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FINANCIAL LITERACY – WHAT AND WHY SHOULD WE IMPROVE[*]

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Abstract

Financial literacy has become a necessary skill for life and employment. This paper aims to introduce the research findings from a survey conducted in higher education institutions. 522 students participated in the poll. The main goal of this study was to analyze the financial literacy of students in Estonia. The standardized survey method of data collection was used and logit regression model was chosen to examine the impact of financial and non-financial variables on the financial literacy of respondents. The survey revealed that financial literacy of students is affected by gender, nationality, age and academic discipline. However, the level of education the students pursue, the work experience of the students and the level of education of the parents does not affect the level of financial literacy. The main conclusions of this study were that students' financial literacy level in Estonia was low and students' interest for long-term planning was not very high. 51% of the respondents had low level of financial literacy, only 3.4% plan their financial affairs in advance on a several years basis and 55.9% have considered retirement funding. These results have important implication for policy makers and further researchers to develop better strategies for financial education.

Keywords: Students, Financial Literacy, Personal Finance, Financial Knowledge, Financial Education

1. Introduction

The importance to manage personal finances has increased as people must plan for housing acquisition, children's education, medical and life insurance needs, short-term savings and borrowings for vacation, car, etc. The responsibility for the financial security of self-retirement has shifted to people instead of relying on state pensions in the context of aging populations.

Financial literacy helps to orientate in financial services and make deliberate decisions. If people do not have sufficient knowledge for making financial decisions, there can be consequences for the individuals themselves and for the economy as a whole (Lusardi *et al.* 2010). Financial literacy is an essential life skill, which could improve financial welfare at all life-stages, and is high on the global policy agenda (OECD, 2014).

Hogarth and Hilgert (2002, p. 1) have stated: "Well-informed, financially literate consumers should make better decisions for their families, increasing their economic security and wellbeing. Secure families are better able to contribute to vital, thriving communities, further fostering community economic development. Thus, financial literacy is not only important to the individual household and family, but also to their communities as well". Huston (2010) marks that increasing consumer financial literacy is a public policy objective to improve welfare through better decision making.

There are a number of factors we are not aware of or whose effect we cannot assess yet. Good knowledge cannot always result in wise behavior. For instance, in a study undertaken in 14 countries by OECD (2012), Estonians ranked in the second group in financial knowledge and last in behavior - exhibited significantly lower levels of behavior than all other countries, except Albania.

PISA 2012 was the first large-scale international study to assess the financial literacy of young people (OECD, 2014). The financial literacy test was taken in 18 countries and economies, including Estonia. In Estonia, 1088 students took the financial literacy test and achieved a mean score of 529 points, which was significantly above the OECD mean score, what was 500 points. The disturbing fact in results was the gap, between the groups with different languages spoken at home. The students' who have Estonian language spoken at home, had the mean score 46 points higher than the students' whose home spoken language was another language (OECD, 2014).

Previous studies such as Estonian Institute of Economic Research (2010); Faktum and Ariko (2010); and Kann (2010) have shown that Estonians elementary level of financial literacy is not a problem, because it is compensated by the conservative behavior of the money matters. Problems in financial literacy arise when there is a need for using long term financial services and calculations. Faktum and Ariko (2010) identified the main risk group or target audience for the improvement of financial literacy as the average urban consumer: younger or middle age group; wage earner; an average income of middle class and regularity; level of education above the average of the sample.

The objects of the current survey were students studying in higher education institutions. The selection of objects to study relied on the main risk group of an earlier study and on the following deliberation: Students, as young people, are the next economically active population and the creators of the future families, and the most promising segment to use financial services in the future due to better jobs, higher positions, bigger salaries.

This study had three purposes: First, to provide evidence of personal financial literacy among higher education students. Secondly, find out the relationship between the financial literacy and students characteristics. Thirdly, examine students' opinions about the long-term financial planning and assess the linkage between planning and financial (knowledge) literacy.

The main goal of this study was to analyze the financial literacy of students in Estonia to give the results what will enable to identify needs and gaps in financial education provision to develop the field. As the topic of financial literacy is continuingly highly important, these results could be useful for researchers, educational and financial policymakers as well as persons who are interested in the field.

The paper is organized as follows. The second section reviews previous studies on financial literacy. The third section describes the methodology used. The fourth section presents the results and discussion and the fifth section concludes the paper.

2. Literature Review

There are many different definitions about financial literacy. According to Vitt *et al.* (2000), financial literacy is the ability to read, analyze, manage, and communicate about the personal financial conditions that affect material well-being. It includes the ability to discern financial choices, discuss money and financial issues without discomfort, plan for the future, and respond competently to life events that affect every day financial decisions, including events in the general economy.

Remund (2010) introduced a definition of financial literacy: "Financial literacy is the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being", brought out the need for a more consistent conceptual definition and offered the following: "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." (Remund, 2010, pp. 284-285)

The definition by OECD (2012, p. 14) was the following: "Financial literacy is a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing".

In an international study to assess the financial literacy of young people, namely PISA 2012[1], the financial literacy definition used was the following: "Financial literacy is knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life" (OECD, 2014, p. 33). In this study, the definition used by the OECD is mainly followed.

Several studies throughout the world (Altintas, 2011; Atkinson *et al.* 2006; Atkinson and Messy, 2012; Chen and Volpe, 1998; Kalmi, 2013; Lusardi *et al.* 2010; Mändmaa and Zhiguleva, 2013; van Rooij *et al.* 2007; Smith and Stewart, 2008; Wagland and Taylor, 2009) have shown that the level of financial literacy needs improvement.

Previous research has found that financial literacy can have important implications for financial behavior. People with low financial literacy are more likely to have problems with debt (Lusardi and Tufano, 2009), less likely to participate in the stock market (van Rooij *et al.* 2007), less likely to choose mutual funds with lower fees (Hastings and Tejeda-Ashton, 2008), less likely to accumulate wealth and manage wealth effectively (Hilgert *et al.* 2003; Stango and Zinman, 2007), and less likely to plan for retirement (Lusardi and Mitchell, 2006, 2007, 2009).

The financial situation of today's youth is characterized increasingly by high levels of debt. In USA between 1997 and 2007, average undergraduate student loan debt rose from $9,250 to $19,200 — a 58% increase after accounting for inflation; average debt for college students graduating with loans rose 6% in just one year between 2006 and 2007, from $18,976 to $20,098 (Reed, 2008).

There are other potentially costly consequences of accumulating high levels of debt early on, such as bankruptcy (Roberts and Jones, 2001). For instance, in US 2002, the fastest-growing group of bankruptcy filers was those of the age 25 and younger. (Lusardi *et al.* 2010).

Financial literacy is an important component of sound financial decision-making, and many young people wish they had more financial knowledge. In a 2009 survey on credit card use among undergraduate students, 84% of students said they needed more education on financial management topics, 64% would have liked to receive information about financial management topics in high school, and 40% would have liked to receive such information as college freshmen (Sallie Mae, 2009).

Understanding financial literacy among young people is thus of critical importance for policymakers in several areas; it can aid those who wish to devise effective financial education programs targeted at young people as well as those writing legislation to protect younger consumers (Lusardi *et al.* 2010).

3. Methodology and Data

This study uses a standardized survey method of data collection. The questionnaire designed to cover major aspects of personal finance and includes financial literacy on economic base-terminology, saving, borrowing, investment and insurance. The survey participants are asked to answer multiple-choice questions, including ten questions on demographic data, 14 questions to measure financial literacy and seven questions about students' opinions and choices. The validity and clarity of the survey have been previously evaluated by three master level students and by three individuals who are knowledgeable in personal finance.

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[1] Programme for International Student Assessment (*PISA*); PISA 2012 financial literacy assessment, was administered to approximately 29.000 students in 13 OECD countries and economies (Australia, the Flemish Community of Belgium, the Czech Republic, Estonia, France, Israel, Italy, New Zealand, Poland, the Slovak Republic, Slovenia, Spain and the United States) and five partner countries and economies (Colombia, Croatia, Latvia, the Russian Federation and Shanghai-China) (OECD_2014).

The responses from participants are used to calculate the mean percentage of correct scores for each question, section and entire part of survey measuring the financial literacy levels. Consistent with the existing literature (Chen and Volpe, 1998), the mean percentage of correct scores is grouped into (1) more than 80%, (2) 60% to 79% and (3) below 60%. The first category represents a relatively high level of knowledge, the second a medium and the third represent a relatively low level of knowledge. Previous research advises that levels of financial literacy vary among subgroups of students (Chen and Volpe, 1998). This study uses analysis of variance (ANOVA) to provide additional evidence and the differences are further analyzed using logistic regression models. The participants are divided into two groups (based on more or less knowledge) using the median percentage of correct answers of the sample. Students with scores higher than the sample median are classified as students with relatively (more) higher knowledge and students with scores equal or below the median are classified as those with relatively (less) lower knowledge. This dichotomous variable, financial literacy level (more, less), is used in logistic regression as the dependent variable, which is explained simultaneously by all of the independent variables.

In this study, the form of the logistic model is following:

$$\log[p/(1-p)] = B_0 + B_1 (\text{Gender}) + B_2 (Age1) + B_3 (Age2) + B_4 (Age3) + B_5 (Nationality) + B_6 (Academic) + B_7 (Education1) + B_8 (Education2) + B_9 (Education3) + B_{10} (Education4) + B_{11} (Household1) + B_{12} (Household2) + B_{13} (Household3) + B_{14} (Household4) + B_{15} (Household5) + B_{16} (Work1) + B_{17} (Work2) + B_{18} (Work3) + B_{19} (Income1) + B_{20} (Income2) + B_{21} (Income3) + B_{22} (Income4) + B_{23} (Income5) + B_{24} (ParentsEd) + e_i \qquad (1)$$

The independent variables in this case are variables such as gender, academic discipline, age, nationality, level of education, household size, the work experience and personal monthly net income of the student and level of education of the parents. The coefficients represent the effect of each subgroup compared with the reference group (reference groups are in Table 1 at positions "a)" and marked in bold), which is arbitrarily selected.

To improve financial education, it is necessary to examine more deeply how students' financial knowledge affects their views on personal finance issues and financial decision making. For that reason, seven questions about students' opinions and choices, containing personal financial services and financial planning, basic financial literacy self-assessment and interest in having more information in the field, were added and analyzed. The sample divided into three groups using the mean percentage of correct scores: relatively high level of knowledge (more than 80%); a medium level of knowledge (60% to 79%); relatively low level of knowledge (below 60%). To determine if the difference of the three groups' opinions and decisions are statistically significant, the Cross-tabulations and Chi-square tests are used.

For the data collection, the survey was conducted among students studying in higher education institutions in Estonia at 2012. The questionnaire was filled in by 522 students from 13 educational institutions, including 12 public and one private school. More specifically, the survey was distributed in 5 public universities; 6 state institutions of professional higher education; 1 Private institution of professional higher education; 1 state vocational education institution (offering higher education programs).

Detailed characteristics of the sample are presented in Table 1. In terms of education, about 85.4% of the participants acquire "Non-economical" education, 42% of the participants are in Bachelor studies, 28% in Applied higher educational, 22.2% in Master, 6.7% in Combined, which in current case is 5 years study in the field of ensnaring and 1% Doctoral studies. In terms of demographic background, most of the participants are Estonians. By the work experience, the sample is almost evenly distributed to three groups. About 81.8% of the students are from 18 to 25 years of age. The gender distribution of sample, 61% females and 39% males, is close to the gender distribution (female 59% and male 41%) of the students who studied in Estonian higher education institutions at same study year. Similar proportional divisions were also present in student distribution among various levels of education. Table 2 shows the data to describe the share of students in different educational levels during the conduct of this study.

Table 1. Characteristics of the Sample

	Characteristics	Number of Participants	Percentage
A.	**Education**		
	1. Academical discipline		
	a) Non-economical	446	85.4
	b) Economic	76	14.6
	2. Level of education		
	a) Applied higher educational studies	146	28.0
	b) Bachelor studies	220	42.1
	c) Master or Doctoral studies*	121	23.2
	d) Combined studies	35	6.7
B.	**Demographic Characteristics**		
	1. Gender		
	a) Female	318	60.9
	b) Male	204	39.1
	2. Age groups		
	a) 18-21	250	47.9
	b) 22-25	177	33.9
	c) 26 and up	95	18.2
	3. Nationality		
	a) Estonian	418	80.1
	b) Non-Estonian	104	19.9
	4. Household size		
	a) Live alone	133	25.5
	b) Live with husband/ wife	136	26.0
	c) Live with husband/ wife and children	45	8.6
	d) Live with parents/grandparents	181	34.7
	e) Other	27	5.2
C.	**Experience**		
	1. The work experience		
	a) 0 years	181	34.7
	b) 1 to 2 years	165	31.6
	c) 3 years and up	176	33.7
D.	**Income**		
	1. Personal monthly net income		
	a) Under 300 EUR	239	45.8
	b) 301- 600 EUR	135	25.9
	c) 601 – 1000 EUR	56	10.7
	d) 1001 EUR and over	35	6.7
	e) Do not want to answer	57	10.9
E.	**Background**		
	1. Level of education of the parents		
	a) Higher education exists	314	60.2
	b) Higher education missing	208	39.8

Note: * As the number of participants in the level of doctoral studies was lower than 1% of sample size, the answers have been taken into consideration together with master level.

Table 2. The distribution of students (studied at Estonian higher education institutions and participated in poll) by educational levels and gender in the academic year 2011/2012

	Data from Statistics Estonia in the beginning of academic year 2011/2012		Data received during survey	
	No of students	Percentage %	No of students	Percentage %
Higher Education Levels				
Applied higher education	20,791	31	146	28
Bachelor's study Undergraduate	26,571	39	220	42
Combined studies	4,024	6	35	7
Master studies	13,170	19	116	22
Doctoral studies	3,051	5	5	1
Total	67,607	100	522	100
Gender				
Male	27,610	41	204	39
Female	39,997	59	318	61
Total	67,607	100	522	100

Source: Author's own preparation based on Statistics Estonia (2012)

4. Results and Analysis

To evaluate and analyze students' financial literacy, the collected data were analyzed by using the software Statistical Package for the Social Sciences (SPSS).

4.1. Overall Results of the Survey

The overall results are presented in Figure 1 and Figure 2, and in Table 3. and Table 4. The mean percentage of correct scores is grouped into three categories: over 80, 60-79, and below 60. The overall mean percentage of correct scores was 58.9%, indicating on average the participants answered more than 40% of the survey questions incorrectly. The median percentage of correct scores was 57.1%. The findings suggest that students' knowledge on personal finance is inadequate as 51% of the respondents had a low level of financial literacy, 40% of the respondents had a medium level of financial literacy and only 47 students had a high level of financial literacy which was 9% of the respondents. One reason for the low level of financial literacy could be the systematic lack of a sound personal finance education in curricula. A similar view has been expressed by several researchers from several countries. Another reason for the low level of knowledge can be caused by young ages of the participants. As shown in Table 1 and Table 3. about 82% of the participants were under 26. It means they are in very early stage of their financial life cycle. Figure 1 pictures the students' financial literacy levels including differences between male and female students.
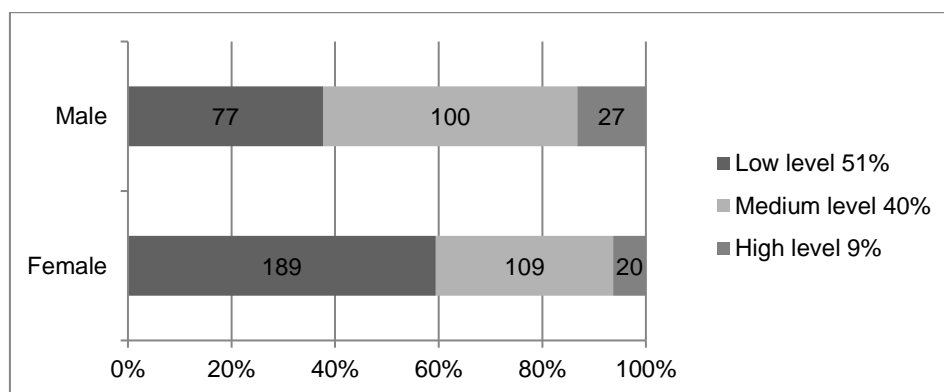

Figure 1. Estonian students' level of financial literacy

204 male and 318 female students participated in the poll. Looking at the distribution of students between the different financial literacy levels, it is notable that the biggest number of male students (100 or 49%) was in medium level but the biggest number of female students (189 or 59%) was in low level.

Table 3. Characteristics by Level of Financial Literacy in percentages except where noted

Characteristics	All obs	Students' financial literacy level			Chi-Square	P-values
		Low	Medium	High		
Number of observations	522	266	209	47	148.379**	0.000
Gender					24.878**	0.000
Female	61	60	34	6		
Male	39	38	49	13		
Age groups					10.910*	0.028
18-21	48	54	40	6		
22-25	34	52	36	12		
26 and up	18	40	49	11		
Nationality					10.697**	0.005
Estonian	80	48	42	10		
Non-Estonian	20	64	32	4		
Academical discipline					28.465**	0.000
Economic	15	26	53	21		
Non-economical	85	55	38	7		
Level of education					19.606*	0.012
Applied higher educational studies	28	54	37	9		
Bachelor studies	42	51	43	6		
Combined studies	22	66	28	6		
Master studies	7	45	40	15		
Doctoral studies	1	0	100	0		
Household size					5.681	0.683
Live alone	25	51	39	10		
Live with husband/ wife	26	52	37	11		
Live with husband/ wife and children	9	47	46	7		
Live with parents/grandparents	35	49	44	7		
Other	5	63	26	11		
The work experience					4.105	0.392
0 years	35	48	43	9		
1 to 2 years	31	57	36	7		
3 years and up	34	48	41	11		
Personal monthly net income					12.516	0.130
Do not want to answer	11	60	37	3		
Under 300 EUR	46	51	41	8		
301- 600 EUR	26	54	36	10		
601 – 1000 EUR	11	46	43	11		
1001 EUR and over	6	31	49	20		
Level of education of the parents					2.282	0.319
Higher education exists	60	49	43	8		
Higher education missing	40	54	36	10		

Notes: *significant at the 0.05 level; **significant at the 0.01 level or greater.

Questions that ascertain the level of financial literacy covered the following financial topics: Saving; Investment; Borrowing; Economic base-terminology and Insurance. Figure 2 shows the percentage of respondents, who answered correctly by topic.
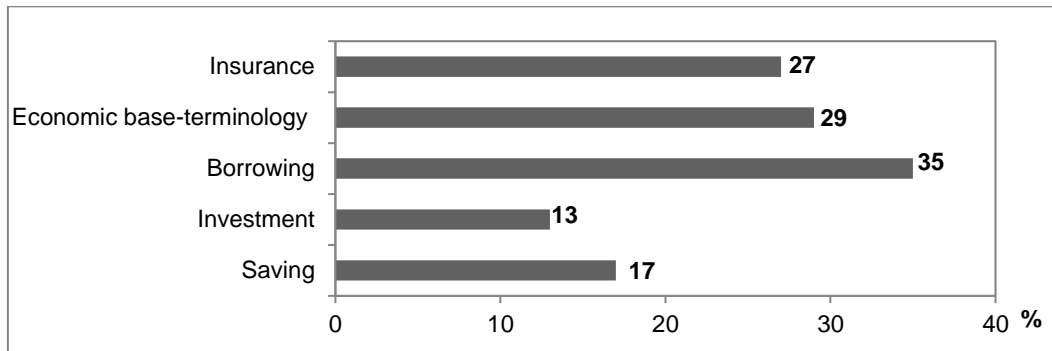

Figure 2. The percentage of respondents who answered correctly by topic

As it seen in Figure 2, the most known topic was borrowing: 182 students, which accounts for 35 percent of respondents, answered correctly to all of the questions about borrowing. All the 14 questions were answered by 522 students and Table 4 give us more specific overview about correct responses.

Table 4. Number and Mean Percentage of Correct Responses to Each Survey Question, Section, and the Entire Survey

	Number of correct responses	Level of Personal Financial Literacy		
		Low Below 60%	Medium 60-79%	High Over 80%
I Saving				
Appropriate saving place	389		74.5	
Annual percentage rate	263	50.4		
Impact of inflation	409		78.4	
Time value of money	191	36.6		
Mean Correct Responses for the Section			**60.0**	
II Investment				
Risk diversification	414		79.3	
Interest rates changes and treasury bond price	89	17.0		
Mean Correct Responses for the Section		**48.2**		
III Borrowing				
Monthly payments of mortgage	383		73.4	
Interest of loan	294	56.3		
Loan co-sing consequences	364		69.7	
The interest rate evaluation	463			88.7
Mean Correct Responses for the Section			**72.0**	
IV Economic base-terminology				
Asset liquidity	258	49.4		
Net worth calculation	251	48.1		
Mean Correct Responses for the Section		**48.8**		
V Insurance				
Understanding the content of insurance	214	41.0		
Considerations in picking the insurance cover	323		61.9	
Mean Correct Responses for the Section		**51.5**		
Mean Correct Responses for the Entire Survey		**58.9**		
Median Correct Responses for the Entire Survey		**57.1**		

The differences in the mean percentages of correct answers for the sections of Economic base-terminology (48.8%), Savings (60.0%), Borrowing (72.0%), Insurance (51.5%), and Investment (48.2%) could be explained by early stage financial life cycle attributes. At this stage of the cycle, most of students' incomes are spent on consumption rather than investment and they are exposed to a limited number of financial issues related to general knowledge, savings, borrowing, and insurance.

According to a survey by Chen and Volpe (1998), students score higher on issues with which they are familiar and earn low scores in areas they have little experience. The highest percentage of correct answers for the section Borrowing could be explained by low personal income, as 46% of participants have monthly income under 300 EURO (Table 3.). A further look into the scores on individual questions about students choices and opinions (Table 7) shows that only 24.1% have Insurance and 6.5% Investment Services.

4.2. Analysis of Results by Subgroups of the Sample

In this section, the relationship between personal financial literacy and participants' education, demographic characteristics, work experience, income and other background are examined. Table 5 shows the mean percentage of correct responses for entire survey and ANOVA has been used to detect if participants from various subgroups have different levels of knowledge.

Participants' educational background has a significant impact on their knowledge. The results for the entire survey clearly show that students from academic discipline, economic are more knowledgeable than students from non-economic discipline. On average, the students from economic discipline answered correctly 67.95% of the survey questions and from non-economic discipline 57.37%. The findings also suggest that participants from different level of education have different levels of financial knowledge. Generally, graduate students know more than the undergraduate students. The testing results of ANOVA indicate that the differences are statistically significant at the 0.01 level.

Table 5 shows participants' knowledge varies with their demographic characteristics. The percentages of correct answers from the female participants (55.77%) are lower than those from the male participants (63.80%). The values of F-statistic suggest that these differences are highly significant. The participants from different age groups have different levels of financial knowledge. The group of youngest students (18-21) got the lowest scores (55.77%) and the group of oldest students (26 and up) reached the highest (63.76%). These results are as expected as knowledge grow over time. The different scores are statistically significant at the 0.01 level. The nationality has as well an influence to the level of financial literacy, as the difference between Estonians and non-Estonians correct answers scores is 6.4% and the results are statistically significant at the 0.01 level.

In terms of participants' household size, it seems that participants with more moral imperatives, like in groups Live alone and Live with husband/wife and children, are more knowledgeable than those with less responsibilities.

The testing results of ANOVA indicate that the differences are not statistically significant at subgroups like Household size, Work experience and Level of education of the parents. Finally, participants with higher personal income answered more questions correctly (69.18%) than those with lower income (scores start 58.20%). The differences in the level of financial literacy, among different personal monthly income, are statistically significant at the 0.01 level.

The results of the logistic regression are shown in Table 6 where the reference categories are given in bold. The model was constructed adding all the independent variables in the model at the same time (Enter method). The same method was used by Chen and Volpe (1998). As suggested by the high Chi-square values, the model has high explanatory power. Another widely used measure of the overall fit of the models is to examine its ability to correctly classify observations. This model is correctly classifying the outcome for 65.1% of the cases compared to 51.0% in the null model.

Table 5. Mean Percentage of Correct Responses by Characteristics of Sample and Results of ANOVA

	Characteristics	%
A.	**Education**	
	1. Academic discipline	
	a) Non-economic	57.37
	b) Economic	67.95
	F Statistic	(22.864)**
	2. Level of education	
	a) Applied higher educational studies	57.73
	b) Bachelor studies	57.56
	c) Master and Doctoral studies	64.29
	d) Combined studies	53.67
	F Statistic	(5.209)**
B.	**Demographic Characteristics**	
	1. Gender	
	a) Female	55.77
	b) Male	63.80
	F Statistic	(25.254)**
	2. Age groups	
	a) 18-21	55.94
	b) 22-25	60.49
	c) 26 and up	63.76
	F Statistic	(7.543)**
	3. Nationality	
	a) Estonian	60.18
	b) Non-Estonian	53.78
	F Statistic	(10.501)**
	4. Household size	
	a) Live alone	60.04
	b) Live with husband/ wife	58.56
	c) Live with husband/ wife and children	60.16
	d) Live with parents/grandparents	58.17
	e) Other	57.94
	F Statistic	(0.287)
C.	**Experience**	
	1. The work experience	
	a) 0 years	59.55
	b) 1 to 2 years	56.41
	c) 3 years and up	60.59
	F Statistic	(2.436)
D.	**Income**	
	1. Personal monthly net income	
	a) Under 300 EUR	58.22
	b) 301- 600 EUR	58.20
	c) 601 – 1000 EUR	61.61
	d) 1001 EUR and over	69.18
	e) Do not want to answer	54.51
	F Statistic	(4.161)**
E.	**Background**	
	1. Level of education of the parents	
	a) Higher education exists	59.03
	b) Higher education missing	58.72
	F Statistic	(0.036)

Notes: *significant at the 0.05 level; **significant at the 0.01 level or greater.

Table 6. The logistic regression model

Characteristics	B	Exp (B)	P-values
Gender (Female)			
Male	0.954**	2.597	0.000
Age groups (18-21)			
22-25	0.281	1.325	0.305
26 and up	0.883*	2.419	0.031
Nationality (Estonian)			
Non-Estonian	-0.681**	0.506	0.008
Academic discipline (Economic)			
Non-economical	1.439**	4.217	0.000
Level of education (Applied higher educational studies)			
Bachelor studies	-0.196	0.822	0.457
Combined studies	0.033	1.033	0.914
Master and Doctoral studies	-0.356	0.700	0.407
Household size (Live alone)			
Live with husband/ wife	0.258	1.295	0.347
Live with husband/ wife and children	0.089	1.093	0.839
Live with parents/grandparents	0.233	1.263	0.364
Other	-0.437	0.646	0.358
The work experience (0 years)			
1to 2 years	-0.231	0.794	0.350
3 years and up	0.110	0.896	0.718
Personal monthly net income (under 300 EUR)			
301- 600 EUR	0.463	1.588	0.168
601 – 1000 EUR	0.190	1.209	0.599
1001 EUR and over	0.379	1.461	0.381
Do not want to answer	0.934	2.545	0.069
Level of education of the parents (Higher education exists)			
Higher education missing	-0.306	0.736	0.131
Constant	-0.899*	0.407	0.044
Chi-Square	79.078**		0.000
-2 log Likelihood	644.376		
Adjusted R^2	0.187		
Correct Classification	65.1%		
Chance Classification	51.0%		

Notes: *significant at the 0.05 level; **significant at the 0.01 level or greater.

Based on the results of the logistic regression analysis presented above, men are 2.6 times more likely to have a higher level of financial literacy than women. Students of the age of 26 and older are 2.4 times more likely to have higher financial literacy compared to students from the age of 18-21. The coefficient (B) of non-Estonians is negative and significant at the 0.01 level. Consistent with findings of ANOVA, the result suggests that non-Estonians are more likely to be less knowledgeable about personal finance than Estonians. The students studying economical discipline are 4.2 times more likely to belong to a higher level of financial literacy group than the students studying other academic disciplines. The result that academic discipline "Economic" are more knowledgeable is consistent with findings of previous researches and is not surprising because curriculum requirements give them more opportunity to take finance and related courses.

While educational levels pursued by students' and income variables affect the level of knowledge in one-way ANOVA, they no longer have any significant impact in the logistic regression where all the variables are used simultaneously to explain the level of knowledge. Consistent with results of ANOVA the students' household size, work experience and

educational level of the parents do not affect students' financial literacy level. The non-significance of the characteristics was assessed by an indicator of significance.

4.3. How knowledge affects student's opinions and decisions

To examine more deeply how students' financial knowledge affects their views on personal finance issues and financial decision making, seven questions were added and analyzed. Four questions asked about personal financial planning and financial services and three questions about self-assessment and interest in having more information in the field. For analyzing, the sample was divided into three groups using the mean percentage of correct scores: the low level (below 60%), the medium level (60% to 79%) and the high level of knowledge (more than 80%). To determine if the difference of the three groups' opinions and decisions are statistically significant, the Cross-tabulations and Chi-square tests were used. Table 7 gives us short overview about students' choices in financial planning and financial services.

Table 7. Differences in students' financial services and planning depending on financial literacy level

	Students' financial literacy level %			Total %	Chi-Square	P-value
	Low	Medium	High			
How long in advance do you plan your financial affairs (the expected revenues, the necessary costs and predictable financial situation)?						
On a current basis, on a daily basis	23.7	15.3	12.8	19.3	6.693*	0.035
On a monthly basis	38.8	43.5	25.5	39.1	5.508	0.064
On a 3 months basis	13.5	15.8	25.5	15.5	4.406	0.110
On a 6 months basis	7.5	9.6	10.6	8.6	0.892	0.640
On a 1 year basis	7.1	6.7	10.6	7.3	0.897	0.638
On a several year basis	2.3	3.8	8.5	3.4	4.845	0.089
Do not see the need to plan	5.6	3.3	4.3	4.6	1.412	0.493
Do not know	2.3	1.9	2.1	2.2	0.066	0.967
Have you thought about retirement funding?						
Yes	52.3	59.8	59.6	55.9	2.986	0.225
What could be your pension in the future (the ratio of average wage)?						
50%	7.1	6.2	6.4	6.7	0.168	0.919
75%	28.9	37.3	36.2	33.0	3.957	0.138
100%	27.8	29.7	23.4	28.2	0.775	0.679
Your own version	31.2	17.7	19.1	24.7	12.323**	0.002
Do not know	4.9	9.1	14.9	7.4	7.108*	0.029
Which of the following financial services are currently available to you?						
Current Account	89.1	92.3	91.5	90.6	1.497	0.473
Debit Card	74.1	86.1	95.7	80.8	18.405**	0.000
Credit Card	21.1	26.8	29.8	24.1	3.007	0.222
Savings Account	24.1	26.3	25.5	25.1	0.322	0.851
Bank loan	20.7	30.6	36.2	26.1	8.753*	0.013
Vehicle Lease	4.9	5.3	4.3	5.0	0.092	0.955
Insurance (car, life, etc.)	19.5	26.8	38.3	24.1	9.011*	0.011
Investment Services	3.0	10.0	10.6	6.5	10.970**	0.004

Notes: *significant at the 0.05 level; **significant at the 0.01 level or greater.

Remund (2010) pointed out the importance of personal long-range financial planning in the U.S. Previous studies in Estonia have shown that problems in financial literacy arise when there is a need for using long-term financial services and calculations (Estonian Institute of Economic Research, 2010; Faktum and Ariko, 2010; Kann, 2010).

Current study shows that 19.3% of students plan their financial affairs ahead on a daily basis and only 3.4% of participants plan on a several year basis. Despite the fact that only 55.9% of the participants have thought about retirement funding, students are quite aware about what could be their pension in the future, as only 7.4% of them gave an answer "Do not know". Most popular answer about pension was 75% of average wage which was chosen by 33% of participants.

The financial situation of today's youth in USA is characterized increasingly by high levels of debt (Reed, 2008). In current study, the limitations do not allow a comprehensive analysis of students' level of debt but there was a possibility to analyze available financial services. The results show that loans are not very popular among students as 24.1% of participants have a credit card and 26.1% have a bank loans. While a Current account (90.6%) and a debit card (80.8%) are actively used by students and approximately every fourth student owns savings account.

The answers to the questions about self-assessment and interest in having more information in the field are described next. Students were asked to answer the question: „How do you evaluate your own level of financial knowledge for organizing your financial affairs and services and making reasonable and smart financial decisions? " **Figure 3** characterizes the relationship between the students' self-assessment about financial knowledge and their actual financial literacy level.
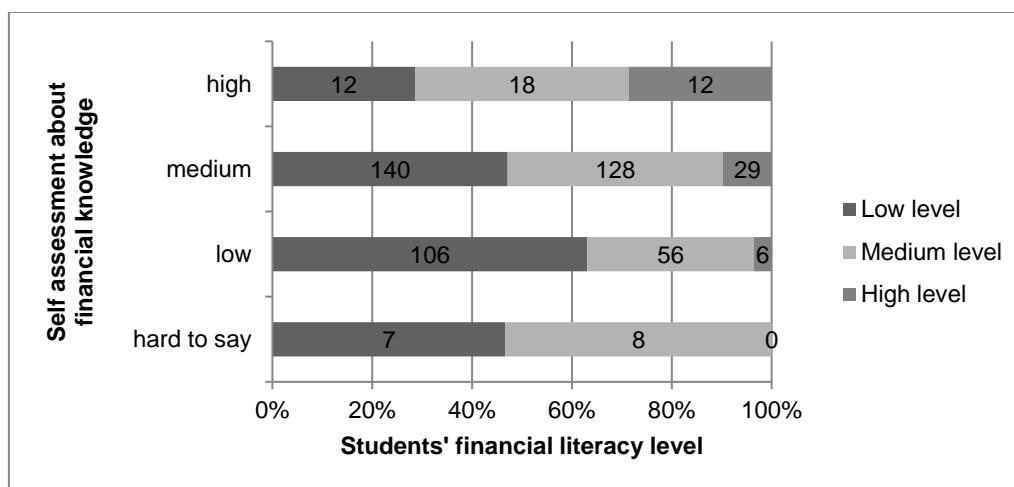

Figure 3. The proportion of students' financial literacy in a subjective and objective assessment

Table 8 gives us statistically more specific overview about relation between students' self-assessment and tested financial literacy levels. The level of own financial literacy was assessed rightly by 246 students, which accounted for 47% of the total number of respondents. 297 students, which is 57% of the respondents, evaluated their financial knowledge to the medium level and 168 students, which is 32%, evaluated their financial knowledge to the low level. Previous research in Estonia have made the conclusion that if the self-assessment about financial knowledge is not high that means it is quite adequate (Faktum and Ariko, 2010).

Table 8. Relationship between students' self-assessment and tested financial literacy level

			Students' financial literacy level			Total
	Self-assessment about financial knowledge		**Low**	**Medium**	**High**	
1	High	Count	12	18	12	42
		% within	28.6%	42.9%	28.6%	100.0%
		% of Total	2.3%	3.4%	2.3%	8.0%
2	Medium	Count	140	128	29	297
		% within	47.1%	43.1%	9.8%	100.0%
		% of Total	26.8%	24.5%	5.6%	56,9%
3	Low	Count	106	56	6	168
		% within	63.1%	33.3%	3.6%	100.0%
		% of Total	20.3%	10.7%	1.1%	32.2%
4	Hard to say	Count	8	7	0	15
		% within	53.3%	46.7%	0%	100.0%
		% of Total	1.5%	1.3%	0%	2.9%
	Total	Count	266	209	47	522
		% within	51.0%	40.0%	9.0%	100.0%
		% of Total	51.0%	40.0%	9.0%	100.0%

Note: Chi-Square=37.591 significant at the 0.05 level

To the question "Do you want to get more information about financial services and monetary affairs planning?" 340 students answered yes, which accounts for 65% of the participants in the survey. Students with low level of financial literacy were even more interested in, as 70.7% of them gave the answer "yes". Table 9 reflects, in summary, the relationship between the level of financial literacy of students and the interest about additional financial knowledge.

Table 9. Relationship between the level of financial literacy and the interest to get additional information about financial services and monetary affairs planning

Do you want to get more information about financial services and monetary affair planning?		Financial literacy level			Total
		Low	**Medium**	**High**	
Yes	Count	188	126	26	340
		55.3%	37.1%	7.6%	100.0%
	% of Total	36.0%	24.1%	5.0%	65.1%
No	Count	78	83	21	182
		42.9%	45.6%	11.5%	100.0%
	% of Total	14.9%	15.9%	4.0%	34.9%
Total	Count	266	209	47	522
	% of Total	51.0%	40.0%	9.0%	100.0%

Note: Chi-Square=7.754 significant at the 0.05 level

Finally, the students were asked to indicate in which financial issues they need more information. This question was answered by 182 students, which accounted for 35% of the participants in the survey. Some of the students noted several topics of which they would be interested in. 61 students (34% of respondents to this question) wanted to get more information about investing, 40 students about financial-base terminology, 37 about borrowing, 21 about saving and 15 about pension funds. The other topics that the students noted were planning the money matters, insurance, taxes, legislation, conditions of contracts.

5. Discussion

On the basis of the results obtained during this work, it can be concluded that the level of financial literacy of students is low. Altintas (2011) and Chen and Volpe (1998) came to the

same results in their financial literacy studies surveying the level of financial literacy of Turkish and US students, respectively. The students involved in this study were the least aware of investment. Chen and Volpe (1998) received the same result in their work.

Previous studies conducted in Estonia have no significant differences in the level of financial literacy of women and men. Also, there were no significant differences between the girls' and boys' financial literacy skills, as revealed in PISA 2012 test results (OECD, 2014). The current study revealed that men have a higher level of financial literacy than women. To the same result came Atkinson *et al.* (2006) in UK, Chen and Volpe (1998) while studying the US students, Lusardi *et al.* (2010), who studied the US youth and Monticone (2010), who examined the financial literacy of the Italian population. Wagland and Taylor (2009), who examined the level of financial literacy of Australian students, came to the result that the gender does not affect the level of financial literacy. Altintas (2011), whose study was conducted in Turkey, came to the result that the level of female financial literacy is higher than men's.

As a result, it was noted that the 26 year old and older students are in higher financial literacy levels than the youngest (18-21 age group) involved in this study. Atkinson *et al.* (2006) obtained a similar result in the study of financial literacy of the United Kingdom population. Chen and Volpe (1998) noted that participants under the age of 30 are more likely to be less knowledgeable as compared with those of the age of 40 or older. Wagland and Taylor (2009) came to the result that age would not affect the level of financial literacy of Australian students.

The study revealed that students with an economic academic discipline have better financial literacy than students who do not learn in the economic direction. The same result was obtained by Chen and Volpe (1998). Altintas (2011) in his study exposed that academic discipline does not affect the level of financial literacy.

Analyzing the impact of nationality on financial literacy, it turned out that Estonians have a higher level of financial literacy compared to non-Estonians. The same results were obtained in Faktum and Ariko's (2010) financial literacy study and in PISA 2012 test results (OECD, 2014).

The findings of this study show that the levels of education students pursue, work experience, and higher education of parents do not affect the level of financial literacy. Wagland and Taylor (2009) got similar results to this study but in contrast, Chen and Volpe (1998) came to the result that working experience does affect the level of financial literacy of students. The impact of educational level to the level of financial literacy is reported in survey results by Atkinson *et al.* (2006) and Chen and Volpe (1998). The result that higher education of students' parents affects the students' level of financial literacy has been obtained by Altintas (2011) and Lusardi *et al.* (2010) in their surveys.

As previous research has found the financial literacy can have important implications for financial behavior, as people with low financial literacy are less likely to participate in the stock market (van Rooij *et al.* 2007), accumulate and manage wealth effectively (Hilgert *et al.* 2003; Stango and Zinman, 2007), and less likely to plan for retirement (Lusardi and Mitchell, 2006, 2007, 2009). The survey results show that only 6.5% of students hold the investment services, 25.1% owns Savings Account, and 55.9% of students have thought about retirement funding but the level of students financial literacy does not make any significant differences in current cases.

Lusardi and Tufano (2009) noted that people with low financial literacy are more likely to have problems with debt. Reed (2008) in his report concludes that the financial situation of today's youth in USA is characterized increasingly by high levels of debt. In current study, the time and space limitations do not allow a comprehensive analysis of students' level of debt. The results show that loans are not very popular among students as 24.1% of participants were credit card users and 26.1% had bank loan.

In a 2009 survey on credit card use among undergraduate students in USA, 84% of students said they needed more education on financial management topics (Sallie Mae, 2009). In current study to the question "Do you want to get more information about financial services and monetary affairs planning?" 65% of the participants answered "yes". Students with low level of financial literacy were even more interested in as 70.7% of them gave the answer "yes".

6. Conclusion

The main goal of this study was to analyze the financial literacy of students in Estonia to give the results that will enable to identify needs and gaps in financial education provision to develop the field.

This study examined 522 students from 13 different higher education institutions. The standardized survey method of data collection was used and logit regression models were chosen. The overall mean of correct answers for the survey was about 59%. By far the weakest area was investing, meaning a little knowledge of the link between the price of the bond and the interest rate. The survey revealed that financial literacy of students is affected by gender, nationality, age and academic discipline. However, the level of education the students pursue, the household size, the work experience of the students, the personal monthly net income and the level of education of the parents do not affect the level of financial literacy. Students' financial literacy level in Estonia was low and students' interest for long-term planning was not very high. 51% of the respondents had low level of financial literacy, medium level had 40% of the respondents and only 47 students (9% of the respondents) had a high level of financial literacy. Lower levels of financial literacy were found among subgroups like women, non-Estonian, students from the age of 18-21 and students studying non-economic disciplines. Just 3.4% of students plan their financial affairs in advance on a several year basis and 55.9% have considered retirement funding. The results show that loans are not very popular among Estonian students as 24.1% of participants were credit card users and 26.1% had bank loan. The study confirmed that students have interest in getting more information about and improving their financial literacy.

To answer shortly to the question presented in a title, what and why should we improve, it is good to use thoughts from earlier studies as well. The illiteracy and its costly consequences make individuals worry about their finances to the extent that their productivity in workplaces is affected (Chen and Volpe, 1998). When individuals cannot manage their finances, it becomes a problem for the society (Chen and Volpe, 1998). The findings of this study show that students are not knowledgeable about personal finance and there is a systematic lack of personal finance education. The results suggest that students' knowledge of financial literacy needs improvement, as the incompetency will limit their ability to make informed financial decisions.

To improve the students' financial literacy level, it is required to integrate topics in economics and personal finance to all academic disciplines, especially to non-economics academic disciplines and to the non-Estonian curriculums. To enhance financial education, it is necessary to examine more deeply how students' financial knowledge affects their views on personal finance issues and financial decision-making.

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