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Extending the concept of financial literacy: A step toward a sustainable society

Edib Smolo[1], Emil Knezović[2], Šejma Aydin[2*]
[1,] Finance Department, Effat University, Kingdom of Saudi Arabia
[2] Department of Economics and Management, International University of Sarajevo, Bosnia

*Corresponding author E-mail: saydin@ius.edu.ba

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Abstract

This study analyzes financial literacy in Bosnia and Herzegovina by considering three areas: interest, inflation, and diversification, with financial literacy as a multi-dimensional construct consisting of financial knowledge and financial skills. Using a cross-sectional questionnaire-based survey, 638 valid responses were collected from working-age individuals (18-65 years old). Financial knowledge and skills were analyzed through a prism of several demographic factors, including age, education, household income, and gender. Welch's F tests, ANOVA with Brown-Forsythe, LSD post hoc tests, and Welch's t-tests were performed to test the hypotheses. The findings provide evidence of moderate financial literacy. Similarly to previous studies, financial knowledge and skills partially depend on the respondent's age, education, household income, and gender. The study contributes to the current literature by taking a much-needed non-functional approach to examining financial literacy, focusing not only on financial knowledge but also on often neglected financial skills and providing insight into the unique context of Bosnia and Herzegovina.

Keywords: Financial literacy, Financial knowledge, Financial skills, Demographic factors, Sustainability, Bosnia and Herzegovina

1. Introduction

Financial markets are rapidly developing and becoming more complex by the day. Innovative and complex financial structures have mushroomed throughout the world, and ordinary people face more complex decision-making in their everyday lives [1, 2]. People must be financially literate to successfully navigate this complex world [3]. While there is no standardized approach to studying financial literacy (FL) [4], functional measures have been propelled to the forefront of investigations in recent years [5]. Much attention has been drawn to examining FL outcomes, including financial behaviors, attitudes, and well-being [6]. The findings of this stream of research suggest FL is associated with stronger resilience to financial shocks and coping with emergency expenses [7], higher investment returns and investments in more complex assets [8], lower credit card debts [9], less costly mortgages [9, 10] and better retirement planning in general [11]. All of these activities involve uncertainty and risk. Therefore, to be financially literate, it is necessary to understand compound interest, inflation, and risk diversification [2, 12] encapsulated in “The Big Three” types of questions used to measure FL [11].

However, focusing on the functional measures of FL reduced it to the knowledge of financial concepts only [5]. Little attention has been given to the construct of FL itself [4, 5]. As a result, there is a pressing need for more research on conceptualizing FL [2] using a more comprehensive approach which would include both financial knowledge (FK) and financial skills (FS) as dimensions of financial literacy [13]. Using FL and FK interchangeably is prominent in the literature [5]. However, that approach is shortsighted [2]. While there is a positive correlation between FK and FS [14], the correlation was low. Financially literate people need to possess not only FK but also the application of that knowledge—FS, which will help successfully translate the knowledge into decision-making [14, 15]. Thus, this study takes a non-functional approach to examining FL [16] and defines it as "measuring how well an individual can understand and use personal finance-related information" [13, p. 306]. The study employs the popular approach of asking "The Big Three" groups of questions to measure not only FK, as predominant in the current literature but also FS, often neglected in the present literature. The results are then analyzed using relevant demographic factors based on previous literature [17]. Thus, this study aims to measure the FK and FS levels and establish the difference between the two concerning various demographic factors.

The topic of FL is still in its infancy in developing countries, and more country-specific research on FL from non-Western economies is required [2] as increasing financial literacy levels contributes to more sustainable economic development by reducing poverty, promoting well-being, and financial inclusion. The example of Bosnia and Herzegovina (B&H) is particularly interesting as the country underwent a period of hyperinflation during the post-conflict transition period in the 90s, which can reflect on the FK and FS of its population [18]. The fertility rate is only 1.24 [19], the grey market is significant and the country is also facing a massive brain drain, which severely strains the pension and social welfare system [20]. As a result, FL, in general, is increasingly important for the population [21]. Meanwhile, many people in B&H believe compulsory public pension is guaranteed and sufficient to support living expenses after retirement [22]. In addition, the commercial banking sector dominates the financial market, and credit indebtedness is on the rise [23]. Financially illiterate individuals spend more on transaction fees, are more indebted, and incur higher interest rates on loans [9, 24]. This study can inform future policy development since B&H has no formal compulsory financial education. The next parts present a literature review and hypothesis, followed by methods, analysis, and results, and finishing with discussion and conclusions.

2. Literature review and hypotheses

2.1 Financial knowledge and financial skills

Financial knowledge is the basis of financial decision-making and good financial behavior [26]. It is a critical element of FL, reflecting the consumer's comprehension of fundamental financial principles and products [13]. That entails that financially literate consumers are knowledgeable about savings and investments, the time value of money, debt management, and insurance [27]. However, to be considered fully financially literate, consumers also need to be able to transfer that knowledge into skills, such as financial control and planning [28]. Financial skills are the ability and confidence of consumers to use and apply their FK in managing their finances [13]. These skills usually reflect in financial control and planning [29, 30]. Financial control is achieved by drawing a monthly budget, the ability to open a bank account or recognizing what one can afford, and declining unfitting financial products [29]. Financial planning refers to the consumer's ability to create and manage emergency savings, set long-term financial goals, compare different financial products, ability to compute different bank charges, obtain information and advice on different financial products, and ensure expenses do not exceed the allowance [31, 30]. Put differently, FS reflects a consumer's ability to minimize the likelihood of getting caught up in financial problems [32].

2.2 Financial literacy in Bosnia and Herzegovina

Studies of FL in B&H are recent, scarce, and focused on functional measures of FL. Okičić et al. [33] highlighted that those who received financial education are more financially literate than those who did not. Bagić [34] identified that the financial outsiders are more frequently female, over the age of 65, with low education, either

retired or a housewife, and with low personal income. Similarly, Halilović et al. [22] found that the youngest and oldest individuals are least financially literate, higher household income levels relate positively to FK, and there is a significant gender gap where men are more knowledgeable about finance. While men enjoy spending more than saving and are more likely to risk their money in investments, women are more likely to save [33]. The present study contributes to the current literature in B&H by offering a non-functional view on FL and examining potential demographic differences between FK and FS, which has not been done previously to the authors' knowledge.

2.3 Financial literacy and demographic factors

Several different demographic factors significantly affect the level of FL [17]. Unsurprisingly, the impact of these factors differs between developed and developing countries. The impact of age on FL has received much attention in the literature [6], resulting in discrepant findings. In developed countries, the youngest [35] and the oldest parts of the population are generally the least financially literate [18] as explained in the context of the life-cycle model [8] and learning-by-doing mechanism [36]. On the contrary, in a longitudinal study by Angrisani et al. [37], relatively stable levels of FL through time were detected, with a slight and significant decline after age 65, attributed to cognitive aging [4] and knowledge depreciation [12]. The results from emerging economies demonstrate that FL declines with age [18, 38, 39] as a result of the relatively recent introduction of new financial instruments. Interestingly, the study by Finke et al. [4] shows that while FL declines with age, confidence in financial decision-making-abilities does not. This indicates a disparity between FK and FS as the confidence to apply FK is one of the crucial parts of FS [13]. Few past studies show that age is negatively related to FK, but relates positively to FS [14, 40]. People in B&H gain financial independence generally late in life; thus, even if they gain FK, their FS would develop later in life. Therefore, we propose the following hypothesis:

H1: Age is a significant differentiator between FK and FS.

Previous research indicates that educational attainment leads to higher levels of FL [3, 41]. In particular, higher levels of schooling, regardless of the field of expertise, lead to higher FL [18, 42]. Social learning theory postulates that people learn from observing others [43]. The consumer socialization theory further specifies that people gain consumption-related knowledge and skills from their environment, including parents, schools, the mass media, and peers [44, 45]. By extension, the relationship between education and FL is not surprising [46]. However, in certain studies, education was found to promote only basic FL [42]. Additionally, those with high levels of FK do not necessarily possess better FS [25]. In line with that, while Guliman [14] detected a positive effect of education on overall FL levels when examining FK and FS separately, the effect was significant concerning FK only. On the contrary, Horska et al. [40] found that education affects FK and FS similarly, but these results are based on the rural population sample. The study disparity may result from regional factors, as the relationship between education and FL is more robust in urban than rural areas [47]. To receive higher education in B&H, people generally have to move to more urban areas. Based on this, we propose the following:

H2: Education is a significant differentiator between FK and FS.

Financial fragility is generally indicative of lower levels of FL, and those with low household incomes are particularly at risk [48]. Thus, the higher the household income, the more likely it is that an individual is financially literate [6, 18, 38, 39]. The nexus between household income and FL is generally attributed to a positive relationship between wealth and FL [49]. However, these studies measured FL through the FK dimension only. Having a high income and being knowledgeable about finance does not necessarily imply the presence of FS. Indeed, higher household income levels are positively related to higher FK but not FS [25], while lower-income households have restricted access to FK, preventing them from developing FS [40]. Lower-income families in B&H have restricted access to gaining FK and a lower likelihood of developing FS. Therefore, we hypothesize that:

H3: Household income is a significant differentiator between FK and FS.

While FL is equally important to men and women, men tend to outperform women in their FK [6, 38]. Moreover, women consider themselves less financially knowledgeable than men [51]. While FL among men is driven by their objective mathematical ability, for women, it is the confidence in their FK that drives their FL [52]. Confidence is one of the crucial elements of FS [13], making it essential in the FL gender gap equation. Namely, when answering questions on FL, women are more likely than men to choose the option "I do not know" when offered one. However, when the option is not offered, they select the correct answer [18]. The FL gender gap may stem from the patriarchal family order [50, 53] and prevailing social norms related to women's participation in financial decision-making [50]. For example, when it comes to the distribution of responsibilities in the household, men tend to specialize in financial decisions. In a study by Horska et al. [40], mn exhibited higher levels of FK; however, when it comes to FS, women outperformed men in budgeting, while men were better at estimating financial risks and making effective plans. However, it is worth noting that findings on the gender gap in FL are often statistically insignificant in the case of developing countries. In addition, men are more likely to enroll in financial education programs [54]. Stereotyping beliefs are one of the primary reasons women under-invest in their financial education [55]. Even though women in B&H participate in financial decision-making, society is still highly patriarchal. Men are expected to have higher levels of FK; they are considered primary providers and responsible for financial affairs. As a result, the following hypothesis is put forward:

H4: Gender is a significant differentiator between FK and FS.

3. Methods

3.1 Participants and procedure

The data for this study were collected using a cross-sectional survey design. The target population was adult individuals in B&H. To reach a desirable sample, a snowball sampling method was used. Despite its limitations, the method is quite popular in studies lacking public databases [56]. This method is carried out in two steps. First, we approached individuals from personal networks, making them initial participants. Second, we asked them to recommend additional participants from their networks. In this case, we collected a more extensive, diversified, and reliable sample, which is essential for reducing possible sample bias [57]. Each individual received either a hard copy or a digital questionnaire, and before filing it, they had to provide their consent to participate in the study. Participation was voluntary, and participants could give up at any moment. Besides, they were granted anonymity and confidentiality. The data collection took place from March until May 2022. The initial number of responses received was 692. Upon checking and performing data cleansing, 54 responses were ruled out, primarily due to incomplete data. Therefore, the final sample reached was 638 individuals, with slightly more males (53%). In addition, the average age was 32, and 57% were highly educated.

3.2 Instrument design and measurement

The data collection instrument was a self-reporting questionnaire that contained a cover letter explaining the purpose of the study and questions regarding financial literacy and demographic factors. Since the questions were initially in English, we used a back-translation method (English-Bosnian-English). After that, a pilot test was performed with several individuals that provided valuable insights that helped improve the content.
This study focused on three main dimensions of financial literacy: interest, inflation, and diversification – following previous studies [12, 20, 46] and selected demographic factors. The financial literacy dimensions were measured by two questions each. Regarding interest, the questions were related to the application of simple and compounding interest. For inflation and diversification, we used one question regarding the definition and one regarding the application. For all questions, respondents had several options with only one correct answer. We created two dependent variables from responses: FK and FS, measured on a 0 to 3 scale based on the number of correct answers per category. The questions are available upon request.

The selected demographic factors were age, gender, education, and income. Age was initially measured as a number of years and then transformed into three categories according to OECD [58] classification: new work lives (NWL, 18-24), prime working lives (PWL, 25-54), and post-prime working lives (PPWL, 55-65). Gender

was measured as a dummy variable (1=male, 2=female). Education was measured with three levels: no university degree (NUD), undergraduate degree (UGD), and post-graduate degree (PGD). Since we had participants from two different educational systems, we used the equivalency of the Centre for Information and Recognition of Qualifications in Higher Education (2022). Individual income contained three levels: low-income (LI, less than 1,000 BAM), moderate-income (MI, 1-2,000 BAM), high-income (HI, 2-5,000 BAM), and very high-income (VHI, over 5,000 BAM).

4. Analysis and result

To test the first three hypotheses, ANOVA with Brown-Forsythe, Welch's F tests, and LSD post hoc tests were performed. Table 1 presents FK and FS analyses based on different age categories.

Table 1. Descriptive statistics and ANOVA with LSD post hoc test based on different age categories

DV	Category	N	M	SD	SE	Test	Sig.
FK	NWL	228	1.74	0.81	0.05	Welch	12.975 (<0.001)
	PWL	376	2.07	0.75	0.04		
	PPWL	34	2.06	0.69	0.12	Brown-Forsythe	14.605 (<0.001)
	Total	638	1.95	0.78	0.03		
FS	NWL	228	2.00	0.82	0.05	Welch	0.436 (0.648)
	PWL	376	2.07	0.86	0.04		
	PPWL	34	2.09	0.87	0.15	Brown-Forsythe	0.425 (0.655)
	Total	638	2.05	0.84	0.03		

DV	Category (C1)	Category (C2)	MD (C1-C2)	SE	Sig.	Lower Bound	Upper Bound
FK	NWL	PWL	-0.33	0.07	0.00	-0.46	-0.206
	NWL	PPWL	-0.32	0.14	0.03	-0.595	-0.04
	PWL	PPWL	0.02	0.14	0.91	-0.255	0.286
FS	NWL	PWL	-0.06	0.07	0.38	-0.201	0.077
	NWL	PPWL	-0.08	0.16	0.59	-0.389	0.221
	PWL	PPWL	-0.02	0.15	0.89	-0.319	0.275

Note(s): M – Mean; SD – Standard deviation; SE – Standard error; NWL – New working lives, PWL – Prime working lives; PPWL – Peak passed working lives; Degrees of freedom = 2, significance of the statistic is presented in parenthesis. MD – Mean difference; SE – Standard error; 95% confidence interval.

Table 1 presents descriptive indicators for both dimensions of FL, where NWL in both cases have the lowest mean. We can also see at least one significant difference between the age categories in the case of FK. Therefore, an LSD post hoc test was performed, suggesting significant differences between NWL and PWL and NWL and PPWL. These results suggest younger people tend to be less financially literate. In other cases, the differences are insignificant. Therefore, we can conclude that there is partial support for H1. Regarding H2, Table 2 presents several analyses of FK and FS based on different education categories.

Table 2. Descriptive statistics and ANOVA with LSD post hoc test based on different education levels

DV	Category	N	M	SD	SE	Test	Statistic
FK	NUD	275	1.77	0.80	0.05	Welch	17.166 (<0.001)
	UGD	225	2.03	0.76	0.05		
	PGD	138	2.20	0.70	0.06	Brown-Forsythe	17.400 (<0.001)
	Total	638	1.95	0.78	0.03		
FS	NUD	275	1.91	0.79	0.05	Welch	7.807 (<0.001)
	UGD	225	2.10	0.89	0.06		
	PGD	138	2.23	0.85	0.07	Brown-Forsythe	7.400 (<0.001)
	Total	638	2.05	0.84	0.03		

DV	Category (C1)	Category (C2)	MD (C1-C2)	SE	Sig.	Lower Bound	Upper Bound
FK	NUD	UGD	-0.26	0.07	0.00	-0.399	-0.129
	NUD	PGD	-0.44	0.08	0.00	-0.592	-0.279
	UGD	PGD	-0.17	0.08	0.04	-0.334	-0.009
FS	NUD	UGD	-0.19	0.08	0.01	-0.336	-0.041
	NUD	PGD	-0.32	0.09	0.00	-0.494	-0.152
	UGD	PGD	-0.13	0.09	0.14	-0.311	0.043

Note(s): M – Mean; SD – Standard deviation; SE – Standard error; NUD – No university degree, UGD – Undergraduate degree; PGD – Post-graduate degree; Degrees of freedom = 2, significance of the statistic is presented in parenthesis. MD – Mean difference; SE – Standard error; 95% confidence interval.

The results in Table 2 note higher means among those with higher education. Interestingly, there is at least one significant difference within each of the dimensions. The LSD post hoc test suggests somewhat mixed results. While there is a significant difference between each education category in the case of FK, for FS the difference between individuals with and without a university degree is significant, but the difference between the two levels of university degrees is insignificant. Therefore, there is partial support for H2. Regarding H3, Table 3 presents analyses of FK and FS based on different household incomes.

Table 3. Descriptive statistics and ANOVA with LSD post hoc test based on different household incomes

DV	Category	N	M	SD	SE	Test	Sig.
FK	LI	114	1.72	0.83	0.08	Welch	6.345 (<0.001)
	MI	169	1.88	0.79	0.06		
	HI	269	2.05	0.78	0.05	Brown-Forsythe	6.692 (<0.001)
	VHI	86	2.10	0.67	0.07		
	Total	638	1.95	0.78	0.03		
FS	LI	114	1.75	0.90	0.08	Welch	8.211 (<0.001)
	MI	169	1.98	0.87	0.07		
	HI	269	2.20	0.77	0.05	Brown-Forsythe	8.198 (<0.001)
	VHI	86	2.07	0.84	0.09		
	Total	638	2.05	0.84	0.03		

DV	Category (C1)	Category (C2)	MD	SE	Sig.

			(C1-C2)			Lower Bound	Upper Bound
FK	LI	MI	-0.16	0.09	0.08	-0.347	0.022
	LI	HI	-0.33	0.09	0.00	-0.503	-0.163
	LI	VHI	-0.39	0.11	0.00	-0.602	-0.168
	MI	HI	-0.17	0.08	0.03	-0.32	-0.021
	MI	VHI	-0.22	0.10	0.03	-0.424	-0.022
	HI	VHI	-0.05	0.10	0.58	-0.241	0.136
FS	LI	MI	-0.24	0.10	0.02	-0.434	-0.039
	LI	HI	-0.46	0.09	0.00	-0.641	-0.277
	LI	VHI	-0.32	0.12	0.01	-0.557	-0.092
	MI	HI	-0.22	0.08	0.01	-0.382	-0.062
	MI	VHI	-0.09	0.11	0.43	-0.303	0.128
	HI	VHI	0.14	0.10	0.19	-0.067	0.336

Note(s): M – Mean; SD – Standard deviation; SE – Standard error; LI – Low income; MI – Moderate income; HI – High income; VHI – Very high income; Degrees of freedom = 3, significance of the statistic is presented in parenthesis. MD – Mean difference; SE – Standard error; 95% confidence interval.

In Table 3, the results show that, on average, the lowest FL in both cases is within those with low income. Furthermore, at least one significant difference exists between those means in both FL dimensions. When performing the LSD post hoc test, mixed results were presented. Furthermore, we can see a significant difference in FK among different income categories, except for high-income and very-high-income. For FS, the results are similar, except for the addition of an insignificant difference between moderate income and very high income. In particular, we can conclude that as income rises in lower income categories, so does FL. Therefore, there is evidence to support H3 partially. Finally, to test H4, Welch's t-test was performed. The results are presented in Table 4.

Table 4. Comparison of FK and FS based on gender

	N	M	SD	SE	t	Df	Sig.
FK							
Male	335	2.040	0.755	0.041	2.861	619.09	0.004
Female	303	1.860	0.806	0.046			
FS							
Male	335	2.110	0.829	0.045	2.142	625.274	0.033
Female	303	1.970	0.855	0.049			

Note(s): N=638. M – Mean; SD – Standard deviation; SE – Standard error; df – Degrees of freedom.

The results in Table 3 demonstrate that males tend to exhibit higher FL in both cases and that the differences in FK and FS between males and females are statistically significant. Therefore, there is sufficient evidence to support H4.

5. Discussion and conclusions

The disastrous consequences of financial illiteracy have a profound impact on society as a whole [2]. People need to be financially literate to successfully navigate the increasingly complex financial world and use new and sophisticated financial instruments. In other words, they need to understand financial concepts (gain FK) and apply that knowledge in practice (obtain FS). This study examines the FL by measuring FK and FS, in the case of B&H, as an answer to calls for more country-specific research from non-Western economies [2]. In doing so, the study takes a non-functional approach, which can aid in creating a more unified definition of FL [16].

5.1 Theoretical implications

The first aim of this study was to examine the FL levels in B&H. The results indicate that middle-aged men with a university degree and medium to high household income are more likely to be financially literate and navigate through the financial world easier. This is in line with what has been reported by Bagić [34]. The overall level of FL in B&H is moderate. On average, the respondents have higher FK than FS. They understand simple interest better than compound interest, which is concerning due to the high credit indebtedness of the population [23]. The understanding of inflation is very high in terms of the knowledge of the concept and understanding it in practice. This result is not surprising as the country underwent a long period of hyperinflation in the 90s [18]. Further, the understanding of diversification is relatively high in knowledge, but the skills related to it are low. This finding was expected since capital markets in B&H are underdeveloped, and many students in B&H are entirely unaware of the existence of stock markets [33]. The diversity of the results in terms of FK and FS emphasizes the importance of including FS in the FL equation.

The second aim of the present study was to analyze the FK and FS using a selection of different demographic variables. In that regard, age, education, household income, and gender were examined in the context of FK and FS. The findings on age and FL are partially significant. Namely, FK varies with age, and the lowest levels of FK are found among the youngest population. This relationship is surprising, even though it is in line with Halilović et al. [22], as it more closely mirrors the patterns generally typical for developed countries [18]. Youth unemployment is relatively high in B&H, as is the age of young people leaving their parental household. As a result, young people in B&H achieve financial independence late in life. Learning-by-doing mechanism posits that people learn by experience [36], and people in B&H start gaining financial experience quite late in life. In addition, B&H underwent a period of hyperinflation in the 90s, which may reflect in higher FK among those who witnessed it [18]. That experience may partly explain why those aged 25-54 have the highest levels of FK. However, the results also demonstrate an insignificant direct relationship between FS and age across all age groups, which is in line with the findings of Guliman [14] and Alhenawi and Elkhal [25].

Regardless of the field of expertise, educational attainment positively affects FK and FS. While FK varies significantly across the spectrum of different educational levels, only having a university degree is statistically significant regarding FS, replicating what was previously reported by Horska et al. [40]. Attending the university, compared to not attending it, largely determines a person's surroundings. As social learning theory [43] and the consumer socialization theory [44, 45] specify, knowledge and attributes of the people surrounding an individual are crucial for FL levels [17]. Education helps create social interactions, which may increase FK and FS [42]. In addition, attending a university in B&H often means moving away to urban areas, and the relationship between education and FL is more robust in urban than rural areas [47].

Regarding household income, the findings demonstrate that higher-income households are more likely to be financially literate. More precisely, as moving from one income group to another, FK increases significantly in all cases except for the difference between high income and very high income, which closely aligns with Halilović et al. [22] and Alhenawi and Elkhal [25]. That may be the case because wealthy households are more likely to invest in FK and become more literate [49]. Clearly, in the case of B&H, when investing in FK, the marginal difference between high and very high-income groups is small. Similarly, FS increases with different income levels up to high income. The difference between medium income and high and very high income is insignificant, which contradicts Alhenawi and Elkhal [25], who found that FS does not vary significantly with household income. The possible explanation for the difference in the studies may be a cause-and-effect problem. Perhaps households with high income in B&H obtained it due to their FS. In addition, it may result from endogeneity, as those with higher incomes may also be more educated. Further studies are needed to clarify this relationship.

The present study also confirms previous findings on the gender gap in the FK [22, 33] and FS [14]. Cupák et al. (2018) pointed out that gender gaps in FL in Eastern European economies are often statistically insignificant, as a legacy of the communist regime that emphasized equality. While the present study's findings are not entirely

in line with that view, it is worth noting that the gender gap is broader in terms of FK than FS, suggesting that women participate in financial-decision making, at least to some extent. Thus, even though B&H is still a very patriarchal society, which cultivates gender inequality [53], there is a possibility that the gender gap may stem from women under-investing in their financial education [55].

5.2 Recommendations for governments and educators

The importance of FL in today's world is indisputable. Even though the average FL in B&H is moderate [59], it is essential to note that the present study sample is skewed towards the more educated, and there are significant gaps in FL among subpopulations. While government policies to improve FL should be put in place, uniform financial education programs are unlikely to be effective [46]. The financial education programs should target those with the lowest levels of FL. For example, based on the results of this study, an ideal candidate would be a young woman with a low household income and no university education. Financial education increases FK and can include practical components that would also develop FS. Financial education programs are more efficient when the direct application of knowledge is enabled when teaching new concepts. That said, universities can also take part in increasing FL in B&H, as financial education programs are most effective when participation is voluntary [46]. As a result, universities can introduce elective courses on FL. In addition, the results of this study imply that improving access to overall education may lead to increased FL and enable more sustainable and inclusive economic growth. All of these improvements in overall FL levels can increase the number of SMEs in the country [60, 61], leading to increased economic growth.

5.3 Limitations and future studies

The study does not come without limitations. First, this cross-sectional study design measures variables only at one point in time. For future studies, the valuable approach would be to use a longitudinal, which enables testing for causal inferences. Second, there is a limitation regarding generalizing results, as the study uses non-probability sampling. Future studies might consider stratified populations with data availability for probability sampling. Third, the collected sample was dominated by highly educated people, which could skew the results. A more balanced sample of education might be beneficial. Finally, we used basic comparative models. Since a deeper understanding of FL is required, especially in the context of B&H, a more advanced model with additional variables and relationships is needed. The researchers should focus on why FL is at a given level in the country.

Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

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