

Factors Affecting Financial Literacy of Vietnamese Adults: A Case Study for Hanoi and Nghe An

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Abstract: This research examines the factors affecting the financial literacy of Vietnamese adults. Using a sample of 266 observations of adults in two big cities in Vietnam (Hanoi and Vinh in Nghe An Province), the author evaluates the literacy level of adults in these urban areas. The financial literacy of the interviewed people is low. The multiple regression results show that lower financial literacy levels associate with higher age and married status and higher financial literacy levels associate with higher education, more family members, the person making financial decisions and the person attending a useful financial course. This research also explores the association between financial literacy and financial behaviors of individuals employing logistic models. It is found that higher financial literacy associates with less probability of overspending and higher probability of saving money and careful spending. Higher financial literacy is also found to associate with higher probability of opening a savings account and making various investments.

Keywords: Financial literacy, financial behavior, Vietnamese adults.

1. Introduction

In their lifetime, individuals have to make various financial decisions such as borrowing, investing, and preparing for retirement. Besides, with the complexity of the incessantly developing financial market, individuals should gain knowledge about various financial products being offered to them. INFE (2011) defines financial literacy as a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual

financial wellbeing [1]. Financial literacy helps people make effective use of financial products and services and plan for their short-term and long-term financial goals. For example, the study of Klapper and Panos (2011) shows that better financial literacy is positively related to retirement planning [2] while the study of Beckmann (2013) shows that there is a positive association between financial literacy and better saving and diversification [3]. In this way, financial literacy improves the well-being of each person. At the country level, financial literacy improvement helps to enhance the quality of financial services and contribute to economic growth and development of a country. On the other hand, a low level of financial literacy may hinder a country's development. Indeed, the research of Morton (2005) shows that a large number of those with

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low financial literacy will seriously affect the prosperity of the whole [4].

Many developed countries such as the United States of America, Australia and Singapore established national financial education strategies. Developing countries such as Poland, Thailand or Malaysia are also in the process of establishing national financial literacy programs. In those developing countries, new financial risks lead to the need for diversification; longer life induces more retirement precautions and newly available financial products require more vigilant financial decisions. Financial knowledge is thus essential for individuals in those countries and especially important for urban people. The reason is that when the economy grows, urban people have to deal with new financial products and services. This is due to the fact that financial institutions concentrate more in the big cities and the financial products and services that they offer are now more affordable with the increasingly higher incomes of urban people. Financial literacy improvement in the urban areas of developing countries may lead to two desirable consequences: (1) Financial literacy increases welfare by inducing rational financial behavior (e.g. to diversify risks and to ease the proper use of credit cards); and (2) Financial literacy mobilizes saving which in turn encourages financial service development and economic growth.

Improving the financial knowledge, financial literacy and financial capability of individuals is possible with appropriate financial education programs targeted at the right people and at the right time. For financial education to be effective it is vital to clearly understand the level of financial knowledge, attitudes and behavior of individuals as well as factors affecting their financial literacy level.

In this study, the author aims to enrich the existing literature by (1) Evaluating the financial literacy levels of adult urban dwellers in Vietnam; (2) Determining the factors affecting the financial literacy of Vietnamese individuals; (3) Examining the association

between the level of financial literacy and the financial behavior of the respondents.

2. Literature review

Previous studies have addressed the issue of an inadequate level of financial literacy in developed countries. Lusardi and Mitchell (2011) use the 2009 National Survey as part of the National Financial Capability Study and found that a large majority of Americans fail to understand critical financial concepts including interest compounding, inflation, and risk diversification [5]. These shortcomings are most severe for women, the less educated and older individuals.

Kehiaian (2012) surveyed 500 adults in the Middle District of North Carolina to examine factors that influenced financial literacy in U.S. households [6]. A questionnaire including 63 questions was used to measure financial knowledge and behavior of debtors and non-debtors. The author developed 149 independent variables broken up into demographic factors, psychological factors, and financial behaviors. The author found 125 significant factors of financial literacy in 16 different categories. In terms of demographic determinants, the study found that age, experience in financial training, education, race, type of work, career and parental background have the most impact on financial literacy.

For developing countries, there have been quite a few researches seeking to determine the factors influencing people's financial literacy level. Bhushan and Medury (2014) surveyed 516 salaried individuals of Himachal Pradesh (in India) using a questionnaire of 13 items to measure respondent's knowledge in the areas of financial numeracy, savings and investments, borrowings, insurance, risk and return [7]. Their findings indicate that financial literacy level is affected by gender, education, income, nature of employment and place of work. The study also concludes that the overall financial literacy level is low in India and necessary measures

should be taken by the government to increase awareness about financially related matters.

Krah et al. investigated the financial management practices of 286 selected households in the Greater Accra Regions of Ghana (2014) [8]. They examined the budgeting and budgetary control practices of the households to identify the relationships that exist between the budget culture of a household and their educational level, stage, income, and savings/investment stock and found that most households do not prepare a budget for various reasons. The study also detected a significant relationship between household budgeting and the level of saving, educational level, income level and age of household. Most households do not seek the assistance of finance experts in financial planning and decision making.

The financial knowledge poorer areas in developing countries are also covered in a study of Xu and Zia (2012) [9]. However, no research focused specifically on studying the financial literacy levels of people living in urban areas of developing countries.

There are not many studies about financial literacy levels and the determinants of financial literacy levels in Vietnam. Dinh and Nguyen proposed a framework to measure financial literacy levels and financial capability for Vietnamese people [10]. However, the authors did not apply this framework to evaluate the financial literacy of Vietnamese people. Nguyen and Tran sought to determine the financial literacy levels of university students [11]. The study found that students' financial literacy level is affected by their gender and whether they study for an economics and finance related degree.

There have been no studies about factors affecting individuals' financial literacy. The aim of this paper is to fill this gap by assessing financial literacy and its determinants in some urban areas in Vietnam. This seeks to help policy makers and regulators devise appropriate strategies in order to increase the level of financial literacy among the population in urban areas.

3. Methodology and data

3.1. The financial-economic background of Vietnam and the two cities in the survey

Vietnam belongs to the group of rapidly developing economies. Vietnam's economic growth per capita since the early 1990s averaged 5.5% a year and has been among the fastest in the world. Its pace of poverty reduction is almost unprecedented as can be seen in Figure 1.

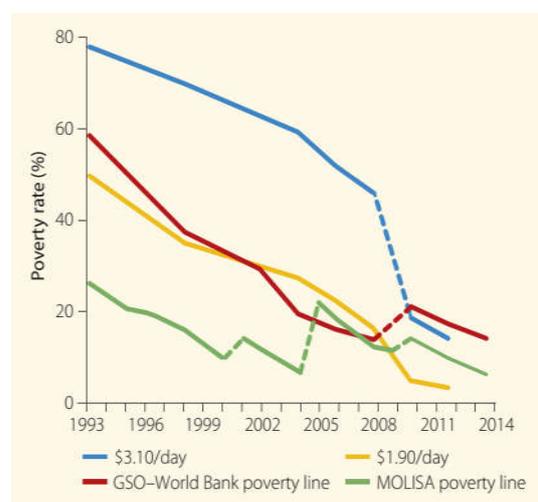


Figure 1. Vietnam reduction in poverty.
Source: World Bank, 2016.

Vietnam's economic expansion reflects a steady acceleration in private consumption growth. Foreign investment, especially in the export oriented electronics sector, is predicted to continue to accelerate with an average annual increase of 13.4% in exports of goods and services in 2014-18, benefiting from the relocation of low-cost export manufacturing from China [12].

The financial sector of Vietnam has kept pace with the overall economy. Vietnam banking and non-banking sectors both account for high proportions of GDP in comparison with other countries in the South East Asian region. This can be seen in Figure 2.

Financial services such as insurance are prospering rapidly and the growing trend

continues. For example, total insurance premiums nearly doubled between 2007 and 2011 driven by robust economic growth, the rising middle class, rapid urbanization and better access to insurance products (Figure 3). The financial sector is well developed making access to sophisticated financial products easier than ever.

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In Vietnam, the cities of Hanoi and Vinh provide a suitable field to study the factors affecting financial literacy levels in a developing country.

Hanoi is the capital and the second largest city in Vietnam. Hanoi's population in 2015

was estimated at 7.7 million people with the population growth rate of 3.5% per year.

The city is both a major metropolitan area of Northern Vietnam, and also the country's political center. It is located in the northern region of Vietnam, situated in the Red River delta, nearly 90 km away from the coast line. Hanoi is divided into 12 urban districts, 1 district-level town and 17 rural districts. Hanoi has the highest Human Development Index among the cities in Vietnam and is expected to be one of the fastest growing cities in the world in terms of GDP growth from 2008 to 2025. In the year 2013, Hanoi contributed 12.6% to GDP, exported 7.5% of total exports, contributed 17% to the national budget and attracted 22% of the investment capital of Vietnam. The city's nominal GDP at current prices reached 451,213 billion VND (21.48 billion USD) in 2013, which made per capita GDP stand at 63.3 million VND (3,000 USD) [13]. The economic structure underwent important shifts, with tourism, finance, and banking now playing an increasingly important role.

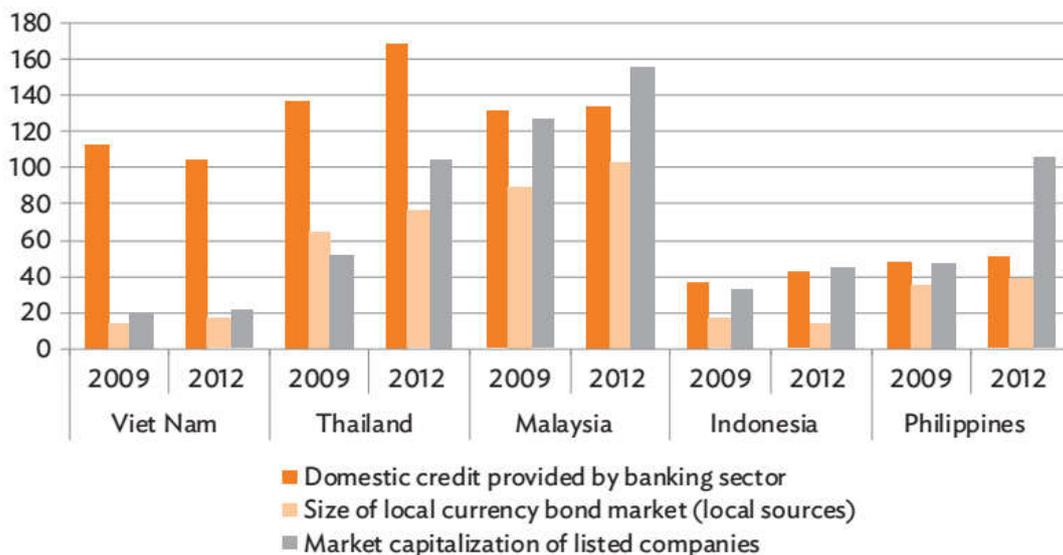


Figure 2. Financial Sector Composition (% of gross domestic product (GDP)).

Sources: World Bank, 2014; Asian Bonds Online, <http://asianbondsonline.adb.org/>

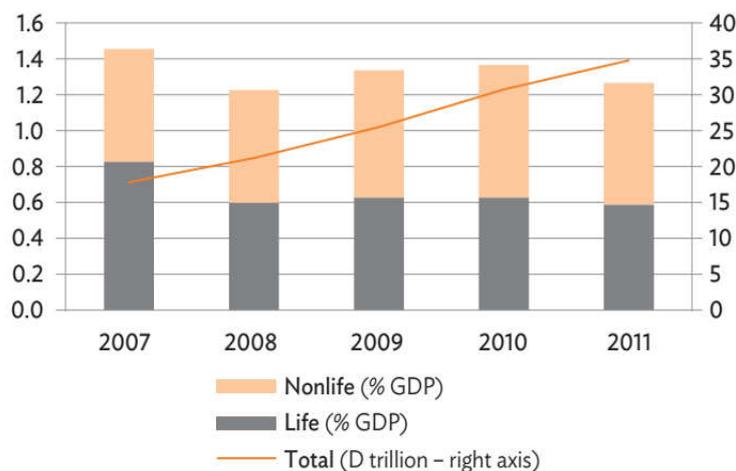


Figure 3. Insurance premiums (% of GDP).

Source: World Bank Global Financial Development Database, 2014.

Vinh is the biggest city and economic and cultural center of the Central Coast of Vietnam. Vinh is the capital of Nghe An Province, and is a key point in the East-West economic corridor linking Myanmar, Thailand, Laos and Vietnam. The city is situated in the south-east of the province, and is located on the main north-south transportation route of Vietnam, easily accessible by highway, railroad, boat and air. Vinh is about 300 kilometers south of Hanoi and 1,400 kilometers north of Ho Chi Minh City. The total area of Vinh city is 104.97 square kilometers, and includes 16 urban wards and 9 suburban communes. The population of Vinh was estimated in 2015 to be 490,000 people. The service sector comprises the largest part of Vinh's economy, with around 55% of the working population being employed in this area. Vinh is an important transportation hub, having a key position on the route between the northern and southern parts of the country, and is also a notable port.

3.2. Data collection

For the purpose of the study, a survey was conducted amongst individuals in Hanoi and Vinh with a random sample technique. The places selected to conduct the survey were in the main streets where there is a high concentration of people so as to get a representative sample of the population. Data

collection was carried out in a one-month period from July to August 2015. Interviews were conducted face to face by a group of student volunteers. Locations were decided to ensure a balanced sample with respect to income, education and wealth. Each volunteer interviewer attended a training session on this specific survey. Each interviewer approached his or her respondent one at a time. Participants were informed that the information obtained from the survey would be used only for academic purposes. Each interview took 15 to 20 minutes. 200 residents in Hanoi were sampled and 173 valid answers were collected. 150 residents in Vinh were sampled and 93 valid answers were collected. The total sample size is 266. The invalid answers were due to missing data and/or the respondents refusing to answer important questions in the survey.

Primary data from the respondents was collected by using a structured questionnaire designed by the Science and Service Department - Association of Vietnam Universities and Colleges. It contains 36 questions divided into four sections:

1. Demographic information: 4 questions.
2. Personal finance: 9 questions.
3. Financial behavior of individuals: 13 questions.
4. Financial knowledge of individuals: 10 questions.

The last section of 10 questions is to evaluate the financial literacy levels of the interrogated individuals. Specifically, the questions ask the individuals to calculate the simple interest rate, time value of money, credit, foreign exchange and insurance; test their knowledge about the relationship between inflation - profits, inflation - prices, inflation - risk and the role of diversification in reducing risk. The total score for each respondent is calculated by giving one mark for each correct answer and zero for an incorrect answer. The total score on that test was used to determine the level of financial literacy. Among the 10 questions, there are 3 questions comparable to previous study of Lusardi and Mitchel testing the knowledge of the respondents about interest rate, inflation and risk [14]. This would allow for comparison with previous studies.

3.3. Research questions and hypotheses

The purpose of this research was to determine the relationship between financial literacy, demographic characteristics of Vietnamese households, and other social factors. This paper develops a list of factors and behaviors that may influence financial literacy. The demographic variables include age, gender, type of job, education, marital status, the number of family members and income. The social factors include whether the person is making financial decisions in the family and whether the person has attended any financial management program. The authors tested the hypothesis whether these variable affect the financial literacy levels of the interviewed people.

This research also aims to find the association between the financial literacy level and financial behaviors of individuals. It is assumed that people with higher financial literacy levels would tend to use financial products and services and have good financial habits such as saving or living within their means.

3.4. Model

The author employed 2 models in this research. First, a multiple regression model is

applied to determine the factors affecting literacy levels.

The regression equation for the whole sample is as follows:

$$FLC = \beta_0 + \beta_1 * Age + \beta_2 * Age^2 + \beta_3 * gender + \beta_4 * higher_education + \beta_5 * marital_status + \beta_6 * family_member + \beta_7 * financial_decision + \beta_8 * high_expenditure + \beta_9 * high_income + \beta_{10} * course_affect + \varepsilon (1)$$

Where:

- FLC: Financial literacy score
- Age: Age of the interviewee
- Age2: Square of Age
- Gender: Gender of the interviewee
- Higher_education: Whether the interviewee has completed higher education or not (1 if yes, 0 if no).
- Marital_status: Whether the interviewee is currently married or not (1 if yes, 0 if no).
- Family_member: The number of members in the interviewee's family.
- Financial_decision: Whether the interviewee makes the financial decision in the family or not (1 if yes, 0 if no).
- High_expenditure: Whether the interviewee has high expenditure or not (more than 9 million VND per month) (1 if yes, 0 if no).
- High_income: Whether the interviewee has a high income or not (more than 9 million VND per month) (1 if yes, 0 if no). In Vietnam, 9 million VND is the threshold at which a person has to pay income tax.
- Course_affect: Whether the interviewee has participated in a financial training course and has found it useful (1 if yes, 0 if no).

The second model applied in this research is the logistic model. Logistic regression measures the relationship between the dependent variables and independent variables by estimating probabilities using a logistic function, which is the cumulative logistic distribution. A logistic regression model is an equation that relates the conditional probability of an event Y occurring to a weighted combination of values for variables $x_1, x_2, x_3, \dots, x_N$. Y is called the response variable while

the various x 's are called explanatory variables. The regression equation has the following form: $\Pr(Y|x_1, x_2, x_3, \dots, x_N) \sim \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_N x_N$ (2)

In this article, the author uses the financial literacy score as the main explanatory variable and other variables such as age, gender, higher_education, marital_status, family_member, financial_decision, high_expenditure, high_income as controlled variables in the logit model. These variables are described in the multiple regression model.

The dependent variables for each logit model are different financial behaviors of individuals. Those variables are described below:

- Book keeping: Whether the interviewee has the habit of book keeping his/her income and expenditure or not (1 if yes, 0 if no).

- Careful spending: Whether the interviewee has the habit of spending carefully or not (1 if yes, 0 if no).

- Overspending: Whether the interviewee has ever overspent (i.e. spending so much that he/she has to cover for the expenditure by borrowing or getting financial support) or not (1 if yes, 0 if no).

- Saving money: Whether the interviewee has the habit of saving money or not (1 if yes, 0 if no).

- Savings account: Whether the interviewee has a savings account or not (1 if yes, 0 if no).

- Other investments: Whether the interviewee has made other investments besides saving money in a bank or not (1 if yes, 0 if no).

- Life insurance: Whether the interviewee purchases life insurance or not (1 if yes, 0 if no).

- Credit card: Whether the interviewee has a credit card or not (1 if yes, 0 if no).

4. Results and discussion

4.1. Statistics of collected data

Table 1 gives the summary of the demographic and socio-economic characteristics of the respondents. A look at the demographic and socio-economic characteristics in detail shows that the

percentage of male respondents is 54.1% and female respondents is 45.9%. Among the interviewed individuals, 51.9% are in the age group of 20-35 years, 34.6% in the age group of 36-55 years and only 13.5% are older than 55 years. The majority of the respondents in our sample have finished their higher education with a university degree (61.3%), college degree (6.4%) or post-graduate degrees (4.5%). The fraction with no higher education degree account for a small number with 22.9% graduated from high schools and 4.9% graduated from vocational schools. Most of respondents work as office staff (60.9%) or freelance laborers (25.6%).

Most respondents are married (81.2%) and have 3-5 family members (82.3%). The proportion of respondents earning a monthly income of over VND 9 million, VND 6-9 million and VND 3-6 million is 31.6%, 34.6% and 27.1% respectively. The proportion of respondents with a monthly expenditure of over VND 9 million, VND 6-9 million and VND 3-6 million is 11.7%, 22.9% and 36.5% respectively. The fact that expenses seem to be lower than income might reflect the tradition of the Northern Vietnamese people in spending and saving.

Table 2 gives the statistics of some variables according to the survey results. 80.5% of the respondents take part in the financial decision process in their family. Only 1.5% of them receive financial support from outside, such as the government or their relatives, besides their own income. More than half of them have experienced overspending while 70.7% have faced financial problems. 39.1% of the people keep track of their income and expenditure while 77.8% of them consider themselves as careful spenders. 78.2% of them have a saving habit while 50.8% of them maintain a saving account in a bank and 56% of them use other types of investment. Only 7.5% of the respondents use credit cards while the percentage of life insurance users is at 47.4%. 26.3% of the respondents have attended training courses related to finance and most of them (i.e. 87.6%) found the course beneficial.

Table 1. Demographic and socioeconomic details of the respondents

		Frequency	Percentage (%)
Gender	Male	144	54.1
	Female	122	45.9
Age	20-35	138	51.9
	36-55	92	34.6
	Over 55	36	13.5
Education	High school	61	22.9
	Vocational school	13	4.9
	College	17	6.4
Type of work	University	163	61.3
	Postgraduate	12	4.5
	Office staff	162	60.9
	Teacher/lecturer	18	6.8
Marital status	Factory worker	18	6.8
	Freelance laborer	68	25.6
	Single	46	17.3
	Married	216	81.2
Number of family members	Divorced	4	1.5
	1-2	9	3.4
	3-5	219	82.3
Expense	More than 5	38	14.3
	Under VND 3 million/month	77	28.9
	VND 3-6 million/month	97	36.5
	VND 6-9 million/month	61	22.9
Income	Over VND 9 million/month	31	11.7
	Under VND 3 million/month	18	6.8
	VND 3-6 million/month	72	27.1
	VND 6-9 million/month	92	34.6
	Over VND 9 million/month	84	31.6

Source: Author's calculation.

Table 2. Mean value of some selected variables

financial_decision	.8045	credit_card_using	.0752
support_receiving	.0150	saving_habit	.7820
overspending	.5301	saving_account	.5075
financial_problem	.7068	other_investment	.5602
high_expenditure	.1165	Life_insurance	.4737
high_income	.3158	course_participation	.2632
book_keeping	.3910	course_benefit	.8759
careful_spending	.7782	course_affect	.2406

Source: Author's calculation.

4.2. Financial literacy results

The overall literacy level of the respondents is not high. The average financial literacy score of the whole sample is 5.56 out of 10 with a standard deviation of 2.48. Around 60% of the people managed to answer correctly 4 to 6 questions. There are more than 20% of the people who can get at least 8/10 points in terms of financial literacy knowledge but at the same time there are more than 20% who can get only 3/10 points.

The results of the responses to the financial literacy questions are shown in Table 3. The pairwise correlations of the 3 questions are shown in Table 4. Because none of the correlations exceeds 0.3, it is proof that each question measures a different element of financial literacy.

The results from the 3 questions are consistent with that of the whole set of 10 questions. The percentage of people who can answer all the three questions is rather low.

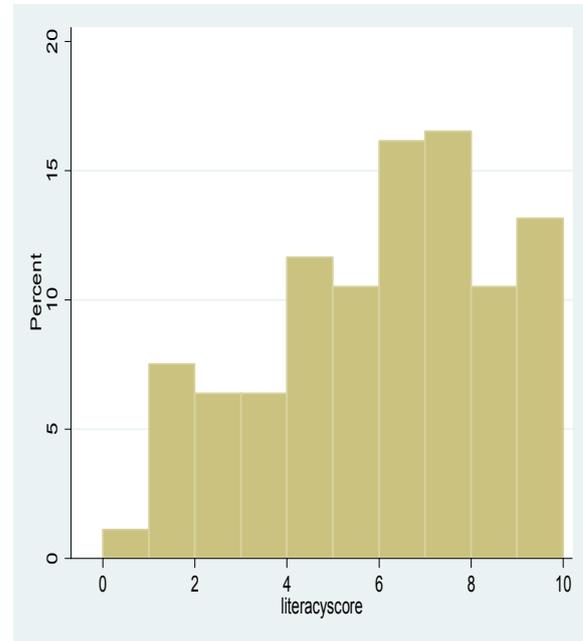


Figure 4. Financial literacy level
Source: Author's calculation.

Table 3. Responses to financial literacy questions

	Minimum	Maximum	Mean	Std. Deviation
Interest rate	0.00	1.00	.4323	.49633
Inflation	0.00	1.00	.6654	.47274
Diversification	0.00	1.00	.5000	.50094
Lusardi & Mitchell financial literacy scores	0.00	3.00	1.5977	1.03515

Source: Author's calculation.

Table 4. Pearson correlation

	Interest rate	Inflation	Diversification
Interest rate	1	.265**	.220**
Inflation	.265**	1	.247**
Diversification	.220**	.247**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed).

Source: Author's calculation.

The respondents perform best with the inflation question where 66.5% gave the correct answer. This can be partly explained by the effect of the recent economic slow-down in Vietnam when inflation stayed at a high level for a long time and affected people's lives. The percentage of respondents who correctly answered the questions about interest rates and diversification are 43.2% and 50%, respectively. The overall results are lower than for people from other countries such as in Grohmann (2014) [15].

4.3. Factors affecting financial literacy levels

Table 5 shows the results of multiple regressions with the financial literacy level as the dependent variable. All the coefficients for independent variables are statistically significant at least a 90% confidence level. Thus, it can be concluded that there is strong correlation between independent variables and the dependent variable.

For variables age and square of age, according to the result, if we take the

derivative with respect to variable age, then from equation (1) we have:

$$\frac{\partial \text{Financial literacy}}{\partial \text{Age}} = 0.179 - 2 \times 0.003 \text{Age}$$

Making the left hand-side equal to 0, we can solve for Age = 30. This is the turning point for variable Age. It means when the people in the sample have a higher literacy level they are older (0.179 point higher with 1 year older). But that relationship holds only if the individuals are 30 years old or younger. If they are older than 30, their financial literacy level will be 0.003 point lower with each 1 year older.

Males have significantly higher levels of financial literacy level than females. Also, keeping other things unchanged, on average people with higher education degrees have 2.156 points of financial literacy level higher than people with no higher education degree. This is evidence that higher education significantly contributes to people's financial literacy level.

Table 5. Factors affecting financial literacy level

Variable	Coefficient	Std. error	t-statistic	p-value
Age	0.179	0.082	2.18	0.03
Age2	-0.003	0.001	-2.96	0.00
Gender	1.151	0.246	4.67	0.00
higher_education	2.156	0.280	7.69	0.00
marital_status	-1.155	0.339	-3.41	0.00
family_member	0.482	0.098	4.94	0.00
financial_decision	1.174	0.317	3.71	0.00
high_expenditure	-0.707	0.396	-1.79	0.08
high_income	-1.243	0.287	-4.34	0.00
course_affect	1.033	0.295	3.50	0.00
Constant	-1.094	1.752	-0.62	0.53
Adjusted R-squared				0.46
Prob. (F-statistic)				0
Number of observations				266

Source: Author's calculation.

Also, married people have lower financial literacy levels than the unmarried with 1.155 lower points on the financial literacy score on average keeping other factors unchanged. One possible explanation is that a person may be relieved of taking responsibility for his or her own budget after getting married, thus paying less attention to maintaining their financial literacy knowledge. On the other hand, if the respondent is involved in decision making within the family, he or she will have a higher financial literacy level, other things unchanged. The number of family members also has a significant association with people's literacy score. The more people in the family, the higher the financial literacy score.

Besides, if the person attends some financial course and finds it useful, his or her financial literacy level is higher by 1.033 points on average. Whether people's income and expenditure is high or not might have an effect on financial literacy levels. The regression results show that at a 90% significance level, the people with higher expenditures have a 0.707 lower financial literacy score than lower expenditure people. Similarly, people with higher incomes have lower financial literacy scores than those with lower incomes. This is evidence that richer people may have less knowledge about personal finance than the poor.

4.4. Financial literacy and its effect on usage of financial products

Next, the author examines the possible effect of financial literacy on the usage of financial products. Binary logistic regression is used to examine the probability that the respondents have financial habits such as book keeping, careful spending, good habits relating to overspending and saving money and use financial products including credit cards, saving accounts, life insurance and other types of investment. It can be seen from Table 6 that

the financial literacy score is positively associated with a higher probability of using savings accounts and making other types of investments (e.g. investing in stocks or real estate). On the other hand, no evidence of the association between the literacy score and the probability of using life insurance and a credit card was found.

To interpret the results from the logit model, odd ratios were calculated. The results in Table 7 indicate that 1 point higher in the financial literacy score is associated with 1.28 points higher in the odd ratio (the ratio between the probability of using saving accounts and the probability of not using saving accounts). Similarly, 1 point higher in the financial literacy score is associated with 1.34 points higher in the odd ratio of making other types of investments.

4.5. Financial literacy and its effect on financial behavior

Last, the author examines the financial literacy level's effect on the financial practice of respondents. Table 8 presents the logistic regression results with financial literacy as the main independent variables and different financial behavior as dependent variables. Other variables such as age, gender, higher education, etc. are also included as control variables.

There are associations between financial literacy represented by the financial literacy score and the financial practices of the respondents. Higher financial literacy levels associate with the higher probability of having good financial habits. The coefficient for the literacy score in the regression with careful spending and savings habits as dependent variables are both positive and statistically significant at a 99% confidence level. The coefficients for book keeping and overspending have the expected signs but are not statistically significant.

Table 6. Associations between financial literacy score and financial product usage

	Saving account		Other investment		Life insurance		Credit card	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Literacy_score	0.25**	0.08	0.30**	0.09	0.06	0.07	-0.61	0.32
Age	0.01	0.02	-0.03	0.02	0.05**	0.02	-0.01	0.04
Gender	0.24	0.31	-0.11	0.34	-0.66*	0.30	0.83	1.05
higher_education	0.83*	0.37	1.01*	0.40	0.58	0.35	0.00	(omitted)
marital_status	-0.10	0.41	0.25	0.43	0.31	0.39	0.00	(omitted)
family_member	0.33*	0.14	0.14	0.13	-0.36**	0.12	1.42**	0.41
financial_decision	1.17**	0.41	0.32	0.41	-0.36	0.39	0.90	1.34
high_expenditure	-0.87	0.49	-1.03	0.57	-0.30	0.46	3.31**	1.16
high_income	0.91*	0.37	2.63**	0.50	1.06**	0.34	-0.84	1.25
Constant	-4.96**	0.89	-2.64**	0.77	-1.33	0.69	-7.37**	2.16
Pseudo R Square		0.1917		0.2685		0.0954		0.4414
Prob > Chi square		0		0		0.0001		0
Number of Observation		266		266		266		151

Note: * Statistically significant at 95% confidence level,

** Statistically significant at 99% confidence level.

Source: Author's calculation.

Table 7. Odd ratios for financial product usage variables in logit models

	Saving account		Other investment	
	Odd ratios	Std. Error	Odd ratios	Std. Error
Literacy_score	1.28**	0.10	1.34**	0.12
Age	1.01	0.02	0.97	0.02
Gender	1.27	0.40	0.90	0.30
higher_education	2.29*	0.85	2.73*	1.09
marital_status	0.91	0.37	1.28	0.55
family_member	1.39*	0.19	1.15	0.15
financial_decision	3.22**	1.32	1.37	0.56
high_expenditure	0.42	0.20	0.36	0.21
high_income	2.48*	0.93	13.87**	6.90
Constant	0.01**	0.01	0.07**	0.06

Note: * Statistically significant at 95% confidence level,

** Statistically significant at 99% confidence level.

Source: Author's calculation.

Table 8. Associations between financial literacy score and financial behavior

	Book keeping		Careful spending		Overspending		Saving habit	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Literacy_score	0.01	0.07	0.42**	0.09	-0.07	0.08	0.48**	0.10
Age	0.00	0.01	0.04*	0.02	-0.07**	0.02	-0.01	0.02
Gender	-1.06**	0.30	-1.38**	0.38	-0.87**	0.32	-0.38	0.38
higher_education	-0.14	0.35	-0.12	0.43	0.52	0.38	-0.04	0.43
marital_status	-0.64	0.38	-0.38	0.53	-0.45	0.44	0.43	0.51
family_member	-0.08	0.12	-0.12	0.15	-0.18	0.14	0.29	0.17
financial_decision	-0.05	0.38	-1.38*	0.53	-0.20	0.43	0.41	0.47
high_expenditure	0.42	0.45	0.82	0.55	1.23*	0.49	0.01	0.59
high_income	0.23	0.34	0.05	0.41	-1.52**	0.39	0.35	0.49
Constant	0.92	0.70	0.38	0.92	4.83	0.89	-2.23**	0.98
Pseudo R Square		0.06		0.15		0.21		0.21
Prob > Chi square		0.01		0.00		0.00		0.00
Number of Observation		266		266		266		266

Note: * Statistically significant at 95% confidence level,

** Statistically significant at 99% confidence level.

Source: Author's calculation.

Table 9. Odd ratios for financial behavior variables in logit models

	Careful spending		Saving habit	
	Odd ratios	Std. Error	Odd ratios	Std. Error
Literacy_score	1.53**	0.14	1.61**	0.16
Age	1.04*	0.02	0.99	0.02
Gender	0.25**	0.10	0.68	0.26
higher_education	0.89	0.38	0.96	0.41
marital_status	0.69	0.36	1.54	0.78
family_member	0.89	0.13	1.34	0.23
financial_decision	0.25*	0.13	1.50	0.70
high_expenditure	2.28	1.26	1.01	0.59
high_income	1.05	0.43	1.42	0.69
Constant	1.46	1.34	0.11**	0.11

Note: * Statistically significant at 95% confidence level,

** Statistically significant at 99% confidence level.

Source: Author's calculation.

To interpret the results of the logistic models, odd ratios are calculated in Table 9. The results imply that 1 point higher in the financial literacy score is associated with 1.53 points higher in the odd ratio (i.e. the ratio of probability the respondent will carefully spend versus the probability that the person will carelessly spend). In other words, a person with a higher financial literacy score tends to set a financial plan beforehand or think carefully before making an expenditure. Similarly, 1 point higher in the financial literacy score is associated with 1.61 points higher in the odd ratio of the person having the habit of saving money.

5. Conclusion and recommendation

The study found that the overall financial literacy level of adults in the urban areas of Vietnam is not high both in terms of financial literacy score and correctly answering basic financial literacy questions. Although the notion of inflation seems to be rather familiar with respondents, many of them do not understand the concept of interest rates and investment diversification. The results suggest that financial education programs are needed for people living in the urban areas as their financial literacy levels do not cope with the development of the financial sector. Moreover, the emphasis in the financial education program should be on interest rates and investment diversification topics.

Regarding factors affecting the financial literacy level, it is found that there are associations between demographic variables and the financial literacy level. People in their 30s have the highest literacy score while male people have higher financial literacy levels than females. Also, people having higher education are found to be more financially literate than those who do not have higher

education degrees. Married people have lower financial literacy levels than the unmarried but a higher number of family members implies a higher financial literacy level for the interviewee. If the person is the financial decision maker in the family, his or her financial literacy level would be higher. Attending some useful financial course seems to positively affect the financial literacy level of the respondents. The income and expenditure levels of the respondents have no effect on financial literacy levels of the respondents. The policy implication of this result is that attention should be paid to elderly, female, married people in designing financial literacy improvement for the population. Likewise, the result confirmed the usefulness of financial short courses in improving people's financial literacy. Therefore, it can be concluded that financial short courses can be an efficient way to improve people's financial literacy and those courses should focus on female, married middle-aged individuals.

The results from logistic regression models show that the financial literacy score is positively associated with the higher probability that the respondents spend carefully and save regularly. A higher financial literacy score is also associated with more probability of saving money. Logistic regression results also show that higher financial literacy levels are associated with more probability of using savings accounts and having various kinds of investments. Thus it can be concluded that financial literacy improvement may help form good financial behavior for individuals. People with a higher financial literacy level may have better financial habits and may be well prepared for using new financial products and services.

There are some limitations in this research. First, the research was conducted in only two big

cities in the North and the Center of Vietnam. Due to the limit of time and financial resources, the sample is not large enough to represent the situation in all cities across the country. Future studies should be on a larger scale to better reflect the situation in the whole country.

Second, the way to measure financial literacy in this survey is based on a questionnaire designed especially for Vietnamese adults. Therefore the financial literacy it evaluates would be difficult to compare with results from other countries. Future studies should use a questionnaire adopted from the World Bank or OECD to ensure comparability among countries.

References

- [1] INFE, O., "Measuring financial literacy: Core questionnaire", in *Measuring financial literacy: Questionnaire and guidance notes for conducting an internationally comparable survey of financial literacy*, Paris: OECD, 2011.
- [2] Klapper, L., & Panos, G. A., "Financial literacy and retirement planning: The Russian case", *Journal of Pension Economics and Finance*, 10, (2011) 4, 599-618.
- [3] Beckmann, E., "Financial literacy and household savings in Romania", *Numeracy*, 6 (2013) 2, 9.
- [4] Morton, H., "Financial literacy: A primer for policymakers", in *National Conference of State Legislatures*, April 2005.
- [5] Lusardi, A., & Mitchell, O. S., "Financial literacy and retirement planning in the United States", *Journal of Pension Economics and Finance* 10 (2011) 4, 509-525.
- [6] Kehiaian, S. E., "Factors and behaviors that influence financial literacy in US households", Doctoral dissertation, Nova Southeastern University, 2012.
- [7] Bhushan, P., "Insights into awareness level and Investment Behaviour of salaried individuals towards Financial Products", *International Journal of Engineering, Business and Enterprise Applications*, 8 (2014) 1, 53-57.
- [8] Krah, R. Y., Aveh, F. K., & Addo, R., "An exploratory study of financial management practices among Ghanaian households", *International Journal of Management and Stability*, 3 (2014) 7, 393-414.
- [9] Xu, L., & Zia, B., "Financial literacy around the world: An overview of the evidence with practical suggestions for the way forward", *World Bank Policy Research Working Paper*, 6107 (2012).
- [10] Dinh, V., & Nguyen, T., "Estimating financial capability: International standards and suggestions for Vietnam", *Vietnam Banking Review*, 14 (2015), 8-13.
- [11] Nguyen, T., & Tran, C., "Study about factor affecting financial literacy levels of students", *Journal of Social and Educational Studies*, 61(2016) 122, 45-48.
- [12] Economist Intelligence Unit, "Country Report Vietnam", London: The Economist Intelligence Unit, 2014.
- [13] General Statistics Office, "Some main economic indicators of Hanoi", Hanoi: General Statistics Office, 2014.
- [14] Lusardi, A., & Mitchell, O. S., "Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth", *Journal of Monetary Economics*, 54 (2007) 1, 205-224.
- [15] Grohmann, A., Kouwenberg, R., & Menkhoff, L., *Financial Literacy and Its Consequences in the Emerging Middle Class*, Kiel Institute for the World Economy, 2014.