

Evaluate Financial Literacy of Vietnamese Students in Higher Education and Its Determinants – The need of Financial Education

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Abstract

This study applies the objective test to measure the financial literacy level of higher education students in Vietnam. With the use of survey-based method, data was collected by randomly selecting 435 students from various majors in the college and universities within Vietnam. Through the linear regressions, the impact of financial education and other factors on the student's financial literacy are then evaluated. The data analysis shows that Vietnamese students in higher education do not financially literate, even at a very basic level. The results indicate that gender, place of residence, field of study, work-experience, the financial dependence rate of students on their family and the demand of students on financial education are found to significantly affect to 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 the student's income and the professional of parents are two predictors for student's financial literacy at a basic level, but not at an advanced and accumulative level.

Keywords: Financial literacy, financial education, determinants, higher education

1. Introduction

In the recent years, with the increasingly complicated background of financial market, financial literacy plays a very important role not only in individual's life, but also in the development of any country. Financial literacy has a positive relationship with the financial and economic development (Beck, Demirgüç-Kunt, and Levine 2009). The population with better financial literacy is likely to increase the domestic savings rate; as a result, reducing the reliance on foreign capital, and fostering faster economic growth (Naoyuki Yoshino et al., 2015). For emerging economies, financially educated citizens could ensure that the financial sector can effectively contribute to real economic growth and poverty reduction (Faboyede et al., 2015). Although Vietnam is one of emerging countries, financial literacy, nevertheless, is still not concerned by the government and citizens as it should be. Financial literacy of Vietnamese is still very low. The Standard & Poor's Ratings Services Global FinLit Survey (2014) found that Vietnam is one of the countries with the lowest rate of financial literacy among 148 participating countries. The Mastercard Financial Literacy Index Reports with the participation of 16 countries across Asia Pacific, also showed that Vietnam was still at 12th and 11th position in 2013 and 2014, respectively.

One of the effective ways to raise the financial literacy of vulnerable groups, such as students, poor households and women, etc., is develop financial education programs. According to the research of Jamie Wagner in 2015 based on data from the 2012 National Financial Capability Study (NFCS), financial education is positively correlated with a person's financial literacy score. Lusardi, Keller, and Keller (2009) found that the retirement saving program designed for low income people and women is effective in improving the financial knowledge of participants. The Center for Economic Education in the UIC Department of Economics likewise suggested that the After School Matters Financial Literacy (ASMFL) program rose financial literacy of participants as students of certain underperforming Chicago Public Schools (Jamie Wagner, 2015). In Vietnam, financial education have not been attractive to the academic researchers and policymakers. It is expressed by very few papers in this topic as well as financial education programs in the country. In fact, there are several financial education programs in Vietnam, but they were organized separately by different institutions with the small scale.

The current situation of Vietnam regarding financial literacy and financial education, the importance of financially literate population, and the positive impact of financial education on financial literacy present an urgent need to enhance financial literacy of Vietnamese by

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promoting financial education. Simultaneously, financial education should be notably focused on students because they are the future generation of the country.

Therefore, in this study, firstly, the author would like to understand the current financial literacy status of Vietnamese students in higher education by measuring their financial literacy score, and discovering its determinants including financial education. Secondly, based on the previous literature and the situation of Vietnam, the current paper expects to demonstrate the importance of financial education in upgrading financial literacy of Vietnamese students. Besides, evaluating the advantages and disadvantages of the previous financial education programs for students in Vietnam. Subsequently, the recommendations will be proposed to enhance the financial literacy of Vietnamese students via financial education.

2. Literature Review

2.1. The definition of financial literacy and its significance

Financial literacy can be understood under a variety of definitions depending on the conception of each individual as well as researcher. In the simplest definition, financial literacy is known as knowledge concerning finance (Hilgert, Hogarth, & Beverley 2003). In details, it is the “knowledge of basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basics of risk diversification” (Lusardi 2008a, 2008b). In some practical views, financial literacy is defined as the “practical experience and active integration of knowledge” of individuals about finance (Moore 2003). Sekar.M and Gowri. M (2015) seem to have a more comprehensive understanding about financial literacy. They stated that it is the aggregation of an individual’s cognizance, attitude and skill towards financial matters. These three factors had also discussed ex ante by the OECD (2012) along with “behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being”. (See more definitions in Appendix 1).

Financial literacy becomes more and more important in the modern life with the rapid development of financial services. Nowadays, people need to have a good financial literacy as their vital tool to make right financial decisions since “Poor financial decisions can have a long-lasting impact on individuals, their families and society” (OECD 2012). Jere R. Behrman et al. (2012) found that financial literacy has a positive correlation with wealth accumulation of individuals at the significant level. This relationship had been recognized previously by other researchers too, including Alessie et al. (2008), Guiso and Jappelli (2008), McArdle et al. (2009) and Banks et al. (2009). Besides, financially literate citizens were also demonstrated as the motivation to any country’s development (Beck, Demirgüç-Kunt, and Levine 2009; Naoyuki Yoshino et al., 2015), especially the economic growth of emerging economies (Faboyede et al., 2015). According to data from the S&P Global FinLit Survey in 2014 and the GDP Ranking from World Bank, there were 7 in 10 countries with the highest percentage of financially literate adults that was in the top 30 economies with the highest GDP in 2014 and 2015 (Table 1).

Due to the significance of financial literacy, a large number of academic researchers, policy makers and related organizations have found various ways to measure it in order to discover financial literacy level of determined groups in their country, region or in the world. More details concerning the measurement of financial literacy will be discussed in the next section.

2.2. The measurement of financial literacy

In the literature, financial literacy has been mostly measured by the survey-based method. The questions were usually true/false, multiple-choice or based on a 5-point Likert scale relating to personal finance (income, money management, saving, spending, etc). Besides, several questions were about macro factors and financial market (inflation, interest, risk diversification, bond, stock, etc). Questions could be disparate by the approach that was applied in each study.

Among many approaches in measuring financial literacy, there are two main ones, comprised of objective test and self-assessments. The first approach is to test respondents’

understanding of financial concepts and their ability to apply financial knowledge and numerical skills in particularly financial situations. Under the second approach, respondents are asked to self-evaluate their understanding concerning finance. In addition, they are asked to present their attitudes toward financial information, and their ability in making financial decisions. This approach has been used by Jappelli (2010) when comparing financial literacy levels of 55 countries in the world. The objective measure has been found to be better than self-assessment approach when it comes to assessing the financial knowledge of respondents (OECD, 2005). Thus, it has been widely used by global researchers while they have distinct ways to evaluate financial literacy.

The objective test approach was firstly applied by Lusardi and Mitchell (2006) when they designed 2004 Health and Retirement Survey (HRS) in the United States. In that survey, the understanding of respondents regarding financial concepts were examined through three questions about risk diversification, inflation and compound interest. The methodology of Lusardi and Mitchell (2006) was then applied by many researchers as the most popular type of objective measures. Cole et al. (2008) followed this methodology to assess financial literacy of Indian and Indonesian. Almenberg and Säve-Söderbergh (2011), Klapper and Panos (2011) likewise used these three questions to measure financial literacy in Sweden and Russia, respectively. In additions, Alessie et al. (2008) added two more questions about time discounting and money illusion as an extension of the methodology of Lusardi and Mitchell (2006).

Besides, several authors based on other tests to measure financial literacy. The 2007 Unicredit Customers' Survey, Guiso and Jappelli (2009) used questions related to portfolio diversification and risk, interest rate and inflation. Dewey and Prince (2005) referred the questions from The Survey of Health, Age and Retirement in Europe (SHARE) to evaluate financial literacy of eleven European countries. In that survey, respondents were examined on numerical skills and their understanding of economic concepts. Christelis et al. (2010) also then applied the question from SHARE.

2.3. Determinants of student's financial literacy

There are various papers aiming to discover the determinants of financial literacy in many countries worldwide. A majority of them were done for developed countries, such as Italy, United States, Sweden and Australia. Some papers have focused on developing economies, such as India, Indonesia, etc. Demographic variables including social background and family financial sophistication were found to have a significant effect on the financial literacy level of students (Ibrahim et al., 2009; Lusardi et al., 2010). This finding was in line with Ramasawmy et al. (2013) and Fatoki (2014) who declared that the demographic characteristics significantly correlate with the financial literacy of individuals. Subsequently, gender, faculty, personal income, knowledge from parents have a strong impact on the financial literacy level of undergraduate students (Clercq et al., 2009). Besides, in the literature, financial literacy of individuals as well as students was found to be effected by the year of study, field of study, working experiences, parent's work and financial dependence on family of students.

Gender: Among many demographic characters, gender was revealed to have a relationship with financial literacy level in numerous papers. There was rich evidence that male more financially literate compared to female (Volpe et al., 1996; Goldsmith and Goldsmith, 1997b; Chen & Volpe, 1998; Bernhein, 1998; Worthington, 2004; Manton et al., 2006; Danes & Haberman, 2007; Peng et al., 2007; Lusardi and Mitchell, 2006, 2008; Mandell, 2008; Cole et al., 2008; Guiso and Jappelli, 2008; Agarwal et al., 2009; Monticone, 2009; Merwe, 2011; Almenberg and Säve-Söderbergh 2011; Puneet Bhushan and Yajulu Medury, 2013; Ani Caroline Grigion Potrich et al., 2015; and Ning Tanga and Paula C. Peter, 2015. Financial literacy of men was additionally found to be increasingly faster than that of women (Atkinson and Messy, 2012).

Place of residence: Numerable researchers pointed out that place of residence has an impact on individual's financial literacy, while others showed the contrast findings. Indian students who live in rural areas were found to perform better financial knowledge in comparison with urban-based students (Cole et al., 2008). In contrast, Kharchenko, Olga

(2011) revealed that area of residence was not statistically significant with the economic literacy. This finding was in line with Farrah Yasmin et al. (2014), Sekar.M and Gowri. M. (2015) and (Lereko Rasoaisi and Kalebe M. Kalebe, 2015).

Field of study: Another significant factor to the student's financial literacy is their field of study. The strong impact of student's major on their financial literacy level was exposed in several papers. Accordingly, there was considerable evidence that students who major in business or economics are more likely to financially literate than non-business or non-economics students (Volpe et al., 1996; Chen & Volpe, 1998; Beal & Delpachitra, 2003; Peng et al., 2007; Lusardi and Mitchell, 2007; Alessie et al., 2008; Robb & Sharpe, 2009; Almenberg and Säve-Söderbergh, 2011; Fatoki, 2014; Ning Tanga and Paula C. Peter, 2015).

Year of study: Year of study is an important factor affecting to the financial literacy of university and college students. Its significant impact was pointed out in various studies (Jones, 2005, Menton et al., 2005, 2006; Noor Azizah Shaari et al., 2013). This finding was also supported in the study of Samy M. et al. (2008) who found that the credit card knowledge of students was strongly influenced by their year of study.

Work-experience: The momentous impact of work-experience on individual's financial literacy was explored in many papers. People with longer working experience tend to have the higher level of financial literacy due to better familiarity with economic and financial matters, while unemployed or non-working individuals performed less knowledgeable regarding financial subjects (Chen and Volpe, 1998; Research, 2003; Kim and Garman, 2004; Worthington, 2004; and Calamato, 2010; Merwe, 2011; Almenberg and Säve-Söderbergh, 2011). Ansong and Gyensare (2012) revealed that work-experience positively affects to individual's financial literacy when they conducted a survey among 250 university students of Cape Coast.

Income: Many researchers pointed out that personal income has a statistically significant association with financial literacy level of respondents (Clercquet al., 2009; Merwe, 2011). Among various findings, high income level was positively correlated with a high level of financial literacy (Monticone, 2010; Hastings and Mitchell, 2011; Atkinson and Messy, 2012; Ani Caroline Grigion Potrich et al., 2015; and Sekar.M and Gowri. M, 2015).

Parent's professional: Based on the telling effect of work-experience on an individual's financial literacy that was explored in the literature, parents who have professional in economic fields may be more knowledgeable regarding economic and financial matters. Besides, parent's knowledge was found to strongly impact on financial literacy level of respondents (Clercquet al., 2009). Thus, young adults whose parents had financial or investment experience tend to have the higher level of financial literacy than their counterparts (Ning Tanga and Paula C. Peter, 2015).

Demand on financial knowledge and skills, financial dependence on family: Besides the abovementioned factors, financial literacy of students is probably also affected by student's demand on learning about financial knowledge and student's financial dependence on their family. Although the influence of these two factors on the financial literacy level of students has not been discussed in any literature, they are expected to be momentous predictors of student's financial literacy due to the special features of Vietnamese students. As a matter of fact, in Vietnam, university and college students usually have a partially or fully financial dependence on their family. Hence, it is expected to strongly impact on the financial literacy of students. In addition, while financial education has not been popular and required as the independent subjects in the school curriculum, the demand of students on learning and finding about financial knowledge may be significantly correlated to their financial literacy.

2.4. The notion of financial education and its importance

Financial education can be understood as a process in which learners can enhance their understanding about the use of money (A. S. Norman, 2010), their knowledge regarding financial concepts, products and risks on the bases of information; accordingly, develop their skills and confidence to make effective financial decisions based on good

information; know where to seek the help as well as take other effective measures to improve their wealth (OECD, 2005). Financial education is usually carried on under counseling and planning sessions, trainings, workshops and seminars. Some people are likely to learn by working or learn from others, etc. It has been included in the school curriculum in many countries worldwide as well, such as Japan, India, etc. (Bernheim et al. 2001; Bernheim and Garrett 2003; Totenhagen et al. 2015; Urban et al. 2015).

The importance of financial education has not only been seen in the individual's life, but also in the development of the country. Financial education could be viewed as a process of building financial literacy and well-being of individuals over their lifetime (Naoyuki Yoshino et al., 2015). It plays a meaningful role in upgrading financial literacy of people since it "has been identified as a primary determinant of financial literacy" (Yunhyung Chung and Youngkyun Park, 2014). In the previous literature, financial education was found to positively improve financial understanding and consequently enhance financial literacy. Lusardi, Keller, and Keller (2009) revealed that the retirement saving program designed for low income people and women is effective in expanding the financial knowledge of participants. According to the research of Jamie Wagner in 2015 based on data from the 2012 National Financial Capability Study (NFCS), financial education was positively correlated with a person's financial literacy score. The positive effect of financial education on financial literacy was also discussed in the studies of Lyons (2005) and Lyons, Palmer, Jayaratne and Scherpf (2006). A country with more financially literate citizens tends to less rely on the foreign capital due to an increasing domestic savings rate, and having faster economic growth (Naoyuki Yoshino et al., 2015). In emerging economies, financially educated citizens help ensure that the financial sector effectively contribute to the real economic growth and poverty reduction (Day, 1986; Gniewosz, 1990).

Besides, the significance of financial education is principally emphasized with students. Financial education was found to positively influence on financial literacy of students (Yunhyung Chung and Youngkyun Park, 2014; Danes, Huddleston-Casas & Boyce, 1999). The Center for Economic Education in the UIC Department of Economics also suggested that the After School Matters Financial Literacy (ASMFL) program enhanced financial literacy of participants as students of certain underperforming Chicago Public Schools (Jamie Wagner, 2015). Nonetheless, Peng, Bartholomae, Fox, & Cravener (2007) argued that financial education seems to be more effective in college than in high school since it can provide deeper financial knowledge for college students. Another reason is that college students are likely to be interested in financial education because they will soon participate in financial markets.

The importance of financial education has not only been attractive to researchers, but also widely recognized by many global governments as well as policymakers. This was proved by the establishment of many national and international agencies that are responsible for financial education, such as Financial Service Authority in the United Kingdom (2000), Financial Consumer Agency in Canada (2001) and Financial Literacy Foundation in Australia (2005). In 2006, financial education was perceived by the G8 finance ministers' meeting in St. Petersburg. The ongoing work on Financial Education Project of OECD had been likewise welcomed at the meeting. The International Gateway for Financial Education was then established in 2008 by OECD. After that, the World Bank's Consumer Protection and Financial Literacy Project and many other programs of international organizations have been run with the purpose of evaluating and developing the financial literacy worldwide. Besides developed countries, several financial education projects have been launched by the government of more than 40 developing countries in over the world. Among all of them, the most typical one might be the Partnership for Making Finance Work for Africa, which aims to improve the financial literacy of African. Simultaneously, other projects with smaller scale have been carried by the multinational corporations, such as the global project of Citibank, HSBC Bank, and the World Savings Bank (WSBI).

2.5. Financial education for Vietnamese students

An identification of financial education in Vietnam

Even though financial education is still a strange concept with the majority of citizens as well as higher education students in Vietnam, it doesn't mean that financial education has never been on this country. The fact that financial education has existed in Vietnam for a long time as a small part of other subjects in the school curriculum, but not for all majors and all educational levels. Several economic and financial concepts are mostly taught to college and university students who major in economic or business fields. Basic knowledge concerning inflation, interest, numeracy, etc. has been put in to the lecture of some subjects such as microeconomics, macroeconomics, advanced mathematics or probability and statistics. However, financial knowledge, even at a very basic level will has never been attractive to most of Vietnamese students if it has not been recognized officially as the independent subjects in school, or provided through other channels.

The official financial education programs in Vietnam, especially for Vietnamese students

In the recent years, financial education has become more and more attractive to the various groups in Vietnam, which are the governmental, non-governmental and private organizations. Many financial education programs were organized under short training courses, competitions, seminars, online sources or the combination of these methodologies. Among numerous target groups (the poor, women, students' parents, etc.), Vietnam youth and students from primary schools to the universities were the priority objects in majority of these programs. Notwithstanding, the previous financial education programs for students were mostly implemented in the five biggest cities of Vietnam, which are Ha Noi, Ho Chi Minh City, Da Nang, Hai Phong and Can Tho. They were hardly run in smaller provinces and in the countryside. This should be considered as a big disadvantage of them. Another disadvantage of these programs was that they was organized separately with small scope.

2.6. Gaps in literature

Through the literature, there is a large group of researchers who tried to find out factors impacting on individual's financial literacy. Though several studies focused on college and university students, a majority of them were only conducted with a small scope. Accordingly, sample students were only from a single or two universities. Besides, most of them focused only on demographic variables. The influence of student's demand regarding financial knowledge on their financial literacy has not been discussed in the previous papers. In addition, there are very few studies covered financial knowledge at both basic and advanced level.

In Vietnamese context, financial literacy and financial education, exclusively of higher education students have never been discovered by any researcher. There is no financial literacy survey done officially, including for college and university students in Vietnam. As a consequence, the special characteristics of Vietnamese students have not been concerned in the literature.

The current study is expected to become the first study as well as official survey discovering the financial literacy level of Vietnamese students in higher education. Though the survey is conducted online, the sample students are taken from the colleges and universities across Vietnam. In addition to some demographic variables, one special feature of Vietnamese students as their financial dependence on family will be considered as one of the forecasting determinants. This study is also hoped to find out the impact of student's demand on learning about financial knowledge on their financial literacy. Correspondingly, discovering the relationship between financial education and financial literacy.

3. Hypotheses

Hypothesis 1

H0: There is no association between gender and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between gender and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 2

H0: There is no association between place of residence and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between place of residence and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 3

H0: There is no association between field of study and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between field of study and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 4

H0: There is no association between year of study and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between year of study and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 5

H0: There is no association between work-experience and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between work-experience and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 6

H0: There is no association between income and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between income and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 7

H0: There is no association between parent's professional and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between parent's professional and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 8

H0: There is no association between financial dependence rate and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between financial dependence rate and financial literacy score of students at basic/advanced/accumulative level.

Hypothesis 9

H0: There is no association between demand on financial education and financial literacy score of students at basic/advanced/accumulative level.

H1: There is an association between demand on financial education and financial literacy score of students at basic/advanced/accumulative level.

4. Methodology

4.1. Research design

This quantitative research is conducted through using the survey-based method. The objective measure is applied to the questionnaire that includes four essential sections with 23 multiple choice questions. The first section comprised of 10 questions, covering some information concerning respondent's life, occupation and family background.

The second section consists of 5 questions, aiming to test respondent's financial knowledge at basic level. This part is designed based on the S&P Global Financial literacy Survey. These five questions cover four basic financial concepts that are used to calculate basic financial literacy score of students. They are numeracy, risk diversification, inflation and compound interest (saving and debt) that seem to be more suitable for higher education students from various majors and faculties. However, some modifications have been made in order to provide more detailed and specific questions to Vietnamese respondents so that they can completely understand.

In the next section, the advanced financial knowledge of respondents are examined with 7 questions in terms of securities market, investment and portfolio choice. Questions in this part is designed with the reference from Van Rooij, Lusardi, Alessie (2011) and used to calculate the advanced financial literacy score of respondents.

With regards to the measurement of financial literacy, each respondent is given one mark for each correct answer, and no negative marking is done for any incorrect answer. The total basic score is equal sum of all correct answers in the second section. The same method is applied to the third section so as to calculate the total advanced score. And finally, the accumulative score will be equal the sum of respondent's basic and advanced score. Besides, a student who has three correct answers among the total of five basic questions or above is considered to have the basic financial literacy. A respondent who has three correct answers at basic level and four correct answers among seven advanced questions or above is considered to have an advanced financial literacy.

The last section is to ask for the social demographic information of respondents. Data of this section along with the first section is used to evaluate the determinants of student's financial literacy. In addition to the reference from previous studies, other new questions are added to the questionnaire based on the author's forecast. Due to some special features of Vietnamese students, their financial literacy may be affected by the financial dependence on family. Besides, the demand of students on finding about financial knowledge could also influence on their financial literacy.

4.2. Data Collection Methods

In the current study, data is collected and classified into two crucial types which are the primary and secondary ones. The primary data is collected through the survey which is used to evaluate financial literacy of students and its determinants. As for the secondary data regarding the previous financial education programs in Vietnam, notably for higher education students and other related information are looked up in the public sources.

4.3. Sampling Design

The higher education students in Vietnam are treated as the main target population of the survey. In this study, Simple Random Sampling is used to minimize bias and ensure the research's objectiveness. Accordingly, target students are selected randomly from various faculties, majors (economics, medical science, computer science, technical science, art, etc.) in the colleges and universities within Vietnam. There are 435 valid responses.

4.4. Econometric Model

Three simple linear regressions are run separately to verify the determinants of student's financial literacy at the basic, advanced and accumulative level. All hypotheses of the current study are also tested with the help of one-way analysis of variance (ANOVA). This is to determine if there are any differences among the means of two or more independent groups.

- ***Model 1: BASIC_FLS*** = $\beta_1 + \beta_2*(\text{GENDER}) + \beta_3*(\text{PLACE_OF_RESIDENCE}) + \beta_4*(\text{FIELD_OF_STUDY}) + \beta_5*(\text{YEAR_OF_STUDY}) + \beta_6*(\text{EXPERIENCE}) + \beta_7*(\text{INCOME}) + \beta_8*(\text{PARENTS_PROFESSIONAL}) + \beta_9*(\text{DEPENDENCE}) + \beta_{10}*(\text{DEMAND_ON_FE}) + u_i$

- *Model 2: ADVANCED_FLS* = $\beta_1 + \beta_2*(\text{GENDER}) + \beta_3*(\text{PLACE_OF_RESIDENCE}) + \beta_4*(\text{FIELD_OF_STUDY}) + \beta_5*(\text{YEAR_OF_STUDY}) + \beta_6*(\text{EXPERIENCE}) + \beta_7*(\text{INCOME}) + \beta_8*(\text{PARENTS_PROFESSIONAL}) + \beta_9*(\text{DEPENDENCE}) + \beta_{10}*(\text{DEMAND_ON_FE}) + u_i$
- *Model 3: ACCUMULATIVE_FLS* = $\beta_1 + \beta_2*(\text{GENDER}) + \beta_3*(\text{PLACE_OF_RESIDENCE}) + \beta_4*(\text{FIELD_OF_STUDY}) + \beta_5*(\text{YEAR_OF_STUDY}) + \beta_6*(\text{EXPERIENCE}) + \beta_7*(\text{INCOME}) + \beta_8*(\text{PARENTS_PROFESSIONAL}) + \beta_9*(\text{DEPENDENCE}) + \beta_{10}*(\text{DEMAND_ON_FE}) + u_i$

Table 2 shows the definitions of all dependent and independent variables in the aforementioned models.

5. Findings and Discussions

5.1. Descriptive statistics

The detailed descriptions of respondent's characteristics are showed in table 3 and table 4. There is an inconsiderable difference between the number of male and female respondents which are account for 48.9% and 51.1% of the total respondents, respectively. It is about a half of the respondents who are resident in Ho Chi Minh City while 28% students live in another big city, including Ha Noi, Da Nang, Hai Phong or Can Tho; and the remaining ones are based in other provinces or cities. Students who major in economic fields and non-economic fields constituted 46.7% and 53.3%, respectively. The number of fourth-year students make up the largest proportion in the study's sample with 47.8%, followed by 21.1% of fifth-year students. Freshman students account for the lowest proportion. Regarding respondent's income, a large group have the monthly income that is from 3 to below 5 million Vietnam Dong (37.8%), and under 3 million Vietnam Dong (36.7%). Students whose father or mother or parents are professionals in economic fields make up 40%. The work-experience of respondents range from 0 to 36 months. The financial dependence rate of students in the sample is from 0% to 100% of their total monthly income. Data implies a very high average dependence rate of respondents which is 73.954%. In addition, it is about 50% students in the sample size having the demand on learning about financial knowledge. Multichannel communication and book are two most effective channels in which student are interested in finding and learning about finance. Followed by the lectures in school and short training courses.

Respondents have the maximum score of 5 and 7 at basic and advanced level, respectively. Chart 1 shows that the number of financially literate students at both basic and advanced level accounts for more than a half of the total participating respondents i.e. 53%. In spite of that, the result revealed a very low level of financial literacy since the mean value of the basic and advanced score are 2.4 and 2.7, respectively (Table 4). These two figures are below the benchmark as defined in the methodology. Thus, in general, it can be concluded that Vietnamese students in higher education level do not financially literate, even at a very basic level.

5.2. Regression results

Association between gender and financial literacy

The regression results (Table 5, Table 6 and Table 7) show that gender has the positive association with financial literacy of students at all levels. The ANOVA results indicate that the mean scores of male and female have a significant difference. Accordingly, the mean score of male is higher than the one of female 0.663 and 1.321 at basic and advanced level, respectively (Table 8 and Table 9). Hence, H0 of hypothesis 1 - There is no association between gender and financial literacy at basic, advanced and accumulative level is rejected. This finding is in line with almost of previous studies e.g. Volpe et al. (1996), Mandell (2008), Merwe (2011), Puneet Bhushan and Yajulu Medury (2013), Ani Caroline Grigion Potrich et al. (2015), etc.

Association between place of residence and financial literacy

The regressions indicate that financial literacy of students at all levels are significantly impacted by their place of residence. According to the ANOVA results from Table 8 and Table 9, students who live in Ho Chi Minh City have the highest mean score i.e. 2.640, 3.240 and 5.88 at basic, advanced and accumulative level, respectively. Followed by the mean score of other-big-cities-based students. Students who are resident in other provinces or smaller cities perform the lowest scores at all, which are only equal two-thirds of those in Ho Chi Minh City. Consequently, H₀ of hypothesis 2 - There is no association between place of residence and financial literacy at basic, advanced and accumulative level is rejected. This result is similar to Cole et al. (2008) who found that area of residence is one of predictors of student's financial literacy, but does not support to Kharchenko, Olga (2011), Farrah Yasmin et al. (2014), Sekar.M and Gowri. M. (2015), (Lereko Rasoaisi and Kalebe M. Kalebe, 2015), etc.

Association between field of study and financial literacy

Field of study is found to have a momentous influence on financial literacy of students at all levels through the regression results (Table 5, Table 6 and Table 7). ANOVA analysis reveals a difference between the mean score of economic and non-economic students, but it seems to be more significant at advanced level. At basic level, the mean score of economic students is 1.5 times higher than those of non-economic majors, while this is approximately 3.0 times at advanced level. In consequence, H₀ of hypothesis 3 - There is no association between field of study and financial literacy at basic, advanced and accumulative level is rejected. This finding is similar to Chen & Volpe (1998), Beal & Delpachitra (2003), Peng et al. (2007), Robb & Sharpe (2009), Almenberg and Säve-Söderbergh (2011), Ning Tanga and Paula C. Peter (2015), etc.

Association between year of study and financial literacy

H₁ of hypothesis 4 is only rejected in case of basic level of financial literacy since year of study is not found to have any influence on the financial literacy at basic level. The reason is that almost of students whose majors related to economic fields have learned about the basic financial terms since the first year of study. This factor, nevertheless, have the strong impact on the advanced and accumulative financial literacy with the positive association. The reason is that majority of students who have advanced knowledge concerning finance studying in economic majors. Hence, their level of financial knowledge will increase year by year along with the learning program. Even for non-economic students, their financial knowledge may also improve during the study process due to their increasing demand on learning about finance in order to join the financial market after graduation. The positive correlation indicate that senior and final-year students tend to more financially literate than junior students.

Association between work-experience and financial literacy

The regression results from Table 5, Table 6 and Table 7 show that work-experience has a strongly positive impact on the financial literacy of students at all levels. The positive association indicates that people with longer working experience tend to have better financial knowledge. In details, the basic, advanced and accumulative financial literacy score of respondents will increase .045, .041 and .086, respectively if they have one more month of work-experience. Hence, H₀ of hypothesis 5 - There is no association between work-experience and financial literacy at basic, advanced and accumulative level is rejected. This result supports to Kim and Garman (2004), Worthington (2004), and Calamato (2010), Merwe (2011), Almenberg and Säve-Söderbergh (2011), Ansong and Gyensare (2012).

Association between income and financial literacy

According to the regression results of three models, H₁ of hypothesis 6 is only accepted in model 1. In fact, majority of Vietnamese students whose income is mostly supported by their family. Although some of them have the part-time jobs, only a considerably low salary from part-time working could be added to their monthly income. Thus, the difference among the monthly income of participating students is not much. The association between the income and basic financial literacy score of respondents is not significant in model 1, while it does not exist in two remaining models.

Association between parent's professional and financial literacy

H0 of hypothesis 7 is rejected only for the financial literacy of respondents at basic level. The regression result of model 1 demonstrates that the professional of parents is one of predictors for student's financial literacy at basic level, but not at advanced and accumulative level. The negative correlation reveals that students whose parent's professional in economic fields might have more basic financial knowledge than their counterparts thanks to their daily conversations and discussions with parents. Nevertheless, with regards to the advanced knowledge, it depends on their personal interest, time they spend on learning and self-researching about financial market, which could be influenced by their gender and major.

Association between financial dependence rate on family and financial literacy

The regression results imply that the higher financial dependence rate of students on their family, the higher financial literacy score they perform. To be more detailed, the basic, advanced and accumulative financial literacy score of respondents will increase .011, .018 and .029, respectively if their financial dependence rate increases 1%. From that, H0 of hypothesis 8 - There is no association between financial dependence rate on family and financial literacy at basic, advanced and accumulative level is rejected. As for male, economic and senior students, the argument is that they can completely have the high financial literacy score even if they much depend on their family as long as they have the high demand on learning about financial knowledge.

Association between demand on financial education and financial literacy

Demand of students on searching and learning about financial knowledge is found to positively affect to their financial literacy at all levels. In general, the positive correlation indicates that the higher demand of learning about finance, the higher financial literacy score the students have. There is an interesting finding that students who have "Uncertain" choice always perform the lowest financial literacy i.e. 1.571 at basic, .929 at advanced and 2.50 at accumulative level. Correspondingly, H0 of hypothesis 9 - There is no association between demand on financial education and financial literacy at basic, advanced and accumulative level is rejected.

5.3. One-way ANOVA results

The One-way ANOVA results are showed in Table 8, Table 9 and Table 10.

6. Conclusion and recommendations

In conclusion, Vietnamese students in higher education have a very low level of financial literacy, even at a very basic level. Thus, there is an urgent need to improve their financial literacy. Accordingly, financial education need to be promoted due to its importance on enhancing financial literacy of students, especially for the case of Vietnam. The strong impact of gender, field of study, place of residence, the demand on learning about financial knowledge and experience of students on their financial literacy at all levels requires an attention to the following points.

Firstly, Vietnamese colleges and universities should consider to include financial education in the school curriculum as the independent subjects instead of being a part of other subjects. Besides, it is really important to strengthen financial education via variety of channels, i.g. under online sources, TV-shows, competitions or seminars. The implementation may need the cooperation between schools, non-governmental and private organizations.

Secondly, for all financial education campaigns, a priority of financial education should be given to female who usually perform lower financial literacy. Thirdly, financial education should also be specifically designed for numerous non-economic students who have the relatively high demand on learning about finance.

Next, financial education campaigns need to be firstly implemented in Ho Chi Minh and other big cities instead of having a spreading implementation. The reason is that students who are resident in those areas tend to have the higher ability concerning financial literacy. Then, they could participate in the campaigns as the volunteers to support their counterparts who are based in smaller cities or other provinces. This method will help to use all available resources in more sensible way.

In addition, another way to improve financial literacy of students is by working. Subsequently, parents should let their children have the part-time jobs to get real work-experience. Along with that, the universities should provide more support as a good connection between their students and corporations. Another important determinants of student's financial literacy is their demand on learning about finance. Nonetheless, only 50% of participating students have this demand. In order to attract more attention of students as well as increase their demand, financial knowledge need to be taught by more interesting methods, with the support of picture, sound, or video, etc. Finally, the contents of financial education programs need to be designed suitably for university and college students at each different year of their study.

These supports from schools, parents and other organizations will help students recognize the importance of financial literacy, simultaneously, provide them more opportunities to find and learn about financial knowledge. However, it cannot be denied that the passion and effort of students play the most influential role in developing their financial literacy. Students only make more efforts in enhancing their own financial literacy if financial education programs or campaigns are attractive enough. Since the program's content is one of the key factors of an attractive program, it should be always considered as the first concern even if those programs are implemented at school or via other channels.

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APPENDICES

Appendix 1: Financial literacy definition

Financial literacy definition	Dimension	Authors
“...people’s ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions.”	Financial knowledge application, financial decision	Lusardi and Mitchell (2014)
“Cites from previous literature that financial literacy is a measure of the degree to which one understands and is able to make personal financial decisions in the short-run and long-run.”	Financial understanding, financial decision	Fernandes, Lynch, Netemeyer (2014)
“As operationalized in the academic literature, financial literacy has taken on a variety of meanings; it has been used to refer to knowledge of financial products, knowledge of financial concepts, having the mathematical skills of numeracy necessary for effective financial decisions making, and being engaged in certain activities such as financial planning.”	Financial knowledge, skills and decision	Hastings, Madrian, Skimmyhorn (2013)
“the ability to make financial decisions in their own best short- and long- term interests” (Mandell, 2008)	Financial decision	Carlin and Robinson (2012)
“Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions.”	Financial understanding and application	Remund (2010)
“Financial Literacy has an added application dimension requiring the individual to have the ability and confidence to use the financial knowledge to make financial decisions.”	Financial knowledge application, financial decision	Huston (2010)
“Financial literacy [is] the ability to make informed judgments and effective decisions regarding the use and management of money and wealth.”	Financial decision	Gale and Levine (2010)

“...the ability to evaluate the new and complex financial instruments and make informed judgments in both choice of instruments and extent of use that would be in their own best long-run interests.”	Financial choice	Mandell (2008)
“Financial literacy is the ability to interpret, communicate, compute, develop independent judgments, and take actions resulting from those processes in order to thrive in our complex financial world.”	Financial skills	Danes and Haberman (2007)
“Financial Literacy denotes one’s understanding and knowledge of financial concepts and is crucial to effective consumer financial decision making.”	Financial understanding, financial decision	Fox, Bartholomae, and Lee (2005); Fox and Bartholomae (2008)
“Personal financial literacy is the ability to read, analyze, manage and write about the personal financial conditions that affect material well-being. It includes the ability to discern financial choices, discuss money and financial issues without (or despite) discomfort, plan for the future, and respond competently to life events that affect every day financial decisions, including events in the general economy.”	Financial skills, choice and decision	Vitt et al. (2005)
“The ability to use knowledge and skills acquired to better management.”	Financial knowledge and skills	Hung, Paker and Yoong (2009)
“The ability to understand financial information and make effective decisions, by using this information.”	Financial understanding and application	Robb, Babiarz and Woodyard (2012)
“It goes beyond the primary idea of financial education, where the influence of financial knowledge on behaviour is mediated by financial attitude.”	Knowledge, behaviour and attitude	Norvilitis and Maclean (2010)
“The choice of numerous alternatives for establishing financial goals.”	Financial decision	Criddle (2006)
“The most specific human capital, measured by financial literacy issues.”	Financial knowledge	Robb and Sharpe (2009)

“Financial knowledge, financial behaviour and attitude”	Financial knowledge, behaviour and attitude	Atkinson and Messy (2012), OECD (2013)
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Table 1: Financial literacy and GDP Ranking by country

Financial Literacy		Country	GDP 2014		GDP 2015	
Rank	Rate (%)		Value (Billions of U.S. dollar)	Rank	Value (Billions of U.S. dollar)	Rank
1	71	Denmark	341	34	295	36
2	71	Norway	500	27	388	28
3	71	Sweden	570	22	493	22
4	68	Canada	1789	11	1551	10
5	68	Israel	304	37	296	35
6	67	United Kingdom	2945	5	2849	5
7	66	Germany	3860	4	3356	4
8	66	Netherlands	866	17	753	17
9	64	Australia	1444	12	1340	12
10	63	Finland	271	41	230	43

(Sources: Data from World Bank and the S&P Global FinLit Survey)

Table 2: Definition of the variables

Dependent Variable	Definition
BASIC_FLS	Financial literacy score at basic level
ADVANCED_FLS	Financial literacy score at advanced level
ACCUMULATIVE_FLS	Accumulative financial literacy score is equal to the sum of BASIC_FLS and ADVANCED_FLS
Independent variable	Definition
GENDER	Respondent's gender
PLACE_OF_RESIDENCE	Respondent's place of residence
FIELD_OF_STUDY	Respondent's field of study
YEAR_OF_STUDY	Respondent's year of study
EXPERIENCE	Respondent's work-experience (months)
INCOME	Respondent's monthly income
PARENTS_PROFESSIONAL	Respondent's parents are working in economic fields or non-economic fields.
DEPENDENCE	Financial dependence rate of respondent on their family (%/Respondent's monthly income)
DEMAND_ON_FE	Respondent has demand on learning about financial knowledge and skills (Likert scale)

Table 3: Descriptive statistics of qualitative variables

Variables	Value	Frequency	Percentage
GENDER	0, if male	220	48.9
	1, if female	230	51.1
PLACE_OF_RESIDENCE	0, if Ho Chi Minh City	250	55.6
	1, if another big city (Ha Noi, Da Nang, Hai Phong or Can Tho)	125	27.8
	2, if other provinces/cities	75	16.7
FIELD_OF_STUDY	0, if respondent is studying economic fields	210	46.7
	1, if respondent is studying non-economic fields	240	53.3
	2, if respondent is studying other majors	0	0
YEAR_OF_STUDY	0, if 1 st	35	7.8
	1, if 2 nd	55	12.2
	2, if 3 rd	50	11.1
	3, if 4 th	215	47.8
	4, if 5 th	95	21.1
	5, if has graduated	0	0
INCOME	0, if under 3,000,000 VND	165	36.7
	1, if 3,000,000 to below 5,000,000 VND	170	37.8
	2, if 5,000,000 to below 7,000,000 VND	90	20.0
	3, if 7,000,000 to below 9,000,000 VND	20	4.4
	4, if 9,000,000 VND or above	5	1.1
PARENTS_PROFESSIONAL	0, if economic fields	180	40
	1, if non-economic fields	270	60
DEMAND_ON_FE	0, if strongly disagree	85	18.9
	1, if disagree	70	15.6
	2, if uncertain	70	15.6
	3, if agree	175	38.9
	4, if strongly agree	50	11.1

(Sources: Primary data)

Table 4: Descriptive statistics of quantitative variables

Variables	Mean	Maximum	Minimum	St. Deviation
BASIC_FLS (Basic financial literacy score)	2.411	5	0	1.3256
ADVANCED_FLS (Advanced financial literacy score)	2.711	7	0	2.2497
ACCUMULATIVE_FLS (Accumulative financial literacy score)	5.122	12	0	3.3029
EXPERIENCE (Respondent's work-experience, month)	4.856	36	0	8.4085
DEPENDENCE (Financial dependence rate of respondent on their family, %/the monthly income)	73.954	100	0	28.8201
Valid N = 435				

(Sources: Primary data)

Table 5: OLS Result Model 1 - The impact of independent variables on the basic financial literacy score

Dependent Variable = Basic financial literacy score (BASIC_FLS)			
Independent Variable	Coefficient	t-Statistic	Prob-Value
GENDER	-.326	-2.87	.004***
PLACE_OF_RESIDENCE	-.321	-4.22	.000***
FIELD_OF_STUDY	-.503	-4.06	.000***
YEAR_OF_STUDY	.058	1.21	.229
EXPERIENCE	.045	5.71	.000***
INCOME	-.112	-1.65	.099*
PARENTS_PROFESSIONAL	-.272	-2.42	.016**
DEPENDENCE	.011	4.55	.000***
DEMAND_ON_FE	.314	6.84	.000***
R-squared = 0.3340 Adj R-squared = 0.3199 Prob > F = 0.0000 Mean VIF = 1.36 Breusch-Pagan Test: Prob > chi2 = 0.8216			

Note: *** p<0.01, ** p<0.05, * p<0.1
 (Sources: Primary data)

Table 6: OLS Result Model 2 - The impact of independent variables on the advanced financial literacy score

Dependent Variable = Advanced financial literacy score (ADVANCED_FLS)			
Independent Variable	Coefficient	t-Statistic	Prob-Value
GENDER	-.748	-4.81	.000***
PLACE_OF_RESIDENCE	-.251	-2.41	.016**
FIELD_OF_STUDY	-2.237	-13.18	.000***
YEAR_OF_STUDY	.311	4.72	.000***
EXPERIENCE	.041	3.83	.000***
INCOME	.146	1.58	.116
PARENTS_PROFESSIONAL	.040	.26	.795
DEPENDENCE	.018	5.68	.000***
DEMAND_ON_FE	.474	7.54	.000***
R-squared = 0.5651 Adj R-squared = 0.5559 Prob > F = 0.0000 Mean VIF = 1.36 Breusch-Pagan Test: Prob > chi2 = 0.9228			

Note: *** p<0.01, ** p<0.05, * p<0.1
 (Sources: Primary data)

Table 7: OLS Result Model 3 - The impact of independent variables on the accumulative financial literacy score

Dependent Variable = Accumulative financial literacy score (ACCUMULATIVE_FLS)			
Independent Variable	Coefficient	t-Statistic	Prob-Value
GENDER	-1.074	-4.54	.000***
PLACE_OF_RESIDENCE	-.572	-3.61	.000***
FIELD_OF_STUDY	-2.741	-10.62	.000***
YEAR_OF_STUDY	.368	3.68	.000***
EXPERIENCE	.086	5.26	.000***
INCOME	.034	0.24	.808
PARENTS_PROFESSIONAL	-.232	-0.99	.321
DEPENDENCE	.029	5.92	.000***
DEMAND_ON_FE	.788	8.24	.000***
R-squared = 0.5326 Adj R-squared = 0.5227 Prob > F = 0.0000 Mean VIF = 1.36 Breusch-Pagan Test: Prob > chi2 = 0.7516			

Note: *** p<0.01, ** p<0.05, * p<0.1
 (Sources: Primary data)

Table 8: Basic financial literacy score (BASIC_FLS) by factors

		Mean	F Value	Sig
GENDER	Male	2.750	29.947	.000
	Female	2.087		
PLACE_OF_RESIDENCE	Ho Chi Minh City	2.640	12.613	.000
	Another big city	2.320		
	Other provinces/cities	1.800		
FIELD_OF_STUDY	Economic fields	2.929	69.105	.000
	Non-economic fields	1.958		
YEAR_OF_STUDY	1 st	1.714	5.066	.001
	2 nd	2.182		
	3 rd	2.400		
	4 th	2.651		
	5 th	2.263		
INCOME	under 3,000,000 VND	2.394	5.164	.000
	3,000,000 to below 5,000,000 VND	2.441		
	5,000,000 to below 7,000,000 VND	2.111		
	7,000,000 to below 9,000,000 VND	3.250		
	9,000,000 VND or above	4.000		
PARENTS_PROFESSIONAL	Economic fields	2.472	.637	.425
	Non-economic fields	2.370		
DEMAND_ON_FE	Strongly disagree	1.882	32.660	.000
	Disagree	2.000		
	Uncertain	1.571		
	Agree	2.857		
	Strongly agree	3.500		

(Sources: Primary data)

Table 9: Advanced financial literacy score (ADVANCED_FLS) by factors

		Mean	F Value	Sig
GENDER	Male	3.386	42.350	.000
	Female	2.065		
PLACE_OF_RESIDENCE	Ho Chi Minh City	3.240	16.660	.000
	Another big city	2.080		
	Other provinces/cities	2.000		
FIELD_OF_STUDY	Economic fields	4.190	273.659	.000
	Non-economic fields	1.417		
YEAR_OF_STUDY	1 st	1.000	11.849	.000
	2 nd	1.636		
	3 rd	3.000		
	4 th	3.186		
	5 th	2.737		
INCOME	under 3,000,000 VND	2.667	6.377	.000
	3,000,000 to below 5,000,000 VND	2.647		
	5,000,000 to below 7,000,000 VND	2.333		
	7,000,000 to below 9,000,000 VND	4.750		
	9,000,000 VND or above	5.000		
PARENTS_PROFESSIONAL	Economic fields	2.389	6.226	.013
	Non-economic fields	2.926		
DEMAND_ON_FE	Strongly disagree	2.176	60.413	.000
	Disagree	1.214		
	Uncertain	.929		
	Agree	3.657		
	Strongly agree	4.900		

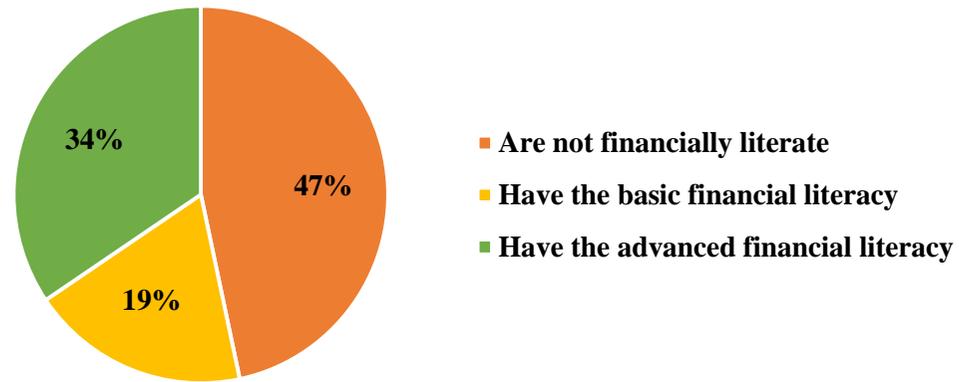
(Sources: Primary data)

Table 10: Accumulative financial literacy score (ACCUMULATIVE_FLS) by factors

		Mean	F Value	Sig
GENDER	Male	6.14	44.512	.000
	Female	4.15		
PLACE_OF_RESIDENCE	Ho Chi Minh City	5.88	16.664	.000
	Another big city	4.40		
	Other provinces/cities	3.80		
FIELD_OF_STUDY	Economic fields	7.12	211.329	.000
	Non-economic fields	3.38		
YEAR_OF_STUDY	1 st	2.71	10.207	.000
	2 nd	3.82		
	3 rd	5.40		
	4 th	5.84		
	5 th	5.00		
INCOME	under 3,000,000 VND	5.06	6.821	.000
	3,000,000 to below 5,000,000 VND	5.09		
	5,000,000 to below 7,000,000 VND	4.44		
	7,000,000 to below 9,000,000 VND	8.00		
	9,000,000 VND or above	9.00		
PARENTS_PROFESSIONAL	Economic fields	4.86	1.879	.171
	Non-economic fields	5.30		
DEMAND_ON_FE	Strongly disagree	4.06	59.591	.000
	Disagree	3.21		
	Uncertain	2.50		
	Agree	6.51		
	Strongly agree	8.40		

(Sources: Primary data)

Figure 1: Evaluation of financial literacy by group



(Sources: Primary data)