

〈Research Report〉

Financial Literacy among Japanese University Students: Current State and Issues

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Abstract

The authors translated the Test of Financial Literacy (Walstad and Rebeck, 2016) into Japanese and administered it on the university students in Japan in 2019; the current state and issues of financial literacy were analyzed. The TFL proved to be valid in Japan, but several terms needed to be modified in Japanese. Japanese university students, most of whom had not studied personal finance in high school, had little knowledge or understanding about the concept of interest rates, financial commodities, or credit institutions. The results reflect the situation in Japan, where indirect financing still plays a crucial role. Meanwhile, direct financing is becoming more important in Japan, and the TFL results have provided significant suggestions about finance education in Japan.

The authors also analyzed the factors that affect students' financial literacy. The results reveal knowledge of one's own income and expenditure had a statistically significant positive effect on financial literacy. The relationships between financial literacy and student attributes, such as the amount of student loans and consciousness about money management, were also analyzed.

Key words: Financial Literacy, Test of Financial Literacy, Personal Finance, Economic Education

INTRODUCTION

This study examines the current state and issues of financial literacy among Japanese university students, using the Japanese translation of the Test of Financial Literacy (TFL) (Walstad and Rebeck, 2016). TFL was developed to measure financial literacy based on the standards and benchmarks stated in the National Standards for Financial Literacy (the Council for Economic Education, 2013). The Japanese research team of economic education conducted a large-scale survey using TFL, in Japan, in 2018 and 2019, and found important facts about financial literacy among university students.

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The team had also conducted extensive assessments of personal finance tests of Japanese high school students (Yamaoka, Abe, Takahashi et al., 2013), and also of the university students (Abe, Yamaoka, Takahashi et al., 2013). The team used the test created by Walstad and Rebeck (2005), namely, the Financial Fitness for Life: High School Test (FFFL high school test). These surveys revealed that the level of financial literacy among Japanese high school and university students was very poor. Hence, we claimed the necessity of financial education. This is why we felt that a test should be conducted to measure financial literacy repeatedly, and hence the TFL survey could be implemented. Moreover, the Test of Economic Literacy Fourth Edition (TEL4) (Walstad, Rebeck, and Butters, 2013) was administered on Japanese high school and university students by the team (Abe, 2019). The survey showed that both high school and university students had difficulty understanding the opportunity costs, macroeconomic concepts, and concepts pertaining to money and banking. This result reinforces our argument that the enhancement of financial education is necessary. We have also been interested in the effects of financial knowledge and attitudes on financial behavior (Takahashi, 2021; Takahashi, Abe, Inose, and Kanie 2021). We added our original questionnaires about financial attitudes toward TFL and multiple regression analysis was conducted to determine the relationship between financial attitudes and literacy.

In the next section, we discuss the methods adopted in our study including a description of our data and the tools employed for data collection. This is followed by the section in which the results have been presented along with the discussion.

METHOD

Translation of TFL into Japanese

The authors translated the TFL (Walstad and Rebeck, 2016) into Japanese in 2018. The TFL consists of 45 items categorized into six standards of financial literacy, as shown in Table 1. Several terms and expressions were modified during the translation process, because the economic and financial systems of Japan differ from those of the United States in some respects.

There are several merits of using TFL, despite it being developed in US. Economic and financial education are areas in which international joint research can easily be conducted because the basic theories and concepts are universal. TFL has already been conducted in the USA, Korea, Germany, and Japan. Therefore, the Japanese team has been using the literacy tests developed in the United States.

Data collection

We decided to administer TFL on the university students in Japan, although it was originally developed for high school students in the United States (Walstad and Rebeck, 2017). This is because

TFL is too difficult for Japanese high school students, as there is no compulsory course of personal finance, and hence the Japanese high school teachers were reluctant to conduct the test because the contents of the test were beyond the national curriculum of Japan.

Table 1. TFL Item and Standard

Item	Standard
1	Standard 1
2	Earning Income
3	
4	
5	
6	
7	
8	Standard 2
9	
10	Buying Goods and Services
11	
12	
13	
14	Standard 3
15	Saving
16	
17	
18	
19	Standard 4
20	Using Credit
21	
22	
23	
24	
25	
26	
27	
28	
29	Standard 5
30	
31	Financial Investment
32	
33	
34	
35	
36	
37	Standard 6
38	
39	Protecting and Insuring
40	
41	
42	
43	
44	
45	

Source: pp.5-8, Walstad, W. B., Rebeck, K. (2016).

The table was simplified from original one by the authors.

Data were collected through a survey of students from ten universities, who were associated with the members of our research team, in Japan, in 2018 and 2019. The details have been shown in Table 2. The final sample comprised 971 responses, excluding those having missing values. Of the sample, approximately 65% were females, and freshmen and sophomores represented approximately 53% of the sample. The response sheets were machine-readable for ease of analysis.

All university students learned economics as a part of the subject 'civics' as a compulsory course in high school. The student participants majored in business, family and consumer sciences, or pedagogy. There were no economics or natural science majors.

RESULTS

The descriptive statistics are presented in Table 2. The average score of the 45 questions of the total students was 22.6 (50.2%). The average score of male students was 24.8 and female students was 21.5. We found a statistically significant difference in scores between the male and female students (***) ($p < .001$).

One of the major findings of this survey was that the students' financial literacy was low. Their average score was only 50.2%, although most of the questions on TFL were on basic knowledge and concepts of personal finance.

This survey also identified specific concepts or standards that were poorly understood or misunderstood by the students. This issue is explored in the next section, which discusses the descriptive approach of each standard. From a pedagogical point of view, one of the most interesting aspects of the results is to check the concepts pertaining to personal finance in which students have lower levels of knowledge or understanding. Table 3 shows the percentage of correct responses for each item, and Table 4 shows the percentage response for each alternative.

For example, low scores were obtained on several questions on interest rates. This information is significant for professors of economics or personal finance if they are teaching these courses without realizing that the students do not even have fundamental knowledge of personal finance or economics.

The results of the survey indicate that the students' financial literacy is by no means high and there are concepts and terms that they do not understand. Educators in financial and economic education should aim at improving their education by ascertaining the actual state of financial literacy among students. Hereafter, we are going to pick up several items with problems in the TFL from each standard and discuss the results in detail.

Table 2. Aggregate Statistics for TFL-Japan

	Japanese University Students	Percentage (%)
Sample Size		
Total	971	100
Male	338	34.8
Female	633	65.2
Reliability		
Coefficient α	0.68	
Means		
Total	22.6	50.2
Male	24.8	55.1
Female	21.5	47.8
Standard Deviation		
Total	7.6	
Male	8.3	
Female	6.9	
Standard Error of Measurement		
Total	0.24	
Male	0.45	
Female	0.27	
Year		
Freshmen	334	
Sophomore	178	
Junior	264	
Senior	186	
Year 5 or higher	9	

Note: The test was administered in ten universities in Japan in 2018 and 2019.

Standard 1: Earning Income

- Q2. Sadie is a high school graduate who decides to go to college the next year. From a financial decision-making perspective, the author concludes that the
- A. The cost of going to college is decreasing. (5.4)
 - B. The expected benefits of going to college are certain. (30.3)
 - C. The costs of going to college is less than the expected benefits. * (40.6)
 - D. The expected benefits of going to college are lower than the expected costs. (23.7)

Note: The items in this section are cited from the TFL (Walstad and Rebeck, 2017). The numbers in parentheses are the percentage of responses on each alternative which are depicted in Table 4. *: Correct answer.

The above item concerns cost–benefit analysis and financial decision-making. The relatively low score showed that the students did not have sufficient training in application of logical thinking, which can be used during decision-making by comparing the costs and the benefits.

Table 3. Percentage of Correct Responses: TFL-Japan (%)

Item	Percentage Correct (%)	Average Percentage Correct by standard (%)
1	30.2	Standard 1 Earning Income
2	40.6	
3	77.9	
4	69.7	
5	59.1	
6	63.9	
7	35.0	
8	51.2	Standard 2 Buying Goods and Services
9	74.6	
10	61.3	
11	83.9	
12	55.1	
13	81.5	
14	27.4	Standard 3 Saving
15	46.2	
16	42.3	
17	44.3	
18	20.0	
19	43.2	Standard 4 Using Credit
20	46.5	
21	48.2	
22	25.5	
23	42.1	
24	68.4	
25	38.1	
26	79.6	
27	37.8	
28	46.7	
29	48.4	Standard 5 Financial Investment
30	39.1	
31	35.5	
32	67.1	
33	57.4	
34	33.9	
35	47.5	
36	58.2	
37	51.2	Standard 6 Protecting and Insuring
38	60.9	
39	39.7	
40	61.2	
41	56.4	
42	55.2	
43	30.6	
44	50.6	
45	66.2	

Table 4. Percentage Response to Each Alternative TFL-Japan (%)

Item	1	2	3	4
1	11.8	1.5	56.4	30.2
2	5.4	30.3	40.6	23.7
3	3.4	77.9	5.9	12.8
4	69.7	22.0	2.6	5.7
5	59.1	11.1	9.4	20.4
6	63.9	12.3	16.6	7.1
7	35.3	35.0	16.8	12.9
8	11.0	4.4	51.2	33.5
9	10.0	9.4	74.6	6.0
10	3.9	7.5	61.3	27.3
11	4.3	83.9	8.5	3.3
12	8.3	12.7	23.8	55.1
13	4.9	6.2	81.5	7.4
14	11.5	6.1	54.9	27.4
15	17.6	25.1	11.1	46.2
16	33.4	42.3	6.2	18.1
17	29.0	44.3	17.2	9.5
18	20.0	14.7	40.7	24.5
19	8.4	43.2	8.5	40.0
20	21.9	46.5	14.9	16.7
21	30.5	7.7	13.5	48.2
22	47.2	17.6	9.6	25.5
23	5.1	16.7	36.2	42.1
24	68.4	11.8	5.7	14.1
25	4.5	43.0	14.5	38.1
26	6.7	79.6	8.2	5.6
27	37.8	22.0	17.1	23.0
28	31.0	12.2	10.2	46.7
29	16.5	19.2	48.4	16.0
30	39.1	24.9	27.2	8.8
31	35.5	32.1	18.5	13.9
32	13.5	11.3	67.1	8.1
33	11.8	57.4	12.2	18.6
34	22.5	33.9	23.5	20.2
35	12.9	29.4	47.5	10.2
36	9.6	15.8	16.4	58.2
37	12.8	24.6	51.2	11.4
38	11.5	60.9	17.3	10.3
39	25.4	25.0	39.7	10.0
40	61.2	14.8	11.3	12.8
41	56.4	20.1	11.6	11.9
42	20.6	13.1	55.2	11.1
43	9.5	48.4	30.6	11.4
44	19.1	50.6	15.3	15.0
45	7.1	11.8	14.8	66.2

Note: Correct Alternative

Q7. Which of the following can be deducted from federal income taxes to lower the amount Olivia owes?

- A. interest earned on savings (35.3)
- B. the value of gifts to charity* (35.0)
- C. the cost of food and clothing (16.8)
- D. capital gains from stock sales (12.9)

This item concerns income taxes and deductions. The results show that most of the students did not even know the meaning of the basic term “deduction.”

Standard 2: Buying Goods and Services.

The students’ scores were relatively high on this standard, average percentage of correct responses being 67.9% as shown in Table 3, and we found no particular problems.

Standard 3: Saving

Q14. Taylor likes to shop. She often purchases expensive things without thinking about the consequences.

Taylor's tendency to buy on impulse

- A. reduces her earned income (11.5)
- B. increases the amount she saves (6.1)
- C. increases the interest rate on her credit card (54.9)
- D. reduces her opportunities to buy things in the future *(27.4)

The above item pertains to the choice between immediate spending and saving for future consumption. The question itself was not too difficult, but the students could not recognize the concept behind this item.

Q15. What is most likely to happen when there is a large and sustained increase in the inflation rate?

- A. the cost of living will decrease (17.6)
- B. the value of savings will increase (25.1)
- C. the cost of loans for automobiles will decrease (11.1)
- D. the interest rate on home mortgages will increase *(46.2)

Inflation affects the value of money, savings, and nominal interest rates. Less than 50% of the students could answer this question properly, even though it pertains to one of the most basic concepts of financial literacy.

Q18. Which of the following is an advantage of a 401(k) retirement plan over a private savings plan that a worker establishes for retirement?

- A. Employers may contribute to a 401(k) plan. * (20.0)
- B. An unlimited amount can be contributed to a 401(k) plan. (14.7)
- C. The money withdrawn from a 401(k) plan at retirement is not taxed. (40.7)
- D. The government guarantees a minimum rate of return on a 401(k) plan. (24.5)

The 401(k) plan was translated into an equivalent pension plan that was introduced in Japan. This retirement plan was still too difficult for students to understand, or they had no opportunity to learn about it. The percentage of correct responses was extremely low (20.0%), although employer-sponsored defined benefit pension plans have been prevalent in Japan in the past few decades, in addition to the private defined contribution plans.

Standard 4: Using Credit

Q22. What does a credit bureau do?

- A. makes decisions about credit applications (47.2)
- B. matches banks to applicants who qualify for a loan (17.6)
- C. explains to consumers why they have been denied credit (9.6)
- D. provides creditors with reports of consumers' credit-paying histories* (25.5)

The Credit Bureau plays an important role to make credit system fair and efficient. The results showed that the students did not have proper knowledge of the system.

Q27. Why are mortgage interest rates generally lower than credit card interest rates?

- A. mortgages are backed by collateral *(37.8)
- B. interest rates are lower on larger loans (22.2)
- C. most consumers generally do not qualify for mortgages (17.1)
- D. federal regulations set credit card rates higher than mortgage rate (23.0)

The result pertaining to the above item showed that students are not aware of the relationship among interest rates, mortgages, and collaterals, percentage correct being 37.8%. Learning these concepts is necessary because the knowledge of these concepts is crucial for the people who apply for loans.

Standard 5: Financial Investment

Q31. Suppose a corporation issues two bonds. One bond matures in a year. The other bond matures in ten years. The bond maturing in one year is expected to

- A. have a lower interest rate * (35.5)
- B. have a higher interest rate (32.1)
- C. provide less diversification (18.5)
- D. provide more diversification (13.9)

The percentage of correct responses for the above item was 35.5%. The question did not seem too difficult for the professors. However, most students did not have sufficient knowledge about bonds. This item was amongst the items concerning interest rates on which low scores were obtained.

Q34. Which of the following would cause the current value of bonds to increase?

- A. Average income falls. (22.5)
- B. Interest rates decrease. *(33.9)
- C. Government regulation increases. (23.5)
- D. The number of bonds issued increases. (20.2)

Interest rates affect the price of financial assets. This can be the reason behind the low scores of students on items pertaining to bonds and interest rates. They did not have sufficient knowledge nor understanding of the meaning of “bond” and its relationship with interest rates.

Standard 6: Protecting and Insurance

Q39. Kayla has a low tolerance for taking risks because she wants to protect her growing family. She would be expected to choose an insurance policy that has

- A. a low premium (25.4)
- B. many exclusions (25.0)
- C. a low deductible * (39.7)
- D. limited coverage (10.0)

Protecting and insuring is a standard pertaining to which learning opportunities are not provided to the students in school. The percentage of correct responses on this item was low (39.7%), which meant that most of the students did not have sufficient understanding of basic terms such as “premium,” “exclusion,” or “deductible.”

Regression Analysis

We integrated our original questionnaire with the TFL and conducted a multiple regression analysis for the TFL scores obtained on each questionnaire (see Table 5). We found that the female dummy had a statistically negative effect on the TFL scores ($p < .001$). School year had a statistically negative effect on TFL scores ($p < .001$). The reason as to why the scores decrease with the increase in the school year needs to be further verified.

A question (Q65) was added to find out whether the students were getting scholarships, student loan or not, to check if a scholarship or a student loan had any effect on the students' score. Both the scholarship and student loan dummies had statistically negative effects on the TFL scores ($p < .001$). We assumed that if the students received scholarship or a student loan, their awareness pertaining to money and their financial literacy would improve. However, the results of the study were contradictory.

The questionnaires pertaining to learning economics in high schools and universities were added to determine if these experiences would affect the score. We asked the students if they remembered learning economics in the high school class (Q63) because we suspected that they might have forgotten them, although all the students were supposed to study economics as part of a mandatory course. The results showed that, even if the students remembered having learned economics in high school, it did not have any statistically significant effect on their financial literacy.

Meanwhile, we found that if students were learning or had learned economics at the university, it had positive effects on the TFL score (Q64), ($p < .01$). This showed that the learning experience of economics by the non-economics major students had positive effects on their financial literacy, although the contents of the economics course are not directly connected to those of personal finance.

The results revealed that grasping one's own income had a statistically positive tendency toward financial literacy (Q47) ($p < .1$). However, the dummy variable, having knowledge of one's monthly expenditure or having awareness of one's expenditure (Q48) had no statistical effect on financial literacy. This meant that being conscious about income motivated students to learn about personal finance rather than expenditure.

When students were conscious about money management and considered private pension plans and insurance as being important for future life (Q52), their attitude revealed a positive tendency toward financial literacy ($p < .1$). When they think money matters more than anything in this world (Q54), they tend to develop a positive tendency toward financial literacy ($p < .1$). These attitudes are likely to motivate students to learn about personal finance.

Table 5. Result of a multiple regression analysis of TFL score

Questionnaire	β	
(constant)		
female dummy	-0.147	***
year	-0.312	***
Q65 student loan (loan scholarship) dummy	-0.070	*
Q47 exactly know the amount of his/her monthly income dummy (Grasping his/her income)	0.061	+
Q48 exactly know the amount of his/her monthly expenditure dummy (Grasping his/her expenditure)	0.015	
Q63 Remember high school economics	-0.006	
Q64 now learning/have learned economics in university	0.098	**
Q52 Conscious about money management and think private pension plans and insurances are important for the future life	0.056	+
Q54 think money matters more than anything in this world	-0.062	+
Adjusted-R2	0.120	
***p <.001, **p <.01, *p <.05, +p <.1		

DISCUSSION

This study revealed the current state and issues pertaining to financial literacy among Japanese university students using the Japanese translation of the Test of Financial Literacy (TFL) in Japanese. The TFL provided concrete information about concepts and theories in which the students lacked knowledge as well as understanding. It is considered as a valid tool and suggests the need for personal finance education in Japan.

The financial literacy of the students was low, as table 2 showed that the overall percentage of correct responses was 50.2%. The students had lower scores in saving (Standard 3), using credit (Standard 4), and financial investment (Standard 5) (see Table 4). We also found that students were unable to apply logical thinking pertaining to cost-benefit analysis, immediate spending and saving for future consumption. They had difficulty understanding the concept of interest rate, which was in line with previous study results. They also lacked knowledge of several basic terms related to personal finance.

As Table 5 showed that several factors had positive or negative effects on TFL scores that were statistically significant. Although the student participants in this study were not economics majors, the learning experience of university economics had a statistically positive effect on TFL scores. Meanwhile, availing student loans had a statistically negative effect on TFL scores. The reason behind

this can be that they are from family with relatively lower income that might affect their score. An issue remains to be solved: the test results revealed that with the increase in the school year, the rate of correct answers decreased.

Our continuous study from the past to the present day has contributed to research in the area of personal finance, which is still an underdeveloped research field in Japan. In the future, we plan to collect more population representative data to be able to generalize our research findings and deepen the regression analysis to determine the factors that affect financial literacy.

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