



Financial literacy of the students of technical sciences

Milena Stanisavljević¹

¹ Faculty of technical sciences Čačak, University of Kragujevac, Serbia

e-mail milena.stanisavljevic@ftn.kg.ac.rs

Abstract: *The terms and procedures of economics and finance may often seem unfamiliar for engineers, as they did not have much chance to learn more about these fields. Financial literacy could enable better understanding of their role in the organization and facilitate task accomplishment, as well as their professional development. The goals of this paper are to show the level of knowledge in finance, familiarity with financial products, level of financial planning and control, and the most often used ways for money saving. The paper emphasizes the need for improvement of this knowledge and skills. A few engineer competency models emphasized financial literacy as one of necessary skills for engineers in global, complex and dynamic world.*

Keywords: *finance, competence, engineer*

1. INTRODUCTION

Financial education as a need is recognized for several years now and it is being in the center of attention of the public and it requires much more attention of the public institutions and other relevant partners in society. The complexity of financial products and their greater access to wider audience suggest the necessity of financial literacy of users because of the very low level of understanding of basic financial concepts.

The diffusion and importance of financial services in modern economies and societies mean that individuals, who do not have access to them, are faced with great problems in meeting their everyday needs and fulfilling normal living. Financial literacy is now globally acknowledged as an essential complement to financial consumer protection, financial inclusion, financial regulation in support of economic and financial stability and development (OECD, 2014).

The financial education of youth is especially important because the youth, as future participants at financial market, will face even higher financial risks and even more complex financial products. The youth is excellent mediator and they will expand their habits and new culture among the rest of the population and they will affect to their surroundings – parents and family. The decisions they will make in the future will influence not only themselves and their close surroundings, but as well the wider social community. Because of growing importance of financial literacy, in general, and especially among youth, in this paper presents the results of a research conducted among students so significant conclusion about financial education could be given. The presented research was

conducted with students of technical sciences, who usually did not have any formal course about finance, so recommendation about involvement of financial education could be given.

2. LITERATURE REVIEW

The education of the modern engineer and technical experts for the changing and demanding world of work in the 21st century must consist of a multi-disciplined integrated approach. Problem solving, computer literacy, technical artfulness, basic economic knowledge, management skills, communication skills must become an integral part of engineering education (McCarthy & Kennedy, 2013). The Engineer Competency model identifies the knowledge, skills and abilities needed for workers to perform successfully in the field of engineering (ETA, 2015). The model is presented as a pyramid with five tiers: personal effectiveness competencies, academic competencies, workplace competencies, industry-wide technical competencies, industry-sector functional areas, respectively. At the fourth tier, engineering economics are embedded as necessary area of competence for engineers. Engineering economics involve knowledge about economic analysis, time value of money, costs, budgeting, accounting, taxes etc. All of these topics are relevant for application to engineering projects, so it is necessary for engineers to have basic knowledge about these terms and concepts. The knowledge about these concepts could be measured through the level of financial literacy, and the results should be used for defining the possibilities of improvement of these skills.

2.1. Financial literacy

The International Network on Financial Education (INFE) of the OECD defines financial literacy as *a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing* (OECD, 2014:32). Financial literacy is the ability to process economic information and make informed decision about financial planning, wealth accumulation, debt and pensions (Lusardi & Mitchell, 2014). Financial literacy reflects an individual's ability to understand financial concepts, financial products and financial services and provide an ability to control personal financial resources (Bahovec, Barbic & Palic, 2015). It should increase an individual's ability to manage and plan personal finances. It is consisted of financial decisions about money, inflation, savings, interest rates, investments, debt, credit and currency risks, all kinds of financial contracts and other financial instruments (Vehovec, Rajh & Škrebliin Kirbiš, 2015).

People who have good financial literacy skills do better planning and saving for retirement and efficiently diversify risks. The benefits of high financial literacy include less fees and charges on credit cards, having a higher net worth, saving earlier for retirement and having less debt overall (Bartley, 2011). Financial ignorance carries significant costs. Customers who do not understand the concept of interest compounding spend more on transaction fees, run up bigger debts, incur higher interest rate on loans, borrow more and save less money (Klapper, Lusardi & van Oudheusden, 2015, de Bassa Scheresberg, 2013).

Recognizing the importance of financial literacy, a growing number of countries have developed and implemented national strategies for financial education in order to improve the financial literacy (OECD, 2014). Since 2014 more than 50 countries designed or implemented national strategies for financial education and many other countries are considering developing one. The strategy of National bank of Serbia for financial education in the period 2016-2020 was created with a goal to give guidance for improvement of

financial literacy and knowledge of citizens in the field of financial education and financial inclusion (NBS, 2016). The relevance of this topic is confirmed with the fact that the Ministry of Education, Science and Technological Development of Republic of Serbia included financial literacy among the goals and outcomes of elementary education, as essential for further education and active involvement in society (Zakon o osnovnom obrazovanju i vaspitanju, 2013). In the first OECD recommendation it is especially stressed out that financial education should start from the earlier phase in life and that it is the long, continuous process.

Financial education is necessary for all participants at financial market. Responsible for improvement of financial literacy are educational system, from elementary schools to faculties, as well as chambers or associations interested in financial education and private companies. The growing importance on this matter represents the fact that this year will be held the 10th Annual Financial Literacy Summit in Chicago, with a main goal to discuss which financial literacy programs from around the world have made an impact and where innovation and technology is leading the industry (Financial Literacy Summit, 2016).

The development of financial literacy skills among young people is increasingly perceived by policy makers as essential. Young people are an important target group for financial education designed to strengthen financial inclusion. The financial products, services and systems became highly sophisticated and the financial risks are growing. The today's youth are likely to face more challenging financial decision than those of past generation.

2.2. Resent research results on financial literacy

In 2012 the OECD's Program for International Student Assessment (PISA) was expanded with a module on financial literacy (beside mathematics, science and reading). In doing so, PISA recognized financial literacy as a skill essential for participation in today's economy. Serbian students will be included for the first time in the research in 2018.

By the research done by Standard and Poor's in 2014, worldwide there are 33% of financially literate adults. There are only 38% financially literate adults in Serbia. The research results in former Yugoslav countries showed that highest results were in Montenegro (48%), than Slovenia and Croatia (44%), Bosnia & Herzegovina (27%) and Macedonia (21%) (Klapper, Lusardi & van Oudheusden, 2015). The most of respondents do not understand the effect of the cumulative interest rate, inflation consequences, are not capable to calculate the loan costs (Nenadović & Golicin, 2015). Several studies showed that only about 30% of young people have basic knowledge about finance (Lusardi & Mitchell, 2014, de Bassa Scheresberg, 2013).

3. METHODOLOGY

The research subject of this paper was the financial literacy among students of technical sciences, as they will soon join the work force and become significant part of economic and financial system.

The goals of this research were:

- to show the level of financial literacy of the students of technical sciences
- to compare these results with the results of similar researches
- to show the familiarity with financial products and its use among students
- to show the level of financial control and financial planning

- to show the most often used ways for money saving.

The research was conducted with third and fourth year students at the Faculty of technical sciences in Čačak during April of 2016. Data were collected using questionnaires. The sample was consisted of 106 students. Students were asked to fill out the questionnaires which were based on the OECD's questionnaire for testing financial literacy (OECD, 2015), but adjusted to students (by the number and the content of questions). The questions are grouped in a few sections. First section included general information about sex, age, study program and year of studies. The next section included questions about financial products and the ways of their selection. The third and fourth sections were dedicated to financial control and financial planning. And the last part consisted from questions which were used to test the level of understanding and knowledge about interest rates, inflation and risk diversification. Before the first question about financial products, students were asked to evaluate their financial knowledge, and the same question was asked in the end of the questionnaire, so the results could be compared before taking the questionnaire and after answering to all of the questions.

Quantitative (descriptive analysis) and comparative analysis had been done. SPSS software was used for data analysis and presentation of results.

4. RESEARCH RESULTS AND DISCUSSION

There were 106 students who participated in this research, among them there were 44 students of third year and 66 students of fourth year of studies, and regarding sex structure, 31 female and 75 male. The financial products which are the most recognizable are the current account (100% of students knew what it is), a credit card (98.1%) and an insurance (98.1%). The least recognizable financial product are microfinance loan (44.3%) and unsecured banking loan (59.4%). Similar results were found in the research done in 2012, with difference on the most recognizable products, where saving account was the second (Ipsos Public Affairs, 2012). Students use the most a current account (79.2%), insurance (58.5%) and credit cards (42.5%). About 8.5% of students do not use any of financial products. Important is to emphasize that 51.9% students decided to use these product after considering several options of different companies, while 22.6% students did not consider any other option. Research in Croatia and Serbia showed this same order of possible behaviors when people decide to use some of financial products (Vehovec, Rajh i Škreblin Kirbiš, 2015, Ipsos Public Affairs, 2012). The most valuable information for decision making were those available on the internet (information about products and best buy information (70.3%)) and advices from family and friends working in financial institutions (69.3%). These results are almost expected, because young people spend a lot of time on the internet and usually do not have much experience with financial products and their first option is to ask someone they knew, friend or family member.

Students showed relatively high results on financial control, overall result was 67.4 (from maximum 100). They showed that they pay their bills on time, think before buying, personally take care about own finances and set long-term financial goals. These results are match with those from 2012 when overall score was 70 (Ipsos Public Affairs, 2012).

Students showed low results on financial planning, overall result was 31.38. Research done in 2012 showed that older people are more dedicated to financial planning then young people (Ipsos Public Affairs, 2012), so these results confirm that finding. Item "money is

there to be spent” is supported by 35.8% of students, but there is high percentage (49.1%) of them who would be “prepared to risk some of own money when saving or making an investment”, which show that results about financial planning are divided.

Students most often save money at home (79.2%) or at their current account (50%). Saving account is not so commonly used; 18.9% of students pay money into a saving account. Only 5.66% students said that they do not save any money.

Students had a chance to evaluate their knowledge about finance before filling the questionnaire and after, but the average grade was the same, 3.01, which means that they did good self-assessment. Very often respondents, given the question to assess their own knowledge about finance, overestimate how much they know (Lusardi & Mitchell, 2014).

The average score on financial knowledge was 62.89 (from 100). The overall score achieved by respondents included in the research conducted in 2012 was 62 (Ipsos Public Affairs, 2012). This is a relatively good result. Dividing money and interest calculation are familiar to the most of students. The lowest results students achieved for calculating compound interest rate and risk diversification, where achieved scores were 37.7 and 52.8 respectively. The overall score achieved for questions about inflation were 65.35, for risk diversification 62.725 and for questions about interest were 60.6. The highest results were found about the questions about inflation, which could be explained by our experience with this phenomenon, although students included in this research were often very young or not even born when Serbia experienced extremely high inflation rate. It could be assumed that family members could communicate much about those times and experiences to their younger generations. Risk diversification is not familiar to students, and they do not understand the principle by which if the investments are diversified, the risks are lower. These results could be explained with low participation of students in investment activities and lack of experience with savings in banks.

5. CONCLUSION

From the perspective of financial industry, improvement in financial literacy is exceptionally relevant because the most important clients are financially literate individuals and increased demand of financial products results in business improvement. From the perspective of individuals, financial literacy develops self-protection, reduces the risk of negative outcomes, increases the consciousness and knowledge about planning own wellbeing. Financial education leads to greater awareness and to increased knowledge, stronger customer protection and greater confidence towards the market of financial services. Introducing financial education in the programs of compulsory education could enable improvement of the level of financial literacy. Research results showed that the most of financial products are not familiar to young people (students), that they are not dedicated to financial planning while financial control is more important. Most students have some kind of savings. Their level of financial knowledge is at the average level, but it should be improved so they could better understand which opportunities exist on financial market, and which the best way of using those opportunities is.

Limitations of the research refer to the used method of the research, the questionnaire was quite long, so students often do not have enough patience to answer to all the questions with high level of attention. Another limitation refers to the possibilities of comparison. The results of this research were compared to the results of the research conducted on the bigger sample with respondents of different age and education level.

REFERENCES

- [1] Bartley, J. (2011). *What drives financial literacy among the young?*. Undergraduate Economic Review, Article 23, 7(1):1-15
- [2] Bahovec, V., Barbić, D., Palić, I. (2015). *Testing of effects of financial literacy on debt behavior of financial consumers using multivariate analysis methods*. Croatian Operational Research Review, 6:361-371.
- [3] de Bassa Scheresberg, C. (2013). *Financial literacy and financial behavior among young adults: evidence and implications*. Numeracy – Advancing Education in Quantitative Literacy, Article No. 5, 6(2):1-21.
- [4] Employment and Training Administration USA. (2015). *Engineering competency model – May 2015*. Available at http://www.aaes.org/sites/default/files/Engineering%20Competency%20Model_Final_May2015.pdf
- [5] Financial Literacy Summit. (2016). *Visa celebrates 10th annual financial literacy summit*. Available at <http://www.finlitsummit.org/>
- [6] Ipsos Public Affairs. (2012). *Merenje finansijske pismenosti - Sažet prikaz rezultata istraživanja*. Available at www.nbs.rs/internet/latinica/63/ispitivanje_finansijske_pismenosti_20130715.pdf
- [7] Klapper, L., Lusardi, A., van Oudheusden, P. (2015). *Financial literacy around the world: insight from the Standard & Poor's ratings services global financial literacy survey*, McGraw Hill Financial Inc, New York, USA. Available at http://gflec.org/wp-content/uploads/2015/11/Finlit_paper_16_F2_singles.pdf
- [8] Lusardi, A., Mitchell, O. (2014). *The economic importance of financial literacy: theory and evidence*. Journal of Economic Literature, 52(1):5–44.
- [9] McGarthy, D.F., Kennedy, D.M. (2013). *Professional skills portfolio for progressive engineering education*. 41st SEFI Conference: Engineering Education Fast Forward 1973 > 2013 >, Available at <http://www.sefi.be/conference-2013/images/108.pdf>
- [10] Narodna banka Srbije. (2016). *Strategija Narodne banke Srbije na polju finansijskog obrazovanja za period 2016-2020*. Available at http://www.nbs.rs/export/sites/default/internet/latinica/63/finansijsko_obrazovanje_strategija_2016_2020.pdf
- [11] Nenadović, A., Golicin, P., (2015). *Finansijska inkluzija u Srbiji – Analiza stanja, prepreka, koristi i šansi*. Tim za socijalno uključivanje i smanjenje siromaštva, Vlada Srbije. Available at <http://socijalnouklucivanje.gov.rs/wp-content/uploads/2015/04/Finansijska-inkluzija-u-Srbiji.pdf>
- [12] OECD. (2014). *PISA 2012 results: students and money: financial literacy skills for the 21st century (volume VI)*, PISA, OECD Publishing. Available at <http://www.oecd.org/pisa/keyfindings/PISA-2012-results-volume-vi.pdf>
- [13] OECD. (2015). *OECD/INFE Toolkit for measuring financial literacy and financial inclusion*. OECD Paris, France. Available at https://www.oecd.org/daf/fin/financial-education/2015_OECD_INFE_Toolkit_Measuring_Financial_Literacy.pdf
- [14] Vehovec, M., Rajh, E., Škreblin Kirbiš, I. (2015) *Financijska pismenost građana u Hrvatskoj*. Privredna kretanja i ekonomska politika, 1(136):54-75
- [15] Zakon o osnovnom obrazovanju i vaspitanju (2013). Sluzbeni glasnik Republike Srbije, br. 55/2013. Available at http://www.paragraf.rs/propisi/zakon_o_osnovnom_obrazovanju_i_vaspitanju.html