Financial literacy in Slovakia – comparative study

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Abstract: With the term financial literacy resp. financial illiteracy, whose low financial literacy of Slovaks we can meet more and more often. The issue of financial literacy also plays an important role in connection with household indebtedness. If households are unable to assess their financial situation or estimate whether it is appropriate for them to seek foreign resources, they can easily become over-indebted without being able to repay debts. The aim of the article is to evaluate the links between the lower level of financial literacy and the growing indebtedness of Slovak households by comparing the results of the personal questionnaire survey and the results of the HFCS household financial behaviour survey. The results suggest the existence of a positive correlation between financial literacy and the level of completed education. Individuals without any form of debt are more financially literate. If individuals are unable to spend their money efficiently and spend it recklessly, it can lead to their debt.

Keywords: Financial literacy, financial illiteracy, survey, indebtedness
JEL Classification: D119, G51, G53

1 Introduction

Whether an individual is a financially literate will be reflected in everyday life situations requiring financial decision-making. However, not all of us can be described as financially literate, which is mainly due to ignorance of finance, the tendency to save less and spend more, which can eventually lead to indebtedness. Financially literate people can independently manage their personal finances and plan their effective use in the future. Financial literacy is one of the indicators that determines how individuals can make decisions in the management of their own resources and whether they are able to predict the phenomena and possible consequences of their decisions. "The more we understand the issue, the more sensible financial decisions we should make." (Prokopec, M., 2019). Undoubtedly, financial planning also belongs to this issue. In publication, Kovalčíková, Z., Smoroň, L., Strenk, R., (2011) defined financial planning as "a combination of all income and expenditure so as to optimally meet the needs of the individual / family in the present and in the future." In terms of time, the main indicator is age. Based on this, it can be argued that with increasing age, the needs of individuals change, which affects financial planning. In terms of priorities, financial planning must consider the goal, and thus the needs to be met, whether it is the need to provide income, housing or various goals or dreams.

Indebtedness, as one of the possible consequences of lower financial literacy, is not an unusual phenomenon in society. Banks or non-banking institutions come to the financial market with a relatively wide range of financial products, while declaring advantageous conditions for their provision. However, these may not be suitable for everyone, and it is therefore essential that potential clients be able to identify their financial situation and consider the appropriateness of such conditions. These situations are also one of those where a certain level of financial literacy is required, as its absence could lead to an unfavourable development of the individual's financial situation, such as over-indebtedness.

A study under the auspices of the OECD, known as PISA (Program for International Student Assessment), also looked at research on student literacy. The testing has so far taken place in three cycles (2012, 2015, 2018), with Slovakia voluntarily participating in all three. The study focused on the students' ability to apply their knowledge in practice. Issues in finance concerned money and financial transactions, financial planning and manipulation, the financial environment, and possible risks (NÚCEM, 2020). The result of financial literacy of Slovak pupils in 2018, climbed to the level of 481 points, based on which it was concluded that they have a low level of financial literacy and is directly below average in comparison with other OECD countries (OECD INFE). The average value of the participating countries reached the level of 505 points. During the three phases, we can perceive a fluctuating tendency of the results. Between the phases carried out in 2012 and 2015, not only the level of literacy of Slovak pupils decreased by 25 points, but also the overall average of the participating countries decreased by 11 points. On the contrary, the results for 2018 showed an increase in the average performance of our students by 36 points and at the same time the average performance of all participating

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countries also increased. However, it should be noted that Slovakia is still below the average level of OECD countries. (NÚCEM, 2020). The National bank of Slovakia also assessed the level of financial literacy of households through 4 questions from the financial area, contained in a survey called HFCS (Household's finance and consumption survey). This research was carried out in Slovakia in three waves, namely in 2010, 2014 and 2017. As we have already announced, the results were not satisfactory. Based on the latest survey, it was concluded that the financial literacy of Slovak households is declining. While in 2014 10.6% of households were able to answer all questions correctly, in the last survey only 9.6% knew. The striking fact is that the questions were answered by those who have the best overview of finances within the household. According to NBS analysts, it is likely that other members of the household have even lower financial knowledge (TASR, 2019).

2 Literature review

Around the world, there are many papers in the literature that examine the financial literacy of young people, as well as the impact of financial literacy on the financial markets. Interestingly, we can mention the work of Aren and Aydemir (2014), entitled "A Literature Review on Financial Literacy." According to the authors, objective measures seem to work best in financial literacy among individuals and there is the need for a common and well-structured definition of financial literacy. In research papers in the field of financial literacy there exist some similarities and contrariness in terms of definitive financial literacy issues, probable endogeneity, determinants established by researchers, and other probable estimators. Ansong and Gyensare (2012) explored the determinant of university working-students' financial literacy. The study randomly collected data from 250 undergraduate and postgraduate students of a public university in Ghana and confirmed the relationship between financial literacy and certain demographic characteristics. Age and work experiences were positively related to financial literacy. Existing studies also present a lot of evidence on the impact of many sociodemographic factors on both financial literacy and financial inclusion. Berggren and Gonzalez (2010) found that gender is the most important factor. The studies of Atkinson (2007), Lusardi, Mitchell, and Curto (2009), and Atkinson and Messy (2012) confirmed that the variable "age" is the most important factor for financial literacy. Chen and Volpe (1998) examined 924 college students with regard to their personal financial literacy and the relationship between their literacy level and student characteristics. They conclude that college students are not knowledgeable about personal finance. Lusardi, Mitchell, and Curto (2009), examined financial literacy among the young using data from the 1997 National Longitudinal Survey of Youth. The financial literacy is strongly related to sociodemographic characteristics and family financial sophistication. Atkinson (2007), and Atkinson and Messy (2012), presented the findings from an OECD/INFE pilot study undertaken in fourteen countries. The results highlight a lack of financial knowledge amongst a sizeable proportion of the population in each of the countries. This study enables countries to identify needs and gaps in the financial education provided and develop national policies or strategies. Bayer, Bernheim, and Scholz (1996) examined the effects of education on financial decision-making skills by identifying an interesting source of variation in pertinent training during the 1990s. Results showed that both participation in and contributions to voluntary savings plans are significantly higher when employers offer retirement seminars. The effect is typically much stronger among employees from lower pay grades, than among those from higher pay grades. Cole and Shastry (2012) found that people who achieved higher levels of education also have higher credit scores and are significantly less likely to be delinquent, declare bankruptcy, or experience a foreclosure. Although theoretically, a high level of financial literacy is possible even amongst those who have not completed formal education, financial literacy usually increases with the years of schooling. Atkinson and Messy (2012) found that the main objective of financial education is to increase financial literacy levels by teaching new knowledge, skills, and attitudes that can bring about changes in money management and financial decision-making. Financial education may be also seen as a tool to raise the degree of financial inclusion, enabling people to take greater advantage of the financial services available to them. To be able to make optimal use of financial products and services, individual financial consumers should have the relevant knowledge, optimal behaviour, and right attitude toward financial markets, which are all elements of financial literacy, achieved in the process of financial education. Cole and Shastry (2008, 2012) confirmed that a higher level of financial literacy and more advanced participation in financial markets can also be observed among people with an educational background in economics or finance. Mandell and Klein (2007, 2009) found that there is a differential impact on seventy-nine high school students of a personal financial management course completed one to four years earlier. Students who took the course did not evaluate themselves to be more savings-oriented and did not appear to have better financial behaviour than those who had not taken the course. McDaniel, Martin, and Maines (2002) evaluated financial reporting quality as part of their corporate oversight responsibilities. Financial expertise evaluations are more strongly associated with their assessments of characteristics underlying report quality. Vass (2012) argued that monetary and financial issues could be deemed a way of representing and reflecting both the form and the future orientation of individuals, instead of considering them only being results of whether people are financially knowledgeable. Rob (2011) examined the relationship between financial knowledge and credit card behaviour of college students. They used a sample of 1,354 students from university, and results suggest that financial knowledge is a significant factor in the credit card decisions of college students. Probably the best-known study on financial literacy and over-indebtedness by Lusardi and Tufano (2015). They found individuals who have less knowledge in the field financial literacy, they label their debts as excessive. In addition, they found that borrowers with higher financial literacy and experience with housing loans, are characterized by much smaller problems with debt repayment. Huston (2012) examined the impact of financial literacy with a focus on cost individual loans. His analyses are realised, through loans to housing and credit cards among individuals in the United States. In this study, he points out that the result of a study that financially literate people are twice as likely to they will have lower costs for financing credit cards and mortgages. Brown et al. (2016) 12 examined the link between financial literacy and debt literacy behaviour in young Americans. They found knowledge of mathematics and financial education improve solvency and discipline. The costs associated with financing needs depend to a large extent on the choice of type credit product, such as housing loans, have significantly lower costs such as credit cards or consumer non-purpose loans. In this regard, Gathergood (2011), confirmed that low financial literacy is associated with a higher risk of possible problem with the repayment of a consumer loan.

3 Research methodology and data

The aim of the article is to evaluate the links between the lower level of financial literacy and the growing indebtedness of Slovak households by comparing the results of the personal questionnaire survey and the results of the HFCS - household financial behaviour survey.

Using the selected methodology, we collected data through an anonymous questionnaire survey, which was the basis of our further analysis. We divided the questions into two basic areas. In the first 8 questions, we found out the basic data about the respondents in connection with what we examined the state of their indebtedness and the way in which they handle their finances. In the last 5 questions, we paid attention to the financial literacy of the respondents, and thus examined their ability to answer questions related to common phenomena in the financial market. These questions were already part of the HFCS survey conducted under the auspices of the NBS. We collected data from 165 respondents. Based on the obtained data, we analysed the current state of indebtedness of households in Slovakia and at the same time we examined their ability to answer basic questions in the field of finance, which would help us to deduce the level of their financial literacy. We used Pearson´s chi square test to determine the existence of a link between gender and indebtedness. In a conclusion, it was necessary to determine null and alternative hypothesis - research assumptions. Subsequently, we determined the range of actual data obtained from the questionnaire. Based on them, we calculated the data that we would expect if there were no differences between the variables. Using Excel, we calculated the value of the chi square from the data range. Based on whether its value was higher or lower than the so-called critical point, we rejected or accepted the null hypothesis. Using a comparison, we compared the results regarding financial literacy with data obtained through a survey by the National Bank of Slovakia (HFCS 2014, 2017) and we can assess whether individuals become financially more literate over the years or not (Gertler, P., Jurašeková-Kuscerová, J., Strachotová, A., 2019).

4 Results

In connection with the aim of the paper, we tried to find out whether there is a certain relationship between gender and indebtedness. For these purposes, we used Pearson's chi-square, resp. independence test. First, it is necessary to establish a null and then an alternative hypothesis:

- H0 - There is no significant link between gender and indebtedness.
- H1 - There is a characteristic link between gender and indebtedness.

Subsequently, it was necessary to summarize all the obtained real data on the indebtedness of men and women, which we implied in the table (see below). We presented these data individually for both sexes. Of the total number of women, 34 are in debt and of all men live in debt 21. Thus, there are a total of 55 indebted respondents.

Table 1 Real data of indebtedness

Real data	women	men	Together	Proportion to the total number
indebted	34	21	55	0,33333
not indebted	77	33	110	0,66667
Together	111	51	165	

Source: own calculations based on results from survey.

After processing the real data, it was necessary to find out what the expected values would be. In this case, we would assume that there is no difference between the sexes. This means that, based on the data in the table, we would expect 33% of women and 33% of men to be in debt and, conversely, 67% of women as well as men to be in debt. According to the stated percentage, we would therefore expect 37 women and 18 men in debt and 74 women and 36 men in debt.

Table 2 Real data of indebtedness

Expected data	**women**	**men**
indebted	37	18
not indebted	74	36

Source: own calculations based on results from survey.

After finding out the actual and expected data, we can proceed to the calculation of the chi-square. We performed the whole procedure using Excel, which allows us to determine the value of the chi-square, which in our case is 0.29, using the "chi-test" function. What is important is the fact whether the value of 0.05 was exceeded, which we call the so-called "Critical point". In general, if the value is higher than the critical point, we do not have sufficient evidence to reject our null hypothesis. Although we perceive some differences between women's and men's responses, there are not enough of them to be able to speak clearly about the interrelationship between the two variables. We can therefore argue that there is no significant link between gender and indebtedness.

Finally, we compared the results regarding financial literacy with data obtained through a survey by the National Bank of Slovakia (HFCS) and we can assess whether individuals become financially more literate over the years or not. Despite the difference in the number of respondents to our questionnaire and the HFCS survey (1089 respondents), which was conducted on a significantly larger sample of the population, we compared the percentage expressions of the results of both surveys.

Table 3 Compared results

Questions	Questionnaire	HFCS survey
In your opinion, which of the following types of mortgages will allow you to determine the amount and number of repayments needed to repay the loan from the beginning?		
Mortgage with a variable interest rate	10,3%	12%
Mortgage with a fixed interest rate	68,5%	49,2%
Do not know	21,2%	38,8%
Imagine that you leave € 1,000 in a current account that has 1% interest and this bank does not charge any fees, also imagine that prices have increased by 2%. Do you think that if you withdraw your money in a year, you will be able to buy the same amount of goods as if you had spent € 1,000 today?		
Yes	3%	3,2%
No, I can buy less	78,8%	67,4%
No, I can buy more	3,6%	5,2%
Do not know	14,5%	24,3%
In your opinion, which of these investment strategies carries a higher risk of losing money?		
Invest all savings in securities issued by one company	69,7%	43,8%
Invest all your savings in securities issued by a wide range of independent companies	20,6%	16,8%
Do not know	9,7%	39,4%
The company can obtain financing either by issuing shares or bonds. Which financial instrument, in your opinion, carries a higher risk of losing money?		
Shares	49,1%	18,0%
Bonds	15,8%	6,2%
It's just as risky	14,5%	26,4%
I don't know the difference between bonds and shares	12,1%	18,4%
Do not know	8,5%	31,0%
What do you mean by "investment risk"?		
Someone will betray my money	0%	18,6%
Due to developments in world markets, I will lose all my investments	15,8%	16,5%
The value of my investment will fall below the amount invested	62,4%	30,1%
I will lose some of my income during the investment	19,4%	17,4%
Do not know	2,4%	17,4%

Source: own calculations based on results from questionnaire and HFCS survey.

In terms of overall success in terms of financial literacy questions, 33 respondents were able to answer all of them correctly, representing 20%. In terms of gender, 22% of all men and 19% of women responded successfully. In the 2014 HFCS survey, only 4.5% of all respondents answered all five questions correctly. As only the first four questions were included in the survey for 2017, it is necessary to compare the success in this range of questions as well. In the mentioned survey, it was 9.6% of respondents who answered all four correctly. Therefore, even in the case of the results of our questionnaire, we will notice certain changes in success. 47 respondents were able to answer these questions, and thus 8% more than was the case with the scope of the five questions.

If we looked at the results from the opposite point of view, (from the point of view of incorrect answers) within the scale of all five questions, only 5 of our respondents answered, which represents 3%. According to the results of the second wave of HFCS in 2014, this is a relatively higher percentage of incorrect answers, namely 12.7%. Between the first four questions in the field of financial literacy, which were part of the third wave of HFCS, all four 18.5% answered incorrectly. After the deliberate exclusion of the last question in our questionnaire, the number of incorrect answers doubled, and thus 6% of respondents did not mark a single correct answer. If we proceeded to the analysis of the answers in terms of whether more indebted respondents than indebted were able to answer correctly, within the range of five questions, most respondents without debt answered correctly. These are specifically 25 respondents, and thus the remaining 8 are in debt. Of the 47 respondents who answered questions 9-12 correctly, 11 are indebted and 36 are indebted. Of the total number of respondents living on debt, this represents 20% and 33% of the non-indebted respondents. Based on these results, we could assume that respondents who have been successful in all issues while not having any debts are more than those in debt.

However, the HFCS survey 2017 has shown the opposite (Jurašeková-Kucserová, J., Strachotová, A., 2019). According to him, there are a percentage more of those respondents who have a housing loan or other consumer credit or loan and who at the same time answered all the questions correctly than those who are not so indebted. Therefore, if we consider the results of both surveys, we cannot clearly assess how financial literacy affects debt. The differences between the conclusions of the two surveys can be justified on the one hand by the time lag of their implementation, but at the same time by the size and difference of the research sample. It can be assumed that since our questionnaire survey was conducted on a significantly smaller sample than in the case of HFCS, the differences between the results will be significantly larger than the differences between the results of the individual waves of the mentioned national survey.

From the point of view of the highest completed education, 11 respondents with a secondary education and 22 with a university education answered all the questions correctly. If we asked only the first four questions, as was the case in the third wave of HFCS, 17 respondents with completed secondary education answered correctly and all of them were 30. Following the findings, which assumes the level of education as one of the incentives for lower financial literacy, we could argue that to some extent this statement is true. Our questionnaire showed that respondents with a university degree have a higher level of knowledge about functioning in the financial sector than respondents with the highest secondary education. This assumption was also demonstrated in the HFCS survey, which also showed some correlation between the level of education and the correct answers. It has been shown that the higher the education of the respondents, the more correct the answers.

5 Conclusions

Based on the results we obtained through the questionnaire, we can conclude that most respondents can effectively manage their finances. As can be seen from the above graphs, most of them make savings and consider the creation of a reserve in case of unexpected events having an impact on the budget. At the same time, we found that the number of reserves of most respondents reaches the value of at least six-monthly incomes, which is generally considered to be optimal. We can also consider these steps as a procedure of a financially literate individual who is able to think strategically in the future.

The results also point to a relatively low level of indebtedness of respondents, as exactly one third of them are indebted. However, we could justify this by the large representation of the age group 18 - 25, as the highest level of indebtedness was shown in respondents over 25 years. Of these respondents, 47% are in debt. At the same time, it was confirmed that the most common form of debt is a mortgage loan, as we stated in the theoretical part of the work.

Regarding the financial literacy of the respondents, in terms of individual questions, the correct answers were most often marked. However, if we consider the correct answers cumulatively, only one fifth of all respondents were successful. However, compared to the results of the HFCS survey for 2014 and 2017, our respondents are more successful in percentage terms.

As was the case with the HFCS survey, our questionnaire showed a positive relationship between financial literacy and the level of completed education. The highest success was demonstrated by respondents with a university degree.

According to the conclusions of our questionnaire, we could also prove the relationship between indebtedness and the level of financial literacy. The data obtained show that individuals without any form of debt proved to be more financially literate. However, the opposite was the case with the HFCS survey, where indebted respondents were more successful in their correct answers. We justified these differences by the size of the research samples of both surveys and at the same time by the time lag between them.

However, the questions used in the questionnaire are just one of several ways in which financial literacy can be ascertained. How an individual is financially literate results from his daily actions. Whether it's the way money is spent, financial decisions made, consumption and savings, or financial planning, these are all aspects of the ability to manage money efficiently. If individuals are unable to spend their money efficiently and spend it recklessly, it can lead to their indebtedness.Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam dui sem, fermentum vitae, sagittis id, malesuada in, quam. Aliquam erat volutpat. Aenean vel massa quis mauris vehicula lacinia. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. Mauris dictum facilisis augue. Nulla accumsan, elit sit amet varius semper, nulla mauris mollis quam, tempor suscipit diam nulla vel leo. Nullam sapien sem, ornare ac, nonummy non, lobortis a enim. Nunc dapibus tortor vel mi dapibus sollicitudin. Aenean vel massa quis mauris vehicula lacinia. Sed ac dolor sit amet purus malesuada congue. Proin pede metus, vulputate nec, fermentum fringilla, vehicula vitae, justo. Curabitur sagittis hendrerit ante.

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