

FINANCIAL EDUCATION OF UNIVERSITY STUDENTS

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Abstract: *The quality of education at universities is at the forefront of the knowledge society. Financial literacy belongs to the integral parts of the modern education and to the key competencies of the modern people. Financial education, therefore, becomes so an important pillar of financial literacy, that we can simply characterize as the ability to make informed and effective decisions about the use and management of money in work and personal life. This article focuses on investigating the financial education effectiveness and the skills acquired in the basic economic course. In addition to the theoretical knowledge, the course provides practical knowledge and skills that enable students to analyze financial flows, plan and change them in the light of changes in the external environment or their own needs. The course was attended by students of management and information department of bachelor study. The research was conducted in the form of a questionnaire survey at the beginning and at the end of the course. The questionnaire also included questions concerned with personal characteristics of the respondents, about current education, verification of competence in the branch, assessment of its own capabilities, progress on important financial decisions, etc. The results obtained in the survey were analyzed by statistical methods, especially by statistical tests. It has brought interesting results in the field of understanding the time value of money, interest rates, inflation and interest rates, annuities, debt amortization, and financial and investment decision making. The results obtained are useful in the teaching process of economic subjects.*

Key words: : *financial literacy, finance education, questionnaire survey.*

1. INTRODUCTION

The world has become a more risky place to live. At the same time, the current time is marked by rapid and turbulent developments in the economic as well as in the social sphere of society. It brings a lot of problems and tensions in society. In the media, we frequently meet the concepts such as the global labor market, unemployment, new technologies, manufacturing innovations, labor productivity and the quality of education.

Exactly the new technologies and innovations in production have become an important indicator of a modern knowledge economy. Employers assume that the "new" employee will have the assumptions and ability to create, apply, maintain and further develop automated solutions from the appropriate department. There has arisen a steady demand for the university-educated individuals who are highly capable of using interdisciplinary knowledge and skills. The quality of education at universities is at the forefront of the knowledge society. Today's world is about financial flows, the financial market, and its products. Every individual is faced with the need to manage financial decision-making in both working and personal living conditions. Financial education, therefore, becomes so an important pillar of financial literacy. [Universities] "They are not just institutions of higher education and research granting titles but

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they together educate responsible people with excellent knowledgeable to solve questions and problems globally and share their knowledge“ [7].

2. ROLE OF FINANCIAL LITERACY IN MODERN SOCIETY

In the European countries, the education and lifelong learning systems are gradually being upgraded to better respond to the current and future needs of the labor market. Students learn more to work with information technologies and effectively acquire, capture and exploit the knowledge that is becoming crucial in increasing labor productivity. Industry 4.0. has another disadvantage, which is still far from being spoken. „It is likely that part of the unemployed middle class might not afford pay loans and mortgages. The problem will require an analysis on the national level. The mentioned negative impacts cannot be removed, the success dealing of the drawbacks means its control. Actually, it is necessary to prepare specific systematic measures (taxes, duties, and generation of the income). According to the experts, we will feel the first effects and signs approximately in 2022-2025“ [3].

The issue of over-indebtedness of the population is a major problem for the economies. This is a particularly difficult problem, especially in those countries, where the low cost of work has longtime been viewed as a "competitive advantage". Another reason is the non-negligible probability that today's young people will have lower standard of living than their parents. It is mentioned [1] by the words: “For the first time since the Second World War, there is a real risk that today’s young adults — the most educated generation we have ever had — may end up less well-off than their parents“. This is only one of the reasons why financial literacy is strongly supported in the education system of the European countries policies.

From several international research [2], [4], [5], [6] it follows that financial literacy can be improved by providing high-quality financial education available to broad populations. The need to be financially literate is based on the life of the individual, without distinction of his/her education. These are requirements of the common life decisions such as mortgage, consumer loans, the need to secure oneself for the next stages of life by exploiting various saving plans and investment opportunities.

Financial literacy can hardly be included in one definition and there are different viewing points. For example, the study [8] is based on a different understanding of financial literacy in countries with high and low incomes. In high-income countries, for instance, the financial literacy is often viewed as a complement to consumer protection. One of the primary goals of financial education is, therefore, to equip individuals with the capability to navigate a complex array of financial products, including pensions and mortgages, and to make sound financial decisions. The people in low-income countries rely to a much greater extent on the microenterprise for their livelihood. Acquiring — managerial capital, or business skills and knowledge, is thus a more relevant component of financial capability than for the typical wage-earning worker in a developed country.

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The article presents the results of the research of the financial education effectiveness, and the skills acquired in the basic economic course. Beside the theoretical knowledge, the course provides also practical knowledge and skills that enable students to analyze financial flows, plan and change them in the light of changes in the external environment or their own needs.

3. METHODS AND DATA COLLECTION

The research was conducted in the form of a questionnaire survey at the beginning and at the end of the course. The questionnaire also included questions concerned with personal characteristics of the respondents, about current education, verification of competence in the branch, assessment of its own capabilities, progress on important financial decisions, etc. Moreover, in view of the study field, it is reasonable to assume that financial literacy should also be part of the professional abilities of the managers. The questions in our questionnaire could be divided into two parts. The first part collected certain personal characteristics in order to make some deeper and more sophisticated analysis of the performance levels. The second part of the questionnaire was designed to test the actual level of respondents' financial literacy. This part of the questionnaire consisted of multiple-choice questions, each having four options, only one of which was correct. Each question included the option for students to say that they did not know or did not want to answer.

The basic characteristics of the research sample are summarized in table 1. As we can see, the sample is relatively balanced in the gender composition of men and women students. We can observe some predominance of the management students which is natural due to the subject of the survey.

<i>Before completing the course</i>				<i>After completing the course</i>			
<i>Gender</i>	<i>Number</i>	<i>Study field</i>	<i>Number</i>	<i>Gender</i>	<i>Number</i>	<i>Study field</i>	<i>Number</i>
Men	75	Management	80	Men	89	Management	138
Women	69	Informatics	64	Women	112	Informatics	63

Table 1: The basic characteristics of the research sample. (Source: own processing).

In order to analyze the influence of the financial education on the results, we applied statistical tests. As the variances of the analyzed samples were different, we used the Welch t-test instead of the classical Student t-test. The testing criterion has, in this case, the form:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$$

where \bar{X}_1, s_1^2 and N_1 are the 1st sample mean, sample variance, and sample size, respectively, and \bar{X}_2, s_2^2 and N_2 are the 2nd sample mean, sample variance, and sample size, respectively. The associated number of degrees of freedom is then given by the formula

$$v \approx \frac{\left(\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}\right)^2}{\frac{s_1^4}{N_1^2 v_1} + \frac{s_2^4}{N_2^2 v_2}}$$

Here $v_1 = N_1 - 1$ and $v_2 = N_2 - 1$ are the degrees of freedom associated with the first and second sample variance estimates respectively. All necessary computations were carried out in the free open source statistical tool R.

4. RESULTS

Before we proceed to evaluate the knowledge section of the questionnaire, we analyze selected elements of self-reflective assessment of respondents. The percentages of respondents according to their self-assessment of financial literacy are summarized in table 2. Here we see a slight increase in self-critics of the participants. Moreover, after completing the course there have arisen respondents who have reduced their skills to zero, even though they did not exist before the course started. However, it is pleasing, that this group does not make even one percentage and, together with the group with very low financially literate, this share is lower than before the course. The largest increase was recorded in a group of respondents who are assessed themselves to be able to decide correctly in most situations.

<i>Self-assessment before the course</i>		<i>Self-assessment after the course</i>	
<i>Level</i>	<i>Share (in %)</i>	<i>Level</i>	<i>Share (in %)</i>
Fully literate	3.47	Fully literate	2.99
Mostly	26.39	Mostly	31.34
Average	33.33	Average	29.35
Feel some deficit	27.78	Feel some deficit	28.86
Very little	9.03	Very little	6.47
Not at all	0.00	Not at all	0.99

Table 2: Percentages of the respondents according to their self-assessment before and after passing the course. (Source: Own processing)

Another important aspect was the perception of the importance of being financially literate. The obtained values are presented in table 3, where are introduced as well absolute figures beside the percentages. This is because the percentages could seem to have declined overall in high importance levels, but absolute figures show that new individuals have only been added to the category of very important or important.

<i>Importance perception before the course</i>			<i>Importance perception after the course</i>		
<i>Level</i>	<i>Percentage</i>	<i>Count</i>	<i>Level</i>	<i>Percentage</i>	<i>Count</i>
Vital	13.19	19	Vital	10.95	22
Very important	52.78	76	Very important	52.73	106
Important	31.25	45	Important	34.33	69
Little importance	2.78	4	Little importance	1.99	4

Table 3: Percentages and absolute counts of the respondents according to their importance of being financially literate perception before and after passing the course. (Source: Own processing).

The main objective of the research was to verify the assumption of the positive impact of financial education on the resulting level of financial literacy. Comparison of the results of both statistical surveys is illustrated graphically in Figure 1. Here we can see graphs of the probability density and cumulative distribution functions of random quantity representing the success of respondents before and after the course. The probability density functions clearly show the change of the skewness in favor of higher performance. Comparing cumulative distribution functions then confirms that the distribution function has moved to the right. This shift represents the stochastic dominance of the first degree of average performance after the completing the course over the average performance before the start of the course. The numerical characteristics of both samples are summarized in table 4. Here we observe namely increase of all essential quantiles of the empirical distribution.

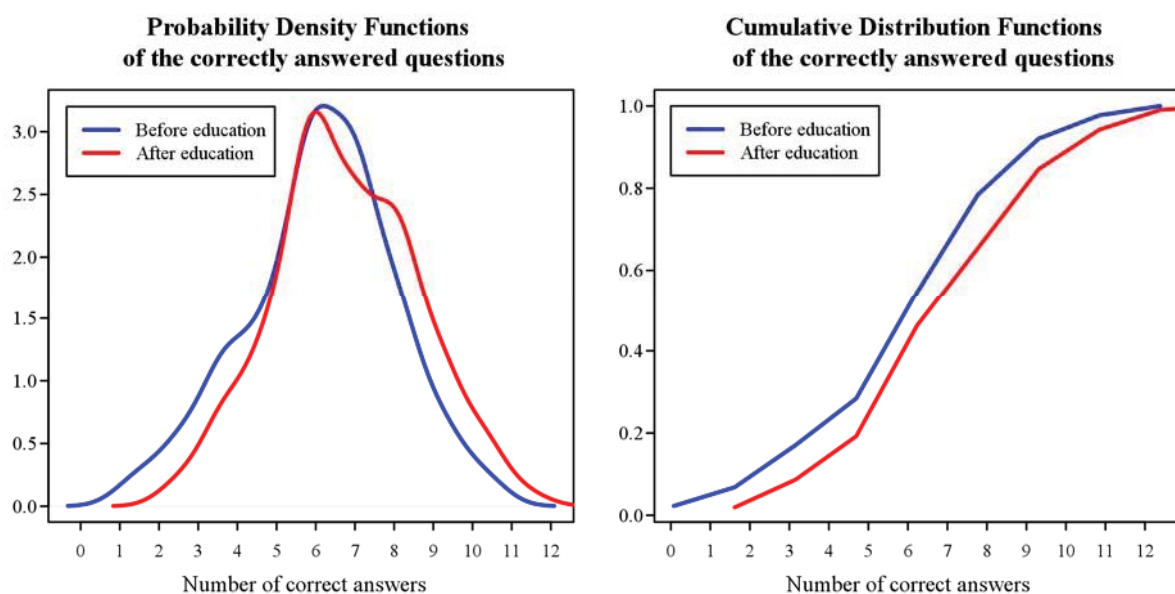


Figure. 1: The probability density functions (left) and cumulative distribution functions (right) of the average performance before and after completing the course. (Source: Own processing)

<i>Before completing the course</i>					
<i>Mean</i>	<i>Median</i>	<i>10 % quantile</i>	<i>25 % quantile</i>	<i>75 % quantile</i>	<i>90 % quantile</i>
0.4780	0.4615	0.3077	0.3846	0.5385	0.6154
<i>After completing the course</i>					
<i>Mean</i>	<i>Median</i>	<i>10 % quantile</i>	<i>25 % quantile</i>	<i>75 % quantile</i>	<i>90 % quantile</i>
0.5300	0.5385	0.3846	0.4615	0.6154	0.6923

Table. 4: Numerical characteristics of the performance before and after completing the course. (Source: Own processing)

<i>Mean performance</i>	<i>t-statistics value</i>	<i>p-value</i>
Before course	0.4780	-3. 7507
After course	0.5300	
		0.0002116

Table. 5: Results of the Welch two sample *t*-test for the mean performances before and after completing the course. (Source: Own processing)

The increase in average performance, visible in the first column of table 4, can also be confirmed by a statistical test. Because our goal is to confirm an increase in average performance, we perform a t-test with a one-sided alternative that average post-exchange performance is greater than before completing the course. The results of the Welch test are presented in table 5. From table 5 one can deduce, the null hypothesis, that the average performance remains unchanged after completing the course can be rejected at the confidence level exceeding 99 %. It confirms the statistically significant increase in the financial literacy level, immediately after completing the course.

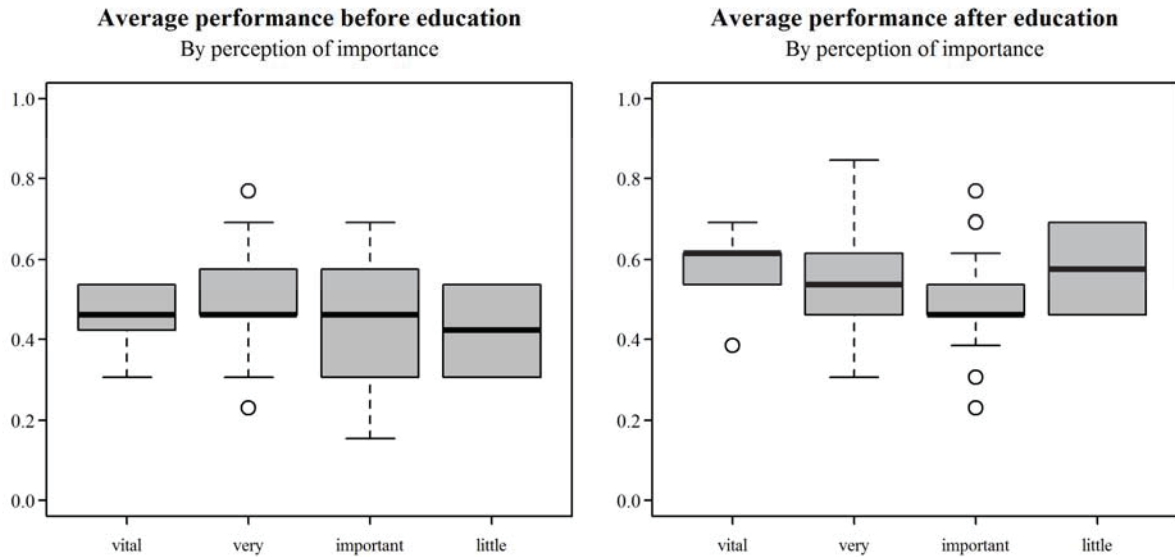


Figure. 2: The boxplots of the average performance before (left) and after (right) completing the course with respect to the importance perception. (Source: Own processing)

Because we have already verified some progress in the level of financial literacy after completing the course, let us look at these shifts deeper, in terms of personality characteristics and respondents' attitudes. First, we analyze the changes according to the perception of the importance of financial literacy. The characteristics of each group are graphically presented using the boxplots in Figure 2. Here we can observe a marked rise in the median in a group of respondents who consider financial literacy to be vital or very important. It is also a surprise that there is a positive shift in the group that evaluates financial literacy as little important. Certain stagnation we can observe in the group, which attributes to the financial literacy an average of importance. The exact values of the medians found for each category are summarized in Table 6.

<i>Importance perception</i>	<i>Median before the course</i>	<i>Median after the course</i>
Vital	46.15 %	61.54 %
Very important	46.15 %	53.85 %
Important	46.15 %	46.15 %
Little important	42.31 %	57.69 %

Table. 6: Median values of the performances before and after completing the course, due to the importance perception. (Source: Own processing)

The second aspect is the self-assessment of own financial literacy. These comparisons are presented graphically, with the help of boxplots in Figure 3. There is a clear drop in the level

of those respondents who have declared themselves as fully financially literate, which subsequently led to an underestimation of the need to educate themselves in this area as well. On the contrary, groups that demonstrated a degree of self-criticism in their self-assessment showed a positive shift, which is significant among respondents who were rated as mostly financially literate. The same significant shift we observe in the group that has acknowledged that they feel a certain deficit, what likely motivated them to an improvement. On the other hand, in the weakest group, there was a split and there has arisen the group, which critically evaluated as completely financially illiterate. The exact values of the medians found for each category are summarized in Table 7.

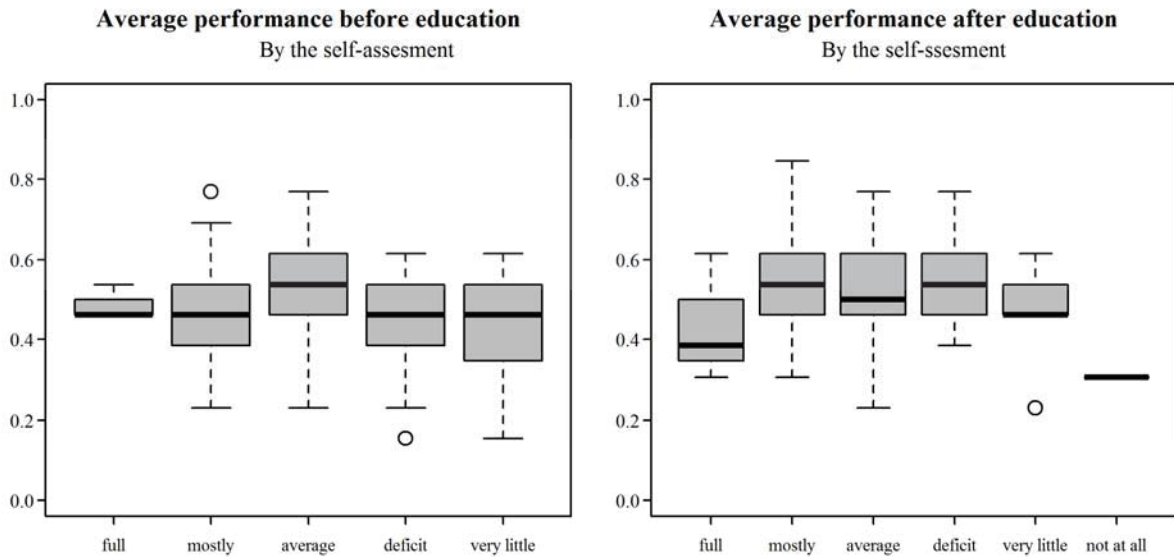


Figure 3: The boxplots of the average performance before (left) and after (right) completing the course with respect to the self-assessment. (Source: Own processing)

<i>Financial literacy self-assessment</i>	<i>Median before the course</i>	<i>Median after the course</i>
Full	46.15 %	38.46 %
Mostly decide correctly	46.15 %	53.85 %
Average	53.85 %	50.00 %
Feel some deficit	46.15 %	53.85 %
Very little	46.15 %	46.15 %
Not at all	Not reported	30.77 %

Table 7: Median values of the performances before and after completing the course, due to the financial literacy self-assessment. (Source: Own processing)

5. CONCLUSION

The aim of the research was to verify the hypothesis on the positive impact of financial education on the level of financial literacy. This assumption was confirmed by the statistical analysis of a research sample of university students of management and informatics study fields. We have also discovered that an important factor influencing progress in financial literacy is the importance that respondents attribute to financial literacy.

At the same time, we have confirmed the assumptions regarding self-assessment. Groups that in their self-esteem showed a certain degree of self-criticism have achieved a positive shift (it did not apply to a group of the weakest). On the contrary, those students who have declared themselves to be fully financial literate have experienced a drop in their level. The possible cause is the underestimation of the need to learn in this field. On the basis of the results obtained, it is possible to conclude that the change in attitudes of students is one of the key elements for improving the effectiveness of financial education.

REFERENCES

- [1] European Commission (2017). *Reflection Paper on the Social Dimension of Europe*. EC COM 206, Brussel, p.19.
- [2] Gale, W.G., Harris, B.H., Levine, R. (2012). *Raising Household Saving: Does Financial Education Work?* Social Security Bulletin, 72 (2), pp. 39-48.
- [3] Kozubíková, Z. (2016). *The 4th industrial revolution: a challenge for the education system*. In: International conference on Informatization of economic and management processes. Proceedings: Brno: B.I.B.S. Brno, pp. 217-222.
- [4] Lusardi, A., & Mitchell, O. (2014). *The Economic Importance of Financial Literacy: Theory and Evidence*. Journal of Economic Literature, 52 (1), pp. 1-40.
- [5] Mandell, L., Schmid-Klein, L. (2009). *The Impact of Financial Literacy Education on Subsequent Financial Behavior*. Journal of Financial Counseling and Planning, 20 (1), pp. 15-24.
- [6] Rybička, J., Kozubík, A. (2017). *Self-reflection of the university students in financial literacy*. In: Knowledge for Market Use 2017: people in economics - decisions, behavior and normative models: international scientific conference proceedings, Olomouc: Palacký University, pp. 682-693.
- [7] Tokarčíková, E, Kucharčíková, A., Ďurišová, M. (2015). *Education of students of the study program informatics in the field of corporate social responsibility*. Periodica Polytechnica Social and Management Sciences , 23 (2), pp. 106-112.
- [8] Xu, L., Zia B. (2012). *Financial Literacy around the World: An Overview of the Evidence with Practical Suggestions for the Way Forward*. The World Bank, Policy Research Working Paper 6107.