





# Level of Knowledge in Personal Finance by University Freshmen Management Students

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## Keywords:

Financial literacy;  
Financial education;  
Questionnaire survey



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**Abstract:** Financial literacy becomes one of the key competencies for life in modern society, and its importance grew significantly in the last decade. The study aims to determine how well newly coming university management students understand basic consumer financial concepts. The research is based on primary data by questionnaires and a sample of 342 students from the target population within Slovakia and the Czech Republic. The questionnaire contained in its first part some questions covering the individual personal socio-economic characteristics. In the second part, the respondents solved thirteen problems submitted as multiple-choice questions that tested their knowledge about personal finance. Authors examine the relationships among the personality characteristics of the students and their financial literacy. This leads to several remarkable findings. Due to the specialization of the study, the difference between the genders is blurred. As a significant source of the differences in financial literacy, the authors detect the previous education of the respondents and the forms of education in financial literacy.

## 1. INTRODUCTION

The importance of sound financial decision-making and orientation in the financial market is growing, especially in times of crisis. The current post COVID era is no exception. Whether the EU itself or individual countries, they all offer different rescue programs for individuals and companies. The right choice of the provided alternatives can have far-reaching consequences in the future. There is also a rich discussion about the demographic crisis and reforms in social programs. The correct retirement program must be selected at an early age when people do not yet have enough experience, but their choice will affect their entire future lives. Therefore, our study focuses on a group of young people standing on the threshold of their adult life, on the university freshmen.

The objective of this study is to verify the state of financial literacy of beginning students of management and economics. For this target group, we can assume a closer relationship to the issue concerning the professional focus of their field of study. In doing so, we took into account their previous education as a crucial determinant. As the individual types of secondary schools differ in their focus and content of education, we came to the formulation of the first research hypothesis:

**Hypothesis one:** The level of financial literacy depends on the type of completed high school.

Assuming that the resulting financial competencies depend on the form, how the education takes place, we formulated the following research hypothesis.

**Hypothesis two:** The level of financial literacy depends on the method of financial education.

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One of the most frequent demographic factors in the financial literacy survey is gender differences. Therefore, we also focused our third hypothesis on gender differences.

**Hypothesis three:** Men and women achieve different results in financial literacy.

## 2. LITERATURE REVIEW

In the literature, we can find many different concepts of financial literacy. Roughly speaking, we can present it as the ability to understand finance. As the first, we introduce the very simple definition of financial literacy given by Kim. *Financial literacy is the basic knowledge that people need in order to survive in modern society.* (Kim 2001). Mandel presents a more sophisticated definition that incorporates reference to finance. He defines financial literacy as “the ability to evaluate new and complex financial instruments and make informed judgments about both: choices of instruments and extent of use that would be in their own best long-run interests” (Mandell, 2007). A more exact definition gave (Lusardi and Mitchell 2014), who defined financial literacy as the knowledge of basic financial concepts needed to make rational financial decisions regarding saving, investing, taking out loans and insurance. According to (Huston 2010), this term represents the ability to make informed judgments and make effective decisions regarding the use and management of money. For purposes of this paper, we adopt the definition of the financially literate person published in (Kozubíková, 2015). She defines a financially literate person as a person *Who uses his ability to make a qualified judgment on the basis of the knowledge, skills and experience gained thus enabling him to smooth financial security throughout life.*

The authors devoted much effort to find the factors that influence the level of financial literacy. As the first important factor, they analyzed the difference between the genders. For example, (Fletschner & Mesbah, 2011) consider that women are less financially informed than men; however, their knowledge improves significantly with education. Similarly, (Falahati and Paim, 2011) presented a study that included 2,340 college students, and this study indicated gender differences in different dimensions of financial literacy, in which males were more knowledgeable in financial matters than female students.

Several authors also examined the relationship between financial literacy and education. As he states (Lusardi, 2019), a positive correlation between education and financial literacy is insufficient. Even educated people may not be savvy enough to work with money. Similarly, (Mandell & Klein, 2009) argue that the impact of financial education on financial behavior is uncertain. Let us also mention (Hastings et al, 2013), where the authors concluded that the influence of financial education on improving financial literacy is contradictory.

## 3. METHODOLOGY

Respondents in our sample are Czech and Slovak young people aged from 18 to 20. All of them are freshmen at the universities that applied for the management study program. The sample data were collected using the questionnaire research. Overall, we distributed 420 questionnaires among the students. After sorting the questionnaires and removing the questionnaires with intentionally wrong answers or incomplete responses, we obtained a sample of 343 questionnaires. That means the response rate was 81.67 %.

In the research, we used a self-developed questionnaire that consists of two parts. In the first part of the questionnaire, we have collected selected socio-demographic data of the respondents, particularly their age, gender, and the type of school they have studied. We also asked about the respondents' attitudes towards financial literacy. Specifically, we mainly investigated:

- the level of importance attributed to financial literacy,
- to what extent do they feel financially literate.

To test the actual financial literacy level of the respondents, we designed the second part of the questionnaire in the form of thirteen multiple-choice questions. Each question had four answer options, one correct answer, two incorrect and the "I don't know" option. The questions covered the following functional areas of financial literacy:

- time value of money, interest and inflation perception,
- basics of investing,
- financial decision making,
- annuities and mortgaging.

Analyzing the sample, we examined the level of financial literacy of students who have just entered university. But our aim was also to detect the factors that affect financial knowledge, skills and attitudes. We used a chi-square test of independence to verify the dependence on individual factors.

When sorting according to the importance that respondents attach to financial literacy or according to the school they finished, we obtained several groups that we compared. It is impossible to test these groups pairwise, but we have to apply the analysis of variance (ANOVA) method instead. The ANOVA approach enables us to reveal statistically significant differences in the results of individual groups. To conduct ANOVA we test the null hypothesis

$$H_0: \mu_1 = \mu_2 = \dots = \mu_n \quad (1)$$

that states there is no difference among the means of  $n$  disjoint groups. Further, we performed a post-hoc analysis to determine the causes of inequalities in the averages of partial datasets using Tukeys' Honestly Significant Difference Test. This approach is widely accepted in the statistical literature and is easily performed.

#### 4. RESULTS

From the collected demographical data, we can extract some general characteristics of the sample. The age of all respondents is in the interval from 18 to 20 years, and the mean equals 19.73. It is adequate to the fact that most students leave secondary school at age 19. Here are also absolvents of the bilingual schools with 5- or 6-years study program, and they move the average age over 19. Concerning gender, our sample contains 65.8% of women and 34.2% of men. It can seem gender imbalanced, but this ratio corresponds to the whole population structure of the freshmen management programs. Partially, it is also related to men's less willingness to answer questionnaires. The graduates of the high school dominate in our sample as they represent almost 50%. On the other hand, graduates of secondary technical schools have the smallest share, which makes up less than 10%.

We have collected descriptive statistics of the percentage of success of answers in Table 1. In this table, we present the overall success and success rates broken down by individual functional areas of financial literacy. These results brought some surprises. In particular, it is a very high

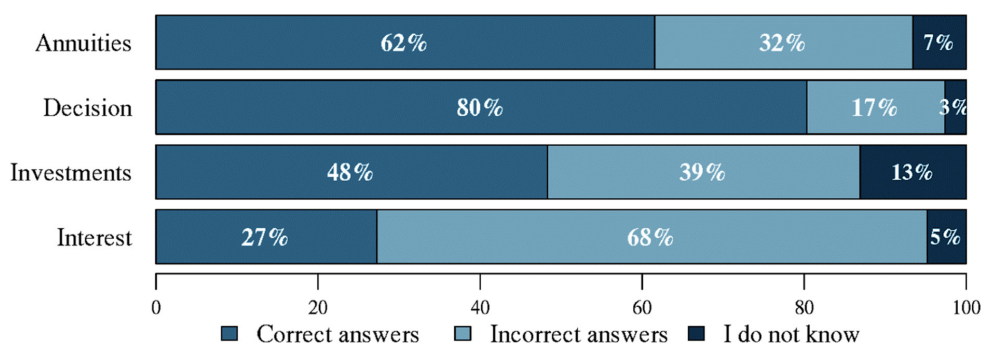
success rate in financial decision-making. On the other hand, we see an extremely weak level in matters related to the time value of money and interest.

The distribution of correct and incorrect answers in individual functional areas of financial literacy is illustrated graphically in Figure 1. Figures 2 - 5 then illustrate this information according to the single types of schools that the respondents attended. One can easily observe a reduced portion of the “I don’t know answers” among the business academies graduates. Moreover, this shift does not increase the share of the incorrect answer.

**Table 1.** Descriptive statistics of the percentages of the correct answers for total score and single functional areas of financial literacy

	Min.	1-st Quartile	Median	Mean	3-rd Quartile	Max
<b>Total</b>	0.077	0.385	0.538	0.513	0.615	0.923
<b>Interest</b>	0.00	0.00	0.25	0.273	0.50	1.00
<b>Annuities</b>	0.00	0.50	0.50	0.615	1.00	1.00
<b>Investments</b>	0.00	0.25	0.50	0.483	0.75	1.00
<b>Decision</b>	0.00	0.667	1.00	0.803	1.00	1.00

Source: Own elaboration



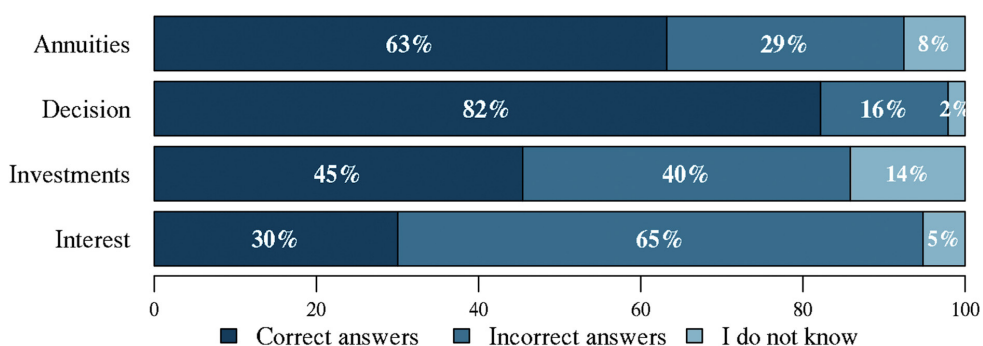
**Figure 1.** Percentages of correct and incorrect answers and “don’t know” answers

Source: Own elaboration

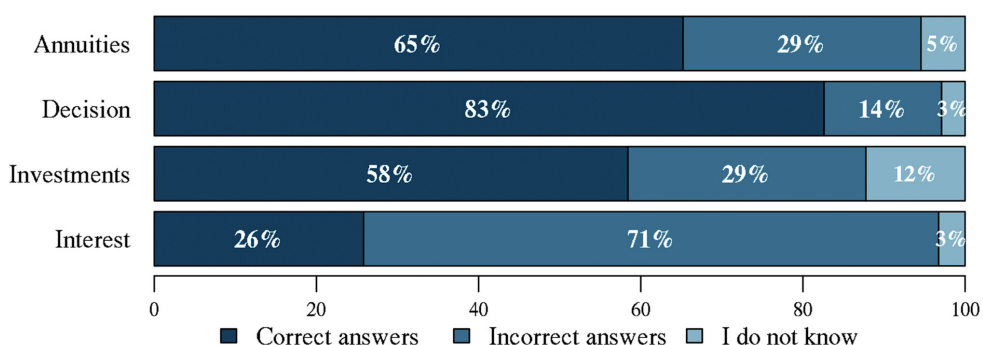
As mentioned in the literature review, many studies have shown that gender is a significant factor influencing financial literacy level. Therefore, we were the first to analyze the dependence of the results on gender. We divided the respondents into four groups according to their overall success and gender. The result of this classification we present in Table 2. Subsequently, we performed a chi-square test of independence. The corresponding *p*-value reached 0.4218, which did not allow rejecting the hypothesis that the level of financial literacy is independent of gender.

For average success rates, we get a value of 51.69% for women and 50.43% for men, and the difference is therefore relatively small. Applying the *t*-test, we confirmed that the difference between genders is not statistically significant. In this case, we obtained the *p*-value of 0.537, which means we cannot reject the hypothesis that both means are equal.

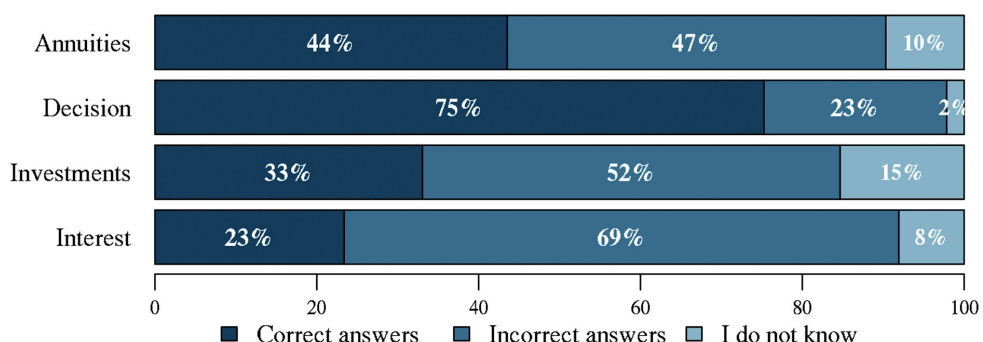
As a significant factor that affects financial literacy, we analyzed the type of school completed before entering university. Dividing the respondents according to the finished school and performance measure we present in Table 3. Consequently, we confirmed a strong dependence of the performance on the type of school by the chi-square test. The *P*-value is 0.023 which allows the rejection of independence with a confidence level greater than 95%.



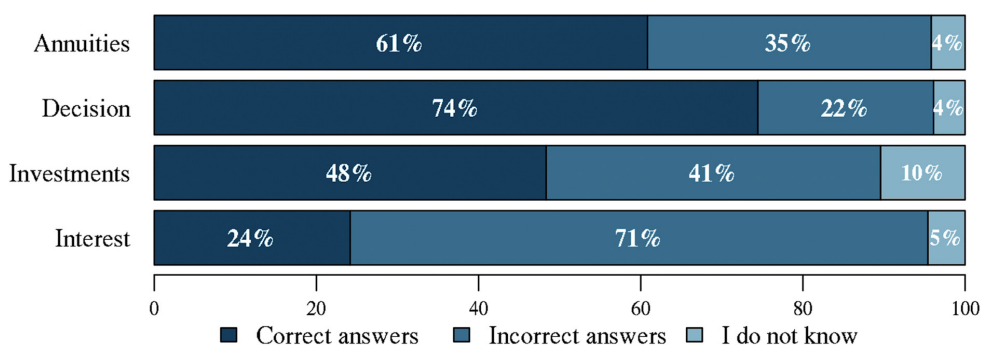
**Figure 2.** Percentages of correct and incorrect answers and “don’t know” answers in the group of high school graduates.



**Figure 3.** Percentages of correct and incorrect answers and “don’t know” answers in the group of business academies graduates.



**Figure 4.** Percentages of correct and incorrect answers and “don’t know” answers in the group of technical high schools graduates.



**Figure 5.** Percentages of correct and incorrect answers and “don’t know” answers in the group of vocational schools’ graduates.

Source of figures 2-5: Own elaboration

**Table 2.** Counts of respondents divided according to the gender and percentages of the correct answers

Gender	Percentage of correct answers			
	Under 25%	25%-50%	50%-75%	Over 75%
Men	11	50	40	16
Women	18	83	98	26

Source: Own elaboration

We can obtain a more detailed look at the differences in the level of financial literacy through analysis of variance. The results summarized in Table 4 confirm the strong dependence on this factor.

**Table 3.** Counts of respondents divided according to the gender and type of the finished school

Type of the school	Percentage of correct answers			
	Under 25%	25%-50%	50%-75%	Over 75%
High school	11	62	66	20
Technical school	6	17	8	0
Business academy	7	27	41	17
Vocational school	5	27	23	5

Source: Own elaboration

**Table 4.** Results of ANOVA with respect to the factor of the previous education

Source of variability	Sum of squares	Degrees of freedom	Mean square	F-value	p-value
Previous School	0.4705	3	0.15684	5.1763	0.00165
Residual	10.2415	338	0,03030	-	-
Total	10.712	441	-	-	-

Source: Own elaboration

We have detected the source of these differences by post-hoc analysis using Tukey's HSD test. As it is visible from Table 5, the worst results were achieved by absolvents of the technical schools. Their low percentages are the main source of the dependency on the previous education and differences in the average performance between the types of schools. This significant drop in knowledge among high school graduates is visible from the boxplots in Figure 6, on the right. Graduates of technical high schools not only achieved the lowest median of all types of schools, but even their third quartile does not reach the median level of grammar schools and business academies.

**Table 5.** Results of the Tukey's HSD test with respect to the previous education

School	High school	Business academy	Technical school	Vocational school
High school	-	0,5241	0,0126	0,6512
Business academy		-	0,0012	0,1438
Technical school			-	0,2200
Vocational school				-

Source: Own elaboration

In addition to the type of school attended, we took into account the approach to education in financial literacy that is a significant factor also. Here we distinguished four alternatives:

- a separate subject,
- an autonomous block as a part of another subject,
- fragments in several subjects,
- none at all.

**Table 6.** Descriptive statistics of the average scores according to the form of financial education

Form of education	Descriptive statistics					
	Min	1-st Q	Median	Mean	3-rd Q	Max
Separate subject	0.07692	0.38460	0.4615	0.4858	0.6154	0.92310
Autonomous block	0.2308	0.4615	0.5385	0.5458	0.6154	0.7692
Fragments	0.07692	0.38460	0.5385	0.5285	0.6154	0.92310
None	0.07692	0.38460	0.4615	0.4541	0.5385	0.92310

Source: Own elaboration

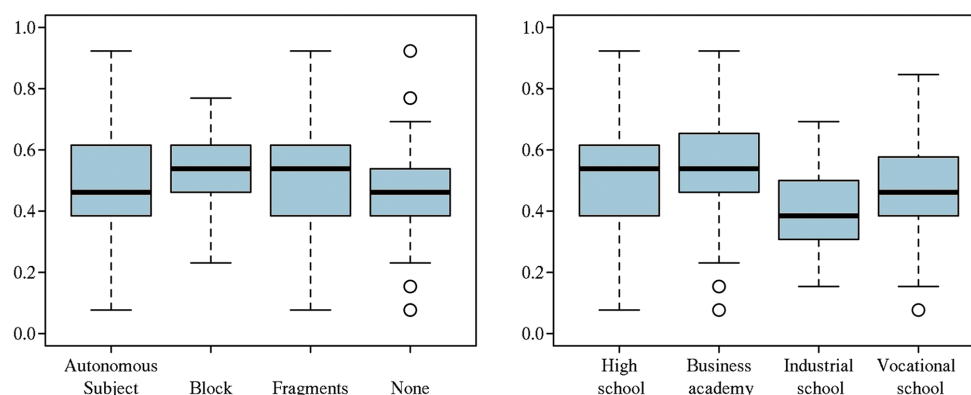
**Table 7.** Resulting p-values of the t-tests of the mean scores equality according to the form of the education

Form of education	Separate subject	Autonomous block	Fragments	None
Separate subject	-	0,0456	0,0767	0,1905
Autonomous block		-	0,5085	0,0032
Fragments			-	0,0036
None				-

Source: Own elaboration

We summarized the resulting successes in Table 6. It is a surprising result that respondents who reported education in financial literacy as a separate subject performed worse than respondents who gained knowledge as an autonomous block within another course or as fragments across other lectures. As expected, those who had no financial education did the worst.

The differences visible in Figure 6 (on the left) were also confirmed by a test of statistical hypotheses about the equality of the mean values. We present the resulting p-values of the t-test for single forms of teaching in Table 7. It shows that we cannot reject the hypothesis of equality of mean values when comparing a separate block of teaching and fragments in several subjects and, surprisingly, when comparing a specialized course and no education. The rejection of the hypothesis for the equality of mean successes between teaching in separate subject and fragments in several subjects is on the edge, with a confidence level exceeding 92%.



**Figure 6.** Boxplots of the respondents' performances according to the form of education (left) and by the type of school completed (right).

Source: Own elaboration

## 5. DISCUSSION

When evaluating the average level of financial literacy of newly entering university students in the study program management, we can state a solid level with a success rate of over 50%. The

median even reached 53.85%, which means that half of the respondents have above-average knowledge. Unlike the studies already mentioned in the literature survey, we did not confirm the lower financial literacy of the women. There are several arguments by which we can explain this apparent contradiction. First of all, it is necessary to emphasize that our analysis focused on students of a specific field of study, where financial literacy is one of the key competencies. Therefore, one can expect that students of this field will have a better relationship with the issue than the rest of the population, which is reflected in their higher financial literacy, especially for women. The second important phenomenon is also the composition of the sample according to the completed secondary school. About one-third of the women graduated from the Business Academy, that is specialized in practical economic skills. It creates the preconditions for a higher level of financial literacy than the current gender standard. In any case, in this specific case of the selected segment of the population, the validity of hypothesis three was not confirmed.

As we can observe from the graphs in Figures 1 - 5, knowledge is not distributed uniformly in individual functional areas of financial literacy. Surprisingly, the weakest results were achieved by respondents in the area of simple interest, time value of money and inflation perception. It turns out that in short-term thinking, students tend to underestimate problems and neglect the impact of time. They tend not to respect the present values of financial flows and compare only absolute amounts regardless of their timing. On the contrary, in the case of more complex tasks connected, for example, with annuities or investments, they are already aware of the higher level of complexity of the questions themselves, and they are approaching the solution more cautiously.

We have proved that previous education in financial literacy is a notable factor affecting financial literacy. We recorded statistically significant differences between graduates of individual types of schools. Graduates of grammar schools and business academies achieve better results. Their relative successes are on the same level. However, as is observable from the box-fences in Figure 6, graduates of business academies tend to achieve higher average success rates. This state we can explain by the fact that their education focuses more specifically on practical economic subjects. This specialized education is then reflected in a higher level of financial skills.

Graduates of secondary industrial schools and secondary vocational schools achieved less satisfactory results. It is due to the strictly technical focus of these types of schools. The surprising fact is the higher success rate in the case of secondary vocational schools, where the practical part of teaching for a given field has an important position. This can be explained by the fact that apprentices receive a symbolic financial reward for their practice. Managing their own money thus leads to a higher level of practical experience in the field of finance. In contrast, students in industrial high schools are still supported by pocket money from their parents and focus on technical subjects in their education. Just introduced results confirm the validity of hypothesis one.

The impact of the method of financial education on the resulting financial literacy is also worth attention. We found a surprising result that in education within a separate subject, the median of the acquired knowledge was lower than in the case of blocks in another course or more lessons in other courses. We explain this by the general absence of interdisciplinary cooperation. Students generally approach individual subjects separately and do not look for connections with other courses. They slide to learn “the subject for the subject”, and there is no synergistic effect of combining knowledge. Finance and financial literacy are no exception. The division of the issue into several areas thus leads to a better awareness of the practical context of financial literacy. This confirmed the validity of hypothesis two.



## 6. FUTURE RESEARCH DIRECTIONS

The presented research focused on a specific group of new students coming to universities in the Czech and Slovak Republics. In doing so, we focused on students of economic study programs. From the point of view of future research, several possible directions are offered. One of them is a subsequent survey of the level of financial literacy of university freshmen in the post-COVID era and to assess the effectiveness of distance education in the online form. Another direction of future research is to identify the crucial cognitive and emotional elements that influence the financial literacy level. Last but not least, there is also the possibility of monitoring progress in financial literacy in the context of further economic education and consumer behavior of respondents.

## 7. CONCLUSION

Summarizing the results of our survey, we come to principal findings. In the segment of the university freshmen studying programs with an economic focus, the difference in financial literacy between the genders blurred. So, the resulting skills are positively affected by the close relationship between the financial competencies and the chosen study field. We have also shown that the decisive influence on the results has the form of the financial education implementation, and not only the type of completed high school. The survey confirmed some inefficiency in including financial literacy as a subject. Including the financial literacy lessons in other subjects leads to better results as it provides higher interdisciplinary cooperation and connection with practice.

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