adult financial literacy. Meanwhile, the regression results do not show demographic variables significantly affect the level of financial literacy in the context of Vietnam. According to literature reviews and the regression results, taken into account the financial-socialization-agents approach, we have some suggestions for policymakers to enhance financial literacy and hence, financial inclusion:

- To improve the so-called "*financial inclusion*" in Vietnam, solutions should be taken from and approached from both the supply and demand side (to be mentioned here after);

- Demand-side policies: According to the results of the current study, financial socialization agents have positive correlations with financial literacy in Vietnam; It is suggested that the Government should have a master plan to implement financial education through various channels, starting from primary schools in

combination with other formal media (Vietnam Broadcast or Vietnam Television, etc.) to improve financial literacy and indirectly enhance financial inclusion;

- Supply-side policies: The literature reviews showed that financial education should be delivered by different channels; and it is also the responsibility of the various stakeholders. Moreover, it should be recognized that, consumers are customers of financial institutions, therefore financial literacy education should be the responsibility of financial institutions.

- The Government should issue a national plan for financial education that aligns with the National financial inclusion strategy, on the basis of cooperation among competent ministries to level up the adult finance literacy in Vietnam, which, in turn, will enhance the financial stability and financial well-being of households. Accordingly, financial education should be mandated in the school program as soon as possible so that children could improve their financial literacy level from now on as they will become smart financial decision-makers in the future;

- There is a requirement for a specific policy to improve financial literacy for vulnerable groups to protect them from scams and frauds. As the mass media shows, in Vietnam, there have been many cases of financial scams and money frauds, and the so-called "usury" in which most victims are the poor and illiterate. And the regression results also showed that low financial literacy scores have high correlations with excessive risk-taking (risk behavior). And it is also clear that the poor or vulnerable groups should be protected from any risk; also, they should have equal opportunity in accessing financial services for the purpose of financial inclusion.

- Banks should actively and be encouraged to provide financial education to their clients rather than implementing public relations (PR) strategies for profit-making purposes like what banks have done so far. The rationale of that is and it should be expected that the smart (financial literate/financial capable) customer base of banks could facilitate their business sustainably

and could bring about improvements in financial inclusion from the national perspective. In line with this, providing financial education or financial training to customers should be mandated for every bank accordingly and appropriately;

- Further studies on financial literacy or related to financial literacy should be strongly encouraged so that policymakers have more research-based solutions. The reason is that so far, the Government have concerned about “usury” and made great efforts to improve financial inclusion; From the policymaker’s side, up to now, the Government, the State Bank of Vietnam in particular, the national financial inclusion strategy had issued in early 2020 (Thủ\_Tướng, 2020). It would be noted that the paper-based strategy requires much effort to realize all ambitious goals, including financial education;

From the researcher perspective, there has been a lack of studies on financial literacy or related issues. As a result, until now, competent governmental organizations and policymakers have heavily relied on ad-hoc measures rather than long-term or sustainable approaches. Our recommendation, in the line with this, is that the Vietnamese government in general and the State Bank of Vietnam, in particular, should make more efforts right away to improve financial literacy by encouraging further research on these issues so that there would be more applicable research-based measures;

- Further studies on the topic of parents’ careers and children’s financial literacy are needed: The current research has shown the negative correlation between parents’ financial and banking careers and their children’s financial literacy. ■

**Appendix: Variables and codings**

Variable	Coding	Value
Major	Major	Finance =1; otherwise=0
Parents job	Parents_job	Finance =1; otherwise =0
Parents Education	Parents_Edu	above bachelor =1; otherwise =0
Financial learning in schools (school’s channels)	Re_Ch_1 (*)	Recalled /learned through this channel = 1, (and only considered if the FL score is above average), otherwise = 0
Finance training by short course (short course channels)	Re_Ch_2 (*)	learned through this channel = 1, (and only considered if the FL score is above average), otherwise = 0
Financial learning in college/ university (college/university channels)	Re_Ch_3 (*)	learned through this channel = 1, (and only considered if the FL score is above average), otherwise = 0
Financial learning on radio and/or TV (radio and/ỏ TV channels)	Re_Ch_4 (*)	learned through this channel = 1, (and only considered if the FL score is above average), otherwise = 0
Financial learning by newspapers (Newspapers channels)	Re_Ch_5 (*)	learned through this channel = 1, (and only considered if the FL score is above average), otherwise = 0
Journal/Magazines and documents (Journal/Magazines and documents channels)	Re_Ch_6 (*)	learned through this channel = 1, (and only considered if the FL score is above average), otherwise = 0
Other financial study channels	Re_Ch_7 (*)	
Risk taking behavior	Risk_Behavior	If the risk appetite is above average =1(mean-centered); otherwise =0
(*) values are compared to mean-centered values		

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