

# An Analysis of Personal Financial Literacy Among College Students

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*This study surveys 924 college students to examine their personal financial literacy; the relationship between the literacy and students' characteristics; and impact of the literacy on students' opinions and decisions. Results show that participants answer about 53% of questions correctly. Non-business majors, women, students in the lower class ranks, under age 30, and with little work experience have lower levels of knowledge. Less knowledgeable students tend to hold wrong opinions and make incorrect decisions. It is concluded that college students are not knowledgeable about personal finance. The low level of knowledge will limit their ability to make informed decisions.*

## I. INTRODUCTION

The ability to manage personal finances has become increasingly important in today's world. People must plan for long-term investments for their retirement and children's education. They must also decide on short-term savings and borrowing for a vacation, a down payment for a house, a car loan, and other big-ticket items. Additionally, they must manage their own medical and life insurance needs.

Unfortunately, studies have shown that Americans have inadequate knowledge of personal finances (EBRI, 1995; KPMG, 1995; PSRA, 1996, 1997; Oppenheimer Funds/Girls Inc., 1997; Vanguard Group/Money Magazine, 1997). They fail to make correct decisions because they have not received a sound personal finance education (HSR, 1993; Hira, 1993; O'Neill, 1993).

This study has three purposes. First, it provides evidence of personal finance literacy among college students. Second, it examines why some college students are relatively more knowledgeable than others. The analysis may help us identify factors that determine the level of competency possessed by college students. The third purpose is to examine how a student's knowledge influences his/her opinions and decisions on personal financial issues.

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The paper is organized as follows. Section II reviews previous studies on financial literacy. Section III discusses methodology. Section IV presents results. Section V concludes the paper.

## II. LITERATURE REVIEW

Most of the previous studies are conducted by practitioners in the financial service industry. They focus on money management and investment-related issues. This emphasis is consistent with findings of the Certified Financial Planners, indicating these issues are important areas of personal financial planning (NEFE, 1993–1996). The results of these studies show that the participants generally answered fewer than 60% of survey questions correctly.

Prior studies of high school students consistently find that they are not receiving a good education in personal financial fundamentals and have poor knowledge (Bakken, 1967; CFA/AMEX, 1991; HSR, 1993; Langrehr, 1979; NAEP, 1979). In a recent study of 1,509 high school seniors from 63 schools, Mandell (1997) reports an average correct score of 57% in the areas of income, money management, savings and investment, and spending. His conclusion is that students are leaving schools without the ability to make critical decisions affecting their lives.

Do adults have a good command of personal finance and investments? Results of several studies suggest that they do not. Princeton Survey Research Associates (1997) surveys 1,770 households nationwide on their financial knowledge and find an average correct score of 42%. This result shows that household financial decision makers do not have a good grasp of basic finance concepts. In another study of 522 adult women, 56% are found not very knowledgeable about investing (Oppenheimer Funds/Girls Inc., 1997).

Workers do not save adequately for retirement and make investment decisions that are too conservative. A KPMG (1995) survey of 1,183 employers finds employees contribute only about 5% of their income to 401K plans, although the typical plan allows a 14% contribution. The evidence indicates that employees are not maximizing their benefits. Additionally, the low savings rate and the low return from conservative investments may not provide enough income for a financially secure retirement. Employee Benefit Research Institute (1995) provides further evidence that most Americans do not save sufficient retirement funds and may have a false sense of financial confidence and security. The study surveys 1,000 current workers and retirees on financial knowledge issues. About 71% of all workers and 81% of retirees score 60% or less. The Institute of Certified Financial Planners (1993) surveys 123 Certified Financial Planner licensees and finds that financial illiteracy is a major problem when it comes to making individual financial decisions. Poor knowledge of investment fundamentals is the most common problem encountered by their clients.

The results of two national surveys suggest that investors do not have a solid knowledge of investment issues. Princeton Survey Research Associates (1996) interviews 1,001 investors and finds that only 18% of them are financially literate. Vanguard Group/Money Magazine (1997) survey 1,467 mutual fund investors at 59 shopping malls across the country. The average correct score on a 20-question quiz is approximately 45%.

Most published studies focus on financial literacy among high school students and adults. Few of them have examined college students except for Danes and Hira (1987) and Volpe, Chen, and Pavlicko (1996). Danes and Hira (1987) survey 323 college students from Iowa State University using a questionnaire covering knowledge of credit card, insurance, personal loans, record keeping, and overall financial management. They find that the participants have a low level of knowledge regarding overall money management, credit cards, and insurance. They also find that males know more about insurance and personal loans, but females know more about issues covered in the section of overall financial management knowledge. Married students generally are more knowledgeable about personal finance. Volpe, Chen, and Pavlicko (1996) focus on knowledge of investment. They survey 454 students from a state university in the Midwest and find that the average correct score of the participants is 44%, suggesting that they have inadequate knowledge. They also find that male students are more knowledgeable than female students, and business majors are more knowledgeable than non-business majors.

While the prior research has provided evidence of people's personal finance knowledge and improved our understanding of the issue, it suffers from several weaknesses. For example, both studies on college students use samples from a single university. Many studies cover selected areas in personal finances, neglecting others. Furthermore, the validity of the survey instruments is questionable because of the limited number of items included in the questionnaires. These limitations are compounded by the fact that many prior studies only report the levels of financial literacy without analyzing the factors that influence people's knowledge. None of the previous studies have examined how an individual's knowledge impacts their opinions regarding personal finance issues and financial decision making.

### III. METHODOLOGY

This study uses a comprehensive questionnaire designed to cover major aspects of personal finance. It includes financial literacy on general knowledge, savings and borrowing, insurance, and investments. The survey participants are asked to answer 52 questions including 36 multiple-choice questions of their knowledge on personal finance, eight questions of their opinions and decisions, and eight questions on demographic data. The survey is used in a pilot study to refine the instrument. The validity and clarity of the survey are further evaluated by two individuals who are knowledgeable in personal finance. The quality and consistency of the survey are further assessed using Cronbach's alpha. A copy of the questionnaire can be found in the Appendix.

The responses from each participant are used to calculate the mean percentage of correct scores for each question, section, and the entire survey. Consistent with the existing literature (Danes & Hira, 1987; Volpe, Chen, & Pavlicko, 1996), the mean percentage of correct scores is grouped into (1) more than 80%, (2) 60% to 79%, and (3) below 60%. The first category represents a relatively high level of knowledge. The second category represents a medium level of knowledge. The third category represents a relatively low level of knowledge.

Previous research suggests that levels of financial literacy vary among subgroups of students (Volpe, Chen, & Pavlicko, 1996). This study provides further evidence of the dif-

ferences using analysis of variance (ANOVA). The differences are further analyzed using logistic regression models. The participants are classified into two subgroups using the median percentage of correct answers of the sample. Students with scores higher than the sample median are classified as those with relatively more knowledge. Students with scores equal to or below the median are classified as students with relatively less knowledge. This dichotomous variable is then used in the logistic regression as the dependent variable, which is explained simultaneously by all of the independent variables.

The independent variables used in the logistic regression are variables such as academic discipline, class rank, gender, race, nationality, work experience, age, and income. The coefficients represent the effect of each subgroup compared with a reference group, which is arbitrarily selected. For example, MAJOR is coded as 1 if a participant is a non-business major, 0 otherwise. The reference category is a business major. If the logistic coefficient of the variable is negative, then it means that compared with business majors, the non-business majors are associated with decreased log odds ratio of being more knowledgeable about personal finance.

The logistic model takes on the following form:

$$\log [p / (1 - p)] = B_0 + B_1(\text{MAJOR}) + B_2(\text{CLASSRANK1}) + B_3(\text{CLASSRANK2}) + B_4(\text{CLASSRANK3}) + B_5(\text{CLASSRANK4}) + B_6(\text{GENDER}) + B_7(\text{RACE1}) + B_8(\text{RACE2}) + B_9(\text{RACE3}) + B_{10}(\text{RACE4}) + B_{11}(\text{NATIONALITY}) + B_{12}(\text{EXPERIENCE1}) + B_{13}(\text{EXPERIENCE2}) + B_{14}(\text{EXPERIENCE3}) + B_{15}(\text{EXPERIENCE4}) + B_{16}(\text{AGE1}) + B_{17}(\text{AGE2}) + B_{18}(\text{AGE3}) + B_{19}(\text{INCOME1}) + B_{20}(\text{INCOME2}) + B_{21}(\text{INCOME3}) + e_i \quad (1)$$

where

- $p$  = the probability of a student who is more knowledgeable about personal finance.
- MAJOR = 1 if a participant is a non-business major, 0 otherwise.
- CLASSRANK1 = 1 if a participant is a freshman, 0 otherwise.
- CLASSRANK2 = 1 if a participant is a sophomore, 0 otherwise.
- CLASSRANK3 = 1 if a participant is a junior, 0 otherwise.
- CLASSRANK4 = 1 if a participant is a senior, 0 otherwise.
- GENDER = 1 if the participant is a male, 0 otherwise.
- RACE1 = 1 if a participant is White, 0 otherwise.
- RACE2 = 1 if a participant is African American, 0 otherwise.
- RACE3 = 1 if a participant is Hispanic, 0 otherwise.
- RACE4 = 1 if a participant is American Indian, 0 otherwise.
- NATIONALITY = 1 if the participant is a foreign student, 0 otherwise.
- EXPERIENCE1 = 1 if a participant has no experience, 0 otherwise.
- EXPERIENCE2 = 1 if a participant has more than 0 to less than 2 years of experience, 0 otherwise.
- EXPERIENCE3 = 1 if a participant has 2 to less than 4 years of experience, 0 otherwise.
- EXPERIENCE4 = 1 if a participant has 4 to less than 6 years of experience, 0 otherwise.
- AGE1 = 1 if a participant is in the age group of 18-22, 0 otherwise.
- AGE2 = 1 if a participant is in the age group of 23-29, 0 otherwise.

- AGE3 = 1 if a participant is in the age group of 30-39, 0 otherwise.
- INCOME1 = 1 if the participant is in the income group of less than \$10,000, 0 otherwise.
- INCOME2 = 1 if the participant is in the income group of \$10,000-\$29,999, 0 otherwise.
- INCOME3 = 1 if the participant is in the income group of \$30,000-\$49,000, 0 otherwise.

**TABLE 1**  
Characteristics of the Sample

	<i>Number of Participants</i>	<i>Percentage</i>
<b>A. Education</b>		
1. Academic Disciplines		
a) Business Majors	431	52.6
b) Non-Business Majors	389	47.4
2. Class Rank		
a) Freshman	156	17.2
b) Sophomore	157	17.3
c) Junior	160	17.7
d) Senior	326	36.0
e) Graduate	106	11.7
<b>B. Demographic Characteristics</b>		
1. Gender		
a) Male	395	44.4
b) Female	495	55.6
2. Race		
a) White	763	85.0
b) African-American	59	6.6
c) Asian	47	5.2
d) Hispanic	14	1.6
e) Native American	15	1.7
3. Nationality		
a) USA	740	93.4
b) Foreign (other than USA)	52	6.6
<b>C. Experience</b>		
1. Years of Work Experience		
a) None	32	3.9
b) Less Than Two Years	78	9.5
c) Two to Less Than Four Years	134	16.3
d) Four to Less Than Six Years	194	23.6
e) Six Years or More	384	46.7
2. Years of Age		
a) 18 to 22	395	43.7
b) 23 to 29	289	32.0
c) 30 to 39	151	16.7
d) 40 and over	69	7.6
<b>D. Income</b>		
1. Last Year's Income		
a) Under \$10,000	184	21.7
b) \$10,000 to \$29,999	224	26.4
c) \$30,000 to \$49,999	192	22.6
d) \$50,000 or more	248	29.2

To determine the impact of financial literacy possessed by the participants on their opinions, students are asked to rank personal finance issues using five categories: very important, somewhat important, not sure, somewhat unimportant, and very unimportant. They are also asked to make decisions on the related financial issues. As in the logistic regression analysis, the sample is partitioned into two groups of students with relatively more knowledge and those with relatively less knowledge. Since the issues are related to each section in the survey, the section median percentage of correct answers is used to classify the sample. Cross-tabulations and Chi-square tests are used to determine if the difference of the two groups' opinions and decisions are statistically significant.

#### IV. RESULTS AND ANALYSIS

The questionnaires are sent to 1,800 students from 14 college campuses. They include both public and private schools, main and branch campuses of large universities, and small community colleges in California, Florida, Kentucky, Massachusetts, Ohio, and Pennsylvania. Nine hundred twenty-four students from 13 campuses participated in the survey, representing a response rate of 51.33%. Detailed characteristics of the sample are presented in Table 1.

In terms of education, about 52.6% of the participants are business majors. Thirty-six percent of the participants are seniors with the rest evenly distributed among freshman, sophomore, junior, and graduate students. In terms of demographic background, most of the participants are white and U.S. citizens. Female participants represent about 55.6% of the sample. Most participants have more than two years of work experience. About 75.7% of the students are from 18 to 29 years of age. Missing responses cause the sample size to vary from 792 to 905; therefore, various sample sizes have been used to calculate valid percentages in Table 1.

##### A. Overall Results of the Survey

The overall results are presented in Table 2. The mean percentage of correct scores is grouped into three categories: over 80, 60-79, and below 60. The highest score is presented first, which is followed by lower scores within each section. The overall mean percentage of correct scores is 52.87%, indicating on average the participants answered only about half of the survey questions correctly. The median percentage of correct scores is 55.56%. The reliability of the 36-question survey is 0.85. The large Cronbach alpha indicates that the questionnaire is reliable, which further increases its validity. The findings suggest that college students' knowledge on personal finance is inadequate.

One reason for the low level of knowledge is the systematic lack of a sound personal finance education in college curricula. Most of the higher education institutions put little emphasis on students' personal finance education (Danes & Hira, 1987). Even business schools do not require students to take a Personal Finance Management course (Bialaszewski, Pencek, & Zietlow, 1993). According to a survey by Gitman and Bacon (1985), only 5% of business school offers an undergraduate major in finance services. Given the lack of personal finance education, it is not surprising the results show that college students have inadequate knowledge on personal finance.

**TABLE 2**  
**Mean Percentage of Correct Responses to Each Survey Question, Each Section,**  
**and the Entire Survey**

	<i>Level of Personal Finance Knowledge</i>		
	<i>Low Below 60%</i>	<i>Medium 60-79%</i>	<i>High Over 80%</i>
<b>I. General Knowledge</b>			
Personal Finance Literacy			80.95
Legal Requirements for Apartment Lease		75.11	
Apartment Leasing Costs		74.03	
Asset Liquidity		73.48	
Spending vs. Saving Pattern		70.89	
Checking Account Reconciliation		62.55	
Net Worth Calculation	56.49		
Personal Financial Planning	52.38		
Tax Credit vs. Tax Deduction	27.38		
<b>Mean Correct Responses for the Section</b>		<b>63.70</b>	
<b>Median Correct Responses for the Section</b>		<b>66.67</b>	
<b>II. Savings and Borrowing</b>			
Creditworthiness		76.95	
Consumer Credit Report Sources		72.08	
Deposit Insurance		69.16	
Checking Account Overdrafts		63.64	
Compound Interest	56.39		
Certificate of Deposit Terms	50.32		
Loan Co-Sign Consequences	44.70		
Annual Percentage Rate	33.23		
Credit Card Use	23.81		
<b>Mean Correct Responses for the Section</b>		<b>54.47</b>	
<b>Median Correct Responses for the Section</b>		<b>55.56</b>	
<b>III. Insurance</b>			
Auto Insurance Rate Determination			86.47
Reason to Buy Insurance		74.35	
Health Insurance Characteristics		64.94	
Insurance Conflict Resolution	48.70		
Homeowners' Insurance Characteristics	48.81		
Term Insurance Characteristics	32.14		
<b>Mean Correct Responses for the Section</b>		<b>59.24</b>	
<b>Median Correct Responses for the Section</b>		<b>66.67</b>	
<b>IV. Investments</b>			
Mutual Fund Selection		64.94	
Common Stock Investing for Selected Investment Goals		64.50	
Retirement - Benefits of Early Investment	53.68		
Mutual Fund Investment Return	47.08		
High Risk - Return Investment Suitability	45.35		
Interest Rate Changes and Treasury Bond Price	36.90		
Municipal Bond Investment	34.31		
Dollar-cost-averaging	33.23		
Investment Diversification	30.09		
Mutual Fund Charges	29.00		
Foreign Exchange Rates	28.57		
Mutual Fund Ownership Characteristics	12.45		
<b>Mean Correct Responses for the Section</b>		<b>40.37</b>	
<b>Median Correct Responses for the Section</b>		<b>41.67</b>	
<b>Mean Correct Responses for the Entire Survey</b>	<b>52.87</b>		
<b>Median Correct Responses for the Entire Survey</b>	<b>55.56</b>		

Another reason for the low level of knowledge can be attributed to the young ages of the participants. As shown in Table 1, about 44% of the participants are 18 to 22 years of age, and about 76% are under 30. The majority of them are in a very early stage of their financial life cycle. At this stage of the cycle, they are exposed to a limited number of financial issues related to general knowledge, savings and borrowing, and insurance. During this period, most of their incomes are spent on consumption rather than investment. These factors may explain the differences in the mean percentages of correct answers for the sections of General Knowledge (63.70%), Savings and Borrowing (54.47%), Insurance (59.24%), and Investment (40.37%). A further look into the scores on individual questions shows that students score higher on issues with which they are familiar. For example, the highest score is related to auto insurance. Students are familiar with the issue because many of them own cars and have to pay a higher auto insurance premium. Students also score relatively high on apartment leases. They know more about these issues because they need to rent apartments during their college years. In contrast, students have little experience with tax, term life insurance, and most of investment topics. Subsequently, they earn low scores in these areas.

### **B. Analysis of Results by Subgroups of the Sample**

In this section, the relationship between personal financial literacy and participants' education, work experience, income and other demographic background are examined. Table 3 shows the mean percentage of correct responses for Section I (General Knowledge), Section II (Savings and Borrowing), Section III (Insurance), Section IV (Investment), and the entire survey by different subgroups. ANOVA has been used to detect if participants from various subgroups have different levels of knowledge.

Participants' educational background has a significant impact on their knowledge. The results for the entire survey clearly show that business majors are more knowledgeable than non-business majors. On average, the business majors answered 60.72% of the survey questions correctly; the non-business majors, 49.94%. This pattern of business majors answering about 8% to 12% more questions correctly than non-business majors is persistent throughout the individual sections. The testing results of ANOVA indicate that the differences are statistically significant at the 0.01 level.

The findings also suggest that participants from different class ranks have different levels of financial knowledge. Generally, graduate students know more than the undergraduate students, and junior and senior students are more knowledgeable than those from the lower ranks. Again, the differences in the level of literacy among different ranks are statistically significant at the 0.01 level.

Table 3 shows participants' knowledge varies with their demographic characteristics. The percentages of correct answers from the female participants (50.77%) are lower than those from the male participants (57.40%). This pattern persists among all sections including the overall results. The values of F-statistic suggest that these differences are highly significant. Participants from dissimilar ethnic backgrounds have different levels of financial knowledge. Although the different scores are statistically significant, no single subgroup can claim the highest scores throughout the four sections. African-American participants earn the lowest scores throughout the various sections. Foreign students also earn lower scores than their American counterparts.

**TABLE 3**  
**Mean Percentage of Correct Responses to Each Section by**  
**Characteristics of Sample and Results of ANOVA**

	<i>General Knowledge</i>	<i>Savings &amp; Borrowing</i>	<i>Insurance</i>	<i>Investments</i>	<i>For the Sample</i>
<b>A. Education</b>					
1. Academic Disciplines					
a) Business Majors	72.85	61.23	66.47	48.36	60.72
b) Non-Business Majors	59.98	53.47	57.97	35.73	49.94
F Statistic	(87.34)**	(30.11)**	(29.95)**	(94.49)**	(103.66)**
2. Class Rank					
a) Freshman	56.48	50.50	54.06	31.25	46.17
b) Sophomore	63.69	51.66	59.02	36.78	50.93
c) Junior	67.22	58.68	63.75	41.98	56.09
d) Senior	63.02	53.00	58.64	42.20	52.85
e) Graduate	75.37	66.25	67.71	55.35	65.12
F Statistic	(12.48)**	(10.58)**	(6.34)**	(27.84)**	(20.60)**
<b>B. Demographic Characteristics</b>					
1. Gender					
a) Male	67.68	59.13	63.16	45.51	57.40
b) Female	62.04	52.01	57.88	37.85	50.77
F Statistic	(13.96)**	(21.48)**	(10.68)**	(33.93)**	(31.01)**
2. Race					
a) White	64.89	55.60	61.25	41.73	54.24
b) African-American	56.69	44.82	46.61	31.78	43.74
c) Asian	61.94	56.73	56.38	42.38	53.19
d) Hispanic	73.81	63.49	57.14	40.48	57.34
e) Native American	60.74	46.67	60.00	36.67	49.07
F Statistic	(2.64)**	(4.05)**	(5.40)**	(3.64)**	(5.05)**
3. Nationality					
a) USA	67.54	58.71	63.67	43.05	56.52
b) Foreign (not USA)	59.62	48.72	50.32	38.62	48.34
F Statistic	(7.26)**	(11.92)**	(17.77)**	(2.53)	(13.22)**
<b>C. Experience</b>					
1. Years of Work Experience					
a) None	57.97	42.01	45.83	29.69	42.53
b) Less than two years	57.55	51.14	52.99	36.65	48.22
c) Two to less than four years	58.21	51.82	55.97	34.36	48.42
d) Four to less than six years	65.12	54.30	61.25	39.18	53.12
e) Six years or more	73.09	63.72	68.66	48.78	61.91
F Statistic	(22.32)**	(20.79)**	(19.42)**	(24.09)**	(37.78)**
2. Years of Age					
a) 18 to 22	60.28	52.32	56.79	36.37	49.74
b) 23 to 29	68.78	59.63	63.68	44.90	57.63
c) 30 to 39	61.07	49.08	55.74	39.96	50.15
d) 40 and over	74.07	62.32	71.74	51.45	63.20
F Statistic	(13.70)**	(11.57)**	(11.43)**	(17.98)**	(20.16)**
<b>D. Income</b>					
1. Last Year's Income					
a) Under \$10,000	62.44	51.39	60.78	39.13	51.63
b) \$10,000 to \$29,999	67.91	58.58	62.20	41.48	55.82
c) \$30,000 to \$49,999	65.45	58.62	61.11	42.97	55.53
d) \$50,000 or more	68.46	59.50	63.71	44.40	57.41
F Statistic	(3.56)*	(6.58)**	(0.74)	(2.77)*	(4.69)**

Notes: \*significant at the 0.05 level; \*\*significant at the 0.01 level or greater.

In terms of participants' work experience and ages, participants with more years of work experience are more knowledgeable than those with less experience. Participants in the age subgroups of 23 to 29 and 40 or older exhibit greater knowledge than the other age groups. Finally, it seems that participants with higher personal income answered more questions correctly than those with lower income. The survey has an age category of "60 or older" and an income category of "No income." However, the number of participants in these categories are very small. They are regrouped into the adjacent groups of "40 and over" and "Under \$10,000."

Results of the logistic regression are shown in Table 4. As suggested by the high Chi-square values, the models have high explanatory power. Another widely used measure of the overall fit of the model is to examine its ability to correctly classify observations. For the entire sample, 71.47% of the observations are correctly classified as compared with 50.03% chance classification. Similar patterns can be found in the individual sections.

In addition to the overall fit of the model, the coefficient of MAJOR for the entire sample is negative and significant at the 0.01 level. Consistent with findings of ANOVA, the result suggests that non-business majors are more likely to be less knowledgeable about personal finance than business majors. The significant negative coefficients for CLASS-RANK variables indicate that participants from lower class ranks are more likely to be less knowledgeable than those from graduate classes. Women participants are more likely to be less knowledgeable than men. Participants with less work experience have high probability of being less knowledgeable than those with more experience. The differences between those with six or more years of experience and those with no experience and those with less than two years of experience are significant at the 0.07 and 0.06 levels respectively. Participants under age 30 are more likely to be less knowledgeable as compared with those 40 or older. Although the coefficient of AGE3 still exhibits a negative sign, the difference between those who are in their thirties and forties or older is statistically insignificant. While RACE, NATIONALITY, and INCOME variables affect level of knowledge in one-way ANOVA, they no longer have any significant impact in the logistic regression where all the variables are used simultaneously to explain the level of knowledge.

With few exceptions, the results from logistic regressions for the individual sections are consistent with that of the entire sample. For example, the business majors perform consistently better than the non-business majors in every section of the survey. Similarly, many coefficients for CLASSRANK, GENDER, and AGE variables in the individual sections carry the same signs and are significant as shown for the entire sample. Few coefficients of RACE, NATIONALITY, and INCOME are significant in the individual sections.

The result that business majors are more knowledgeable is consistent with findings of previous research. The finding is not surprising because curriculum requirements of business majors give them more opportunity to take finance and related courses. Participants who are more senior in class rank have earned higher scores in the survey. One explanation is that by staying in universities longer, students will naturally pick up more about personal finance. Our argument is that students do not gain more knowledge of personal finance by just spending more time in college learning other unrelated subjects. They learn the subject through a business course, seminars, or their own mistakes. Our view is consistent with the finding of this study that business majors are more knowledgeable than non-business majors. A similar line of reasoning would apply to why the participants who are older or have more work experience earned high scores in the survey. They must have prior exposure to personal finance. They are not more literate just because they are older.

**TABLE 4**  
 Logistic Regression Analysis of the Impact of Participants' Education, Experience, Demographic Characteristics, and Income on Their Financial Literacy

	<i>Estimated Coefficients and the Level of Significance for Various Sections and the Entire Sample</i>				
	<i>General Knowledge</i>	<i>Savings &amp; Borrowing</i>	<i>Insurance</i>	<i>Investments</i>	<i>For the Sample</i>
MAJOR	-0.9911**	-0.3495*	-0.5379**	-1.1753**	-0.8965**
CLASSRANK1	-1.0573**	-1.1491**	-0.7044	-2.3630**	-1.8613**
CLASSRANK2	-0.9173**	-1.3251**	-0.5972	-2.0381**	-1.6071**
CLASSRANK3	-0.6985*	-1.2234**	-0.5337	-1.5015**	-1.1107**
CLASSRANK4	-0.4145	-0.7248*	-0.4050	-0.9298**	-0.6697*
GENDER	0.1613	0.4133**	-0.0149	0.6862**	0.6331**
RACE1	0.8546	-0.2740	0.9428	0.4497	0.4667
RACE2	0.5209	-1.1772*	0.1670	-0.2985	-0.1846
RACE3	1.9326*	1.1628	0.9968	0.1480	0.7166
RACE4	0.9402	-0.5615	1.6778	0.7925	1.3456
NATIONALITY	-0.0992	-1.2717**	-0.7854	-0.6123	-0.7156
EXPERIENCE1	-0.3771	-0.8234	-1.2644	-0.9248	-1.0620
EXPERIENCE2	-0.5661	-0.2873	-0.2136	0.1515	-0.6611
EXPERIENCE3	-0.8083**	-0.6371**	-0.3037	-0.5263	-0.9343**
EXPERIENCE4	-0.1623	-0.5574**	-0.2013	-0.4709*	-0.6306**
AGE1	-0.9844**	-1.0899**	-1.5516**	-1.3631**	-1.4867**
AGE2	-0.4770	-0.7995**	-1.0784**	-1.2412**	-1.1914**
AGE3	-0.2517	-0.4050*	-0.6339	-0.7823*	-0.6407
INCOME1	-0.3594	-0.2280	0.3886	0.3382	-0.0459
INCOME2	-0.2291	0.3623	-0.1877	0.0320	-0.1905
INCOME3	-0.2644	0.1893	-0.0668	-0.0135	-0.1664
Constant	0.9773	2.2138**	0.3096	2.1148**	2.4888**
-2 log Likelihood	899.826	924.753	858.451	833.365	842.955
Overall Chi-Square	(150.485)**	(134.040)**	(95.630)**	(210.446)**	(215.650)**
Adjusted R <sup>2</sup>	0.239	0.215	0.165	0.323	0.328
Correct Classification	70.29%	66.88%	72.51%	72.64%	71.47%
Chance Classification	50.74%	50.02%	56.72%	51.00%	50.03%

Notes: \*significant at the 0.05 level; \*\*significant at the 0.01 level or greater.

**TABLE 5**  
**Impact of the Participants' Financial Knowledge on Their Opinion and Behavior**

<b>A. General Knowledge</b>						
<b>1. Number and percentage of participants who view maintaining adequate financial records as:</b>						
	<i>Very Important</i>	<i>Somewhat Important</i>	<i>Not Sure</i>	<i>Somewhat Unimportant</i>	<i>Very Unimportant</i>	<i>Total</i>
Students with More Personal Finance Knowledge	260 69.5%	93 24.9%	8 2.1%	9 2.4%	4 1.1%	374 100%
Students with Less Personal Finance Knowledge	363 68.5%	125 23.6%	30 5.7%	8 1.5%	4 0.8%	530 100%
Chi-Square = 7.835, significant at the 0.098 level.						
<b>2. Number and percentage of participants who actually maintain financial records:</b>						
	<i>Detailed Records</i>	<i>Minimum Records</i>	<i>No Records</i>	<i>Total</i>		
Students with More Personal Finance Knowledge	169 45.6%	182 49.1%	20 5.4%	371 100%		
Students with Less Personal Finance Knowledge	149 29.0%	237 46.1%	128 24.9%	541 100%		
Chi-Square = 65.903, significant at the 0.001 level.						
<b>B. Savings and Borrowing</b>						
<b>1. Number and percentage of participants who view that spending less than their income is:</b>						
	<i>Very Important</i>	<i>Somewhat Important</i>	<i>Not Sure</i>	<i>Somewhat Unimportant</i>	<i>Very Unimportant</i>	<i>Total</i>
Students with More Personal Finance Knowledge	337 83.0%	53 13.1%	11 2.7%	2 0.5%	3 0.7%	406 100%
Students with Less Personal Finance Knowledge	336 67.6%	68 13.7%	39 7.8%	43 8.7%	11 2.2%	497 100%
Chi-Square = 50.813, significant at the 0.001 level.						

2. Number and percentage of participants who choose to act on their spending:

	Correctly	Incorrectly	Total
Students with More Personal Finance Knowledge	365 89.0%	45 11.0%	410 100%
Students with Less Personal Finance Knowledge	351 68.3%	163 31.7%	514 100%

Chi-Square = 56.223, significant at the 0.001 level.

C. Insurance

1. Number and percentage of participants who view that maintaining adequate insurance coverage is:

	Very Important	Somewhat Important	Not Sure	Somewhat Unimportant	Very Unimportant	Total
Students with More Personal Finance Knowledge	145 55.1%	83 31.6%	29 11.0%	4 1.5%	2 0.8%	263 100%
Students with Less Personal Finance Knowledge	354 55.2%	193 30.1%	65 10.1%	22 3.4%	7 1.1%	641 100%

Chi-Square = 2.844, significant at the 0.584 level.

2. Number and percentage of participants who choose to act on their insurance:

	Correctly	Incorrectly	Total
Students with More Personal Finance Knowledge	68 25.7%	197 74.3%	265 100%
Students with Less Personal Finance Knowledge	115 17.5%	544 82.5%	659 100%

Chi-Square = 8.020, significant at the 0.005 level.

(continued)

**TABLE 5 (cont.)**

**D. Investments**

**1. Number and percentage of participants who view planning and implementing a regular investment program is:**

	<i>Very Important</i>	<i>Somewhat Important</i>	<i>Not Sure</i>	<i>Somewhat Unimportant</i>	<i>Very Unimportant</i>	<i>Total</i>
Students with More Personal Finance Knowledge	220 61.5%	100 27.9%	24 6.7%	10 2.8%	4 1.1%	358 100%
Students with Less Personal Finance Knowledge	222 40.8%	171 31.4%	115 21.1%	22 4.0%	14 2.6%	544 100%

Chi-Square = 52.102, significant at the 0.001 level.

**2. Number and percentage of participants who choose to act on their investments:**

	<i>Correctly</i>	<i>Incorrectly</i>	<i>Total</i>
Students with More Personal Finance Knowledge	288 80%	72 20%	360 100%
Students with Less Personal Finance Knowledge	291 51.6%	273 48.4%	564 100%

Chi-Square = 74.774, significant at the 0.001 level.

The finding that women score lower than men is consistent with the existing literature (Genasci, 1995; Goldsmith & Goldsmith, 1997; HSR, 1993; Lewin, 1995; Martinez, 1994; Volpe, Chen, & Pavlicko, 1996; ). Space limitations do not allow a comprehensive analysis of why women are less knowledgeable than men. Yet given the fact that more and more women are joining the work force and they are expected to live longer than men, deficiency in their knowledge about personal finance needs to be addressed.

### C. Consequences of Having Inadequate Knowledge

This section examines how a student's knowledge affects his/her opinions and decisions about some personal finance issues. The sample is partitioned into two groups by each section's median score. Students with section scores higher than the median are classified as those with relatively more knowledge. Students with scores equal to or below the median are classified as those with relatively less knowledge. Since many students' scores are equal to the median scores, the classification scheme changes the number of observations in the two groups from section to section. In addition, missing observations cause the total sample size to vary from 903 to 924.

Participants' responses to the importance of keeping financial records are reported in Part 1 of Section A of Table 5 and what they actually decide to do in everyday life in Part 2. About 95% of the participants from the more knowledgeable group rank keeping records as very important or somewhat important, and the rest of them believe otherwise. For the less knowledgeable group, about 92% view keeping records as important. The difference in opinions is significant at the 0.098 level. When asked what they would actually do, about 45.6% of students with more knowledge keep detailed financial records and only 29% of the less knowledgeable group are willing to keep such records. About 25% of the less knowledgeable group keep no records at all, while the number is 5.4% for the more knowledgeable group. There is a statistically significant difference in behavior between the two groups.

Analysis has also been conducted using an alternative classification scheme. Students with section scores equal to or higher than the median are classified as those with more knowledge, and those with scores below the median as those with less knowledge. This classification scheme makes the sample size in the more knowledgeable group larger than that of the less knowledgeable group. The results are similar to what have been reported above. The difference in opinions regarding record keeping is statistically significant at the 0.039 level. The difference in their decisions is significant at the 0.001 level. The results for savings and borrowing, insurance, and investment are similar to findings to be reported below.

The more knowledgeable participants (96.1%) rank spending less than their income more important than the less knowledgeable group (81.3%). When provided with a hypothetical situation of a spending decision, 89% of the more knowledgeable participants select the correct choice, compared to 68.3% of the less knowledgeable group. The Chi-square tests suggest that the differences in opinions and decisions are highly significant.

In terms of insurance, more than 80% of the participants from both groups rank maintaining adequate insurance coverages as important. The difference in opinions is not significant. However, more participants from the more knowledgeable group act correctly than the participants from the less knowledgeable group. The difference in their decisions can be seen from the significant test results and the fact that a higher proportion of the more knowledgeable participants act according to their opinions and a higher proportion of the less knowledgeable participants do not.

Section D shows that about 89.4% of the more knowledgeable group view planning and implementing a regular investment program as important, but the number is about 72.2% for the less knowledgeable group. Not surprisingly, when offered an investment situation, 80% of the knowledgeable participants choose the correct action, and only 51% of the other group. Both the differences in the opinions and decisions are highly significant.

The above analysis suggests that the level of finance knowledge tends to influence people's opinions and affect their decisions. In the case of insurance, a statistical difference cannot be detected in their opinions. However, more participants from the less knowledgeable group make the wrong choices.

## V. SUMMARY AND CONCLUSION

This study surveys 924 students from multiple universities across the country to examine college students' knowledge of personal finance; the relationship between the financial literacy and participants' characteristics such as academic discipline, gender, and experience; and the consequences of having inadequate knowledge.

Results suggest that college students need to improve their knowledge of personal finance. Although the questions included in the survey are fairly basic, the overall mean of correct answers for the survey is about 53%. None of the mean scores for each area of general knowledge, savings and borrowing, insurance, and investments are above 65%. By far the weakest area is investment, where on average the participants answered about 40% of the questions correctly. Lower levels of financial literacy are found among subgroups. They include those who are non-business majors, in the lower class ranks, women, under age 30, and have little work experience. It is also found that participants with less knowledge tend to hold wrong opinions and make incorrect decisions in the areas of general knowledge, savings and borrowing and investments. While there is little difference in their opinions regarding insurance, the less knowledgeable participants are more likely to act incorrectly. The predictive ability of personal finance knowledge shows that improving college students' knowledge is important. Without adequate knowledge, they are more likely to make mistakes in the real world.

Our conclusion is that college students are not knowledgeable about personal finance. The incompetency will limit their ability to make informed financial decisions. Together with evidence provided by the research conducted in the past three decades, the findings of this study suggest that there is a systematic lack of personal finance education in our education system. The lack of education has resulted in serious financial illiteracy found in the American public. The illiteracy and its costly consequences have made individuals worry about their finances to the extent that their productivity in workplaces is affected (CHRG, 1995). When individuals cannot manage their finances, it becomes a problem for the society. This challenging issue needs to be addressed.

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## APPENDIX

## Survey of Personal Financial Literacy

Thank you for participating in our survey. This survey is intended to measure college students' knowledge of personal finance. The results will be used to help students improve their knowledge and colleges improve curriculums.

**DIRECTIONS:** Please use a #2 lead pencil to mark your responses on the enclosed answer sheet. Please select only ONE most appropriate answer for each question. Please make marks that fill the circle. After completing the survey, please make sure that question numbers and answers correspond directly with those on the answer sheet.

- I. **GENERAL PERSONAL FINANCE KNOWLEDGE**
  1. **Personal finance literacy can help you**
    - A. avoid being victimized by financial scams.
    - B. buy the right kind of insurance to protect you from catastrophic risk.
    - C. learn the right approach to invest for your future needs.
    - D. lead a financially secure life through forming healthy spending habits.
    - E. do all of the above.
  2. **Personal financial planning involves**
    - A. establishing an adequate financial record keeping system.
    - B. developing a sound yearly budget of expenses and income.
    - C. minimizing taxes and insurance expenses.
    - D. preparing plans for future financial needs and goals.
    - E. examining your investment portfolios to maximize returns.
  3. **The most liquid asset is**
    - A. money in a certificate of deposit account.
    - B. money in a checking account.
    - C. a car.
    - D. a computer.
    - E. a house.
  4. **Your net worth is**
    - A. the difference between your expenditures and income.
    - B. the difference between your liabilities and assets.
    - C. the difference between your cash inflow and outflow.
    - D. the difference between your bank borrowings and savings.
    - E. none of the above.
  5. **Assume you have dependent children, is a \$500 tax credit per child or a \$500 tax deduction per child more valuable to you?**
    - A. A \$500 tax credit.
    - B. A \$500 tax deduction.
    - C. They are the same.
    - D. Depends on your tax bracket.
    - E. Depends on the number of children you have.
  6. **You are not overspending if**
    - A. you write checks for more than what you have in your checking account.
    - B. your monthly wages are \$500 and credit charges \$1,000.
    - C. you frequently receive calls from collection agencies.
    - D. your monthly debt payment is 30% of your take-home pay.
    - E. you meet your minimum monthly credit card payments.
  7. \_\_\_\_\_ **is not a cost of leasing an apartment.**
    - A. Security deposit
    - B. Monthly rental payment
    - C. Expenses incurred for non-compliance of lease terms
    - D. Medical expenses of your friend who fell and broke his arm on the icy pavement
    - E. Security deposit retained by the landlord for damages to property beyond normal wear and tear
  8. **If you signed a twelve month lease for \$300/month but never occupied the apartment, you legally owe the landlord**
    - A. your security deposit.
    - B. your first month's rent of \$300.
    - C. your twelve month's rent of \$3,600.

- D. nothing.
  - E. whatever the landlord requires.
9. **Checking account reconciliation involves**
- A. balancing bank statement with your checkbook records to determine if there are errors.
  - B. reconciling current bank statement with the previous month's statement to determine if there are errors.
  - C. subtracting outstanding checks to your checkbook balance to determine if your checks have been properly processed.
  - D. adding outstanding checks to your checkbook balance to improve your credit standing.
  - E. none of the above.

## II. YOUR SAVINGS AND BORROWING

10. **Your savings accounts in a federally insured commercial bank are insured by**
- A. SIPC to the maximum amount of \$10,000 per account.
  - B. FDIC to the maximum amount of \$100,000.
  - C. FDIC to the maximum amount of \$50,000 per account.
  - D. SLIC to the maximum amount of \$100,000.
  - E. FNMA to the maximum amount of \$100,000 per account.
11. **If you invest \$1,000 today at 4% for a year, your balance in a year will be**
- A. higher if the interest is compounded daily rather than monthly.
  - B. higher if the interest is compounded quarterly rather than weekly.
  - C. higher if the interest is compounded yearly rather than quarterly.
  - D. \$1,040 no matter how the interest is computed.
  - E. \$1,000 no matter how the interest is computed.
12. **Which of the following investments requires that you keep your money invested for a specified period or face an early withdrawal penalty?**
- A. Certificate of deposit.
  - B. Checking account that pays interest.
  - C. Government savings bond.
  - D. Money market mutual fund.
  - E. Passbook savings account.
13. **Which of the following statements is TRUE about the annual percentage rate (APR)?**
- A. APR is the actual rate of interest paid over the life of the loan.
  - B. APR is expressed as a percentage on an annual basis.
  - C. APR is a good measure of comparing loan costs.
  - D. APR takes into account all loan fees.
  - E. All of the above.
14. **You can receive your credit report from**
- A. a credit union.
  - B. a commercial bank.
  - C. the Better Business Bureau.
  - D. a credit bureau.
  - E. a professor.
15. **Which is FALSE concerning credit cards?**
- A. You can use your credit card to receive a cash advance.
  - B. If your credit card balance is \$1,000 and you pay \$300, interest is charged on the unpaid balance of \$700.
  - C. The rate of interest on your credit card is normally higher than you can earn on a certificate of deposit.
  - D. A credit card company will not charge you interest if you pay off the entire balance by the due date.
  - E. You cannot spend more than your line of credit.
16. **An overdraft**
- A. occurs when you write a \$1,000 dollar check when you have \$500 in your account.
  - B. is a stop-payment order written by the payee.
  - C. will result in fines.
  - D. All of the above.
  - E. Both A and C.
17. **You will improve your creditworthiness by**
- A. visiting your local commercial bank.
  - B. showing no record of personal bankruptcies in recent years.
  - C. paying cash for all goods and services.
  - D. borrowing large amounts of money from your friends.
  - E. donating money to charity.
18. **If you co-sign a loan for a friend, then**
- A. you become responsible for the loan payments if your friend defaults.
  - B. it means that your friend cannot receive the loan by himself.

- C. you are entitled to receive part of the loan.
- D. Both A and B.
- E. Both A and C.

III. YOUR INSURANCE

19. **Auto insurance companies determine your premium based on**

- A. age of insured.
- B. record of accidents.
- C. type and age of vehicle.
- D. completion of a driver education course.
- E. all of the above.

20. **The main reason to purchase insurance is to**

- A. protect you from a loss recently incurred.
- B. provide you with excellent investment returns.
- C. protect you from sustaining a catastrophic loss.
- D. protect you from small incidental losses.
- E. improve your standard of living by filing fraudulent claims.

21. **The main reason to purchase insurance is to**

- A. After buying health insurance, you are normally covered for pre-existing conditions.
- B. You have a better chance to choose doctors with a health maintenance organization rather than with a traditional health care insurance company.
- C. Most policies contain deductible and coinsurance clauses.
- D. A policy purchased by the individual is cheaper than one purchased through a group.
- E. None of the above.

22. \_\_\_\_\_ would not ordinarily be covered under a homeowners policy.

- A. War
- B. Earthquake
- C. Flood
- D. Your being sued by someone for slander
- E. All of the above

23. **Which of the following statements is FALSE?**

- A. Term insurance is an excellent investment vehicle.
- B. You receive no benefits when your term-insurance policy expires.

- C. A term insurance policy is the least expensive form of life insurance.
- D. A decreasing-term policy reduces coverage over time.
- E. A level-term policy guarantees a fixed-premium over the life of the contract.

24. **You have a better chance of resolving a complaint against an insurance company by bringing the issue to a government agency at the**

- A. federal level.
- B. state level.
- C. county level.
- D. township level.
- E. None of the above.

IV: YOUR INVESTMENTS

25. **If interest rates rise, the price of a Treasury bond will**

- A. increase.
- B. decrease.
- C. remain the same.
- D. trade at a premium.
- E. be impossible to predict.

26. **A dollar-cost-averaging approach to investing involves**

- A. buying low and selling high.
- B. complex calculations of risk and return.
- C. selling securities to minimize capital

29. **A high-risk and high-return investment strategy would be most suitable for**

- A. an elderly retired couple living on a fixed income.
- B. a middle-aged couple needing funds for their children's education in two years.
- C. a young married couple without children.
- D. all of the above because they all need high return.
- E. none of the above because they are equally risk averse.

30. **Which of the following is FALSE?**

- A. As shareholders of a mutual fund, you have a right to tell fund managers what securities to buy.
- B. A mutual fund is a diversified collection of securities used as an investment vehicle.
- C. A mutual fund is an investment corporation that raises funds from investors and purchases securities.
- D. Your ownership in a mutual fund is proportional to the number of shares you own in the fund.
- E. None of the above.

- 31. The returns from a balanced mutual fund include**
- A. interest earned on cash in the fund.
  - B. dividends from common stock in the fund.
  - C. interest earned on bonds in the fund.
  - D. capital gains from stocks and bonds in the fund.
  - E. all of the above.
- 32. No-load mutual funds are recommended over load funds because investors**
- A. do not pay for 12b-1 fees.
  - B. can reduce their tax liability.
  - C. are not charged with sales commissions.
  - D. can avoid the funds' administrative expenses.
  - E. believe that the funds have no management charges.
- 36. If other factors remain the same, U.S. dollar value of a Japan fund will be**
- A. higher if the dollar's value rises against that of the Japanese Yen.
  - B. lower if the dollar's value rises against that of the Japanese Yen.
  - C. unchanged if the Japanese Yen's value rises against that of dollar.
  - D. lower if the Japanese Yen's value rises against that of dollar.
  - E. impossible to determine if exchange rate changes between Yen and dollar.

**V: YOUR PERSONAL FINANCE OPINIONS, DECISIONS, AND EDUCATION**

- 37. Assume you're in your early twenties and you would like to build up your nest egg for a secure retirement in 30 years. Which of the following approaches would best meet your needs?**
- A. Start to build up your savings account at a federally insured bank.
  - B. Save money in certificate of deposit accounts.
  - C. Put monthly savings in a diversified growth mutual fund.
  - D. Invest in long-term Treasury bonds.
  - E. Accumulate money in a safe-box rented from a local bank.
- 38. Assuming you are in your early twenties without any dependents, which of the following would you do regarding your life insurance?**
- A. You would buy a life insurance policy from an insurance agent.
  - B. You would buy a term insurance policy.

- C. You probably do not need to buy any life insurance policy.
  - D. You would buy flight insurance each time you travel by air.
  - E. You would buy a cash value insurance policy.
- 39. You have just graduated from college and found a job earning \$28,000 per year. You will pay \$600 per month for five years for student loans. You have a monthly balance on each of your three credit cards. What should you do to improve your financial health?**
- A. Cut expenses and use your savings to pay down debt.
  - B. Keep the same spending pattern as in the past.
  - C. Apply for a consumer loan for a new car.
  - D. Eliminate debt by filing personal bankruptcy.
  - E. Use your credit card to pay for a vacation in the Bahamas.
- 40. Do you maintain financial records?**
- A. Maintain very detailed records.
  - B. Maintain minimal records.
  - C. Maintain no records.

**Using the scale given below please rank the importance of items numbered from 41 to 44.**

A	B	C	D	E
Very Important	Somewhat Important	Not Sure	Somewhat Unimportant	Very Unimportant

- 41. Maintaining adequate financial records.**
- 42. Spending less than your income.**
- 43. Maintaining adequate insurance coverage.**
- 44. Planning and implementing a regular investment program.**

**VI. ABOUT YOURSELF**

- 45. What is your class rank?**
- A. Freshman
  - B. Sophomore
  - C. Junior
  - D. Senior
  - E. Graduate
- 46. What is your age?**
- A. 18-22
  - B. 23-29
  - C. 30-39
  - D. 40-59
  - E. 60 or older
- 47. What is your sex?**
- A. Male
  - B. Female
- 48. What is your race or ethnic background?**
- A. White
  - B. African-American
  - C. Hispanic
  - D. American Indian
  - E. Asian

- 49. Which best describes your or your family's personal income last year?
  - A. No income
  - B. Under \$10,000
  - C. \$10,000 - \$29,999
  - D. \$30,000-\$49,999
  - E. \$50,000 or more.
- 50. How many years of working experience do you have? Include full- or part-time experience, internship, co-op, summer jobs, etc.
  - A. None
  - B. Less than 2 years
  - C. Two to less than 4 years
  - D. Four to less than 6 years
  - E. Six years or more
- 51. What is your major field of study?
  - A. Business
  - B. Education
  - C. Liberal Arts
  - D. Sciences or Engineering
  - E. Others
- 52. Are you a foreign student?
  - A. Yes
  - B. No
  - C. Two to less than 4 years
  - D. Four to less than 6 years
  - E. Six years or more

**VII. INFORMED CONSENT FORM**

As we explained in the cover letter, the purpose of this survey is to help you improve personal finance literacy. Anonymity will be kept throughout the survey. However, to comply with Youngstown State University's policy of human subject research, we would like to ask you to sign or initial below to verify that your participation is voluntary.

My participation is voluntary. \_\_\_\_\_

If you would like to receive a copy of your personal finance intelligence report and summary of this research project, please write down your address.

Street address \_\_\_\_\_

City, State, and Zip \_\_\_\_\_

**THANK YOU FOR YOUR PARTICIPATION.**

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