

FINANCIAL LITERACY AND FINANCIAL BEHAVIOR AMONG UNIVERSITY STUDENTS

key words; financial literacy, financial behavior, OLS, higher education, Puerto Rico

ABSTRACT

This research aims to determine the level of financial literacy, both objective and subjective, among university students, as well as to identify the factors that may affect or contribute to student's financial knowledge. Furthermore, the research looked to understand the financial behavior of university students, particularly in the areas of budgeting and expense control, and to determine whether student's behavior and motivation regarding their financial matters affect their level of financial literacy. Results show that university students have a low level of financial literacy. The analysis show there is a statistically significant difference in the level of knowledge between students from different backgrounds. Furthermore, this research contributes to the small, but growing body of literature on financial literacy on the Island. Our work adds to the literature on student financial literacy, especially for Puerto Rico that is not usually included in national studies or research.

INTRODUCTION AND LITERATURE REVIEW

The vast majority of young people in their beginnings as university students have begun to manage their own money in one way or another (Bidwell, 2015), either receiving financial aid funds, such as the Pell Grant, through student loans, through their work or even through the use of credit cards. Regardless of where the main source of income comes from to pay for tuition, lodging, and other expenses associated with their university studies, it is important to question whether students adequately manage their money and if in fact whether they have some kind of knowledge in basic aspects of finance. Research studies conducted in the United States and other countries have shown the majority of students lack the necessary knowledge or expertise in basic aspects of personal finance, such as budget preparation, credit card management, among others (Chen & Volpe, 1998; Eitel & Martin, 2009; Lusardi, Mitchell & Curto, 2010; Laborde, Mottner & Whalley, 2013; Ergün, 2018).

For example, Chen & Volpe (1998) concluded that the low level of financial knowledge of university students would preclude them from making informed decisions. Although not focused on university students, Lusardi, Mitchell, & Curto (2010) found that young people have a low level of knowledge about basic financial concepts. Only 27% of the young people surveyed correctly

answered three questions that covered topics on interest rates, inflation, and risk diversification. The vast majority (80%) correctly answered the question about the interest rates, which supposed some knowledge in financial arithmetic. Fifty-four percent correctly answered the question about inflation, while only 47% responded correctly the question about risk diversification, a fundamental element in making informed investment decisions.

Research has shown that individuals need to have an adequate level of financial knowledge as well as to demonstrate a good financial behavior (Hilgert, Hogarth & Beverley, 2003; Mien and Thao, 2015). Good financial behavior can range from thinking carefully before buying a product and paying debts on time, to establishing a plan to meet personal goals (Valencia & Valenzuela, 2017). Therefore, it can be stated that presenting positive financial behavior is intrinsically linked to making good decisions. This is important since making good financial decisions contributes to the increase of wealth, avoids or decreases indebtedness and protects against any adverse outcome (Grohmann & Menkhoff, 2015). That is, the economic well-being of people depends on how they behave financially in the short, medium and long term. So, to the extent that students acquire more financial knowledge, more opportunities will have to make good financial decisions (Herawati et al., 2018). Existing research has demonstrated that a well-educated population on personal financial matters may contribute to a country's economic growth as well as promoting stability of the financial sector (Lusardi & Mitchell, 2014; Sundarasan et al., 2016). Having adequate money management skills allows students to be responsible in their decision-making and promote a better well-being while achieving a better standard of living (Hussain & Sajjad, 2016). It is worthwhile to note that adequate levels of financial literacy reduce the financial stress faced by individuals, including university students (Taft, Hosein, Mehrizi, and Roshan, 2013; Heckman, Lim and Montalto, 2014)

In Puerto Rico, there is limited evidence from studies aimed at evaluating the level of financial literacy of university students and the population in general. Some of the research has focused on the use of credit cards among students (Madera, 2010; Castro, Delgado & Rodríguez, 2014), knowledge in financial and retirement planning (Castro, 2014), and planning and personal financial management (Rodríguez, 2013). This research provides an opportunity to contribute to expand research on financial literacy in Puerto Rico.

PURPOSE AND RESEARCH QUESTIONS

This research aims to determine the level of financial literacy among university students, both objective and subjective, as well as to identify the factors that may affect or contribute to student's financial knowledge. Furthermore, the research looked to understand the financial behavior of university students, particularly in the areas of budgeting and expense control, and to determine whether student's behavior and motivation regarding their financial matters affect their level of financial literacy.

To reach this objective, this investigation attempted to answer the following research questions: What is the level of financial literacy among university students? Does the level of financial literacy vary between business and non-business students? Are there differences in financial literacy between graduate and undergraduate students? Are there differences in financial literacy between female and male students? What are the main determinants of financial literacy among university students?

SAMPLE AND METHODOLOGY

Data for this research was collected via a self-administered questionnaire using Qualtrics online. A link to the survey was emailed to all active students (undergraduate and graduate) at one campus of a higher education institution between spring and fall of 2018. After four follow ups, out of 243 responses, 156 questionnaires were fully completed. The distribution closely resemble the student composition of the official enrollment by fall 2017.

The survey was created using questions from existing research (Avard, et. Al, 2005; Lusardi, 2008; Sabri et al, 2010; Gilligan, 2012; Cullen, 2013). The survey has different type of closed-ended questions: rating scale questions (Likert-scale) and multiple-choice questions. Questions in the areas of general knowledge, credit, savings and investments, as well as demographics to identify our student profile were included. In addition, some questions to identify student's behavior and motivation regarding management of their personal finances were also available in the survey.

Following Chen and Volpe (1998), to determine the level of financial literacy, the average of correct responses in the areas of general knowledge, credit, savings and investments was calculated. A composite average of all the areas represents the level of financial literacy of this

population of university students. Once done, we classified the level of literacy of university students into three groups: low level (less than 60%), intermediate level (between 60% and 79%) and high level (80% or more). To measure the level of subjective financial literacy we followed the same procedure, using the average of responses on three questions: assessment of knowledge about personal finance, assessment of knowledge about personal finance (against peers) and student's level of confidence in managing personal finances, and develop a score.

Several statistical tools were used to analyze the data and answer the research questions. An analysis of variance (ANOVA) helped us determine whether there was a significant difference in the level of financial literacy between business and non-business students. In addition, ANOVA was used to determine whether there was a significant difference in financial literacy by area (measured in this research by general knowledge, credit, savings, an investments) among the four academic colleges (Business Administration, Arts & Sciences, Engineering and Agricultural Sciences). A two-tailed t-test allowed us to analyze if there was a significant difference in the level of financial literacy between men and women. A one-tailed t-test helped us determine if the level of financial literacy of the graduate students was significantly higher than that of the undergraduate students.

A multiple regression analysis allowed us to identify the determinants of financial literacy among university students. For this analysis, the dependent variable was financial literacy and among the independent variables, we have academic background, academic level, year of study, grade point average, student's income level, parent's income level, gender, age, among others). The variables were chosen based on prior research that found certain student characteristics might influence the literacy level among university students (Chen and Volpe: 1998, 2002; Lusardi and Mitchell, 2008; Ford and Kent, 2010; Hanna, Hill, and Perdue, 2010; Falahati and Paim, 2011; Chinen and Endo, 2012; Rodríguez, 2013; Alhenawi and Elkhail, 2013)

RESULTS AND DISCUSSION

More than half of the participants were female students, with about 80% of the responses being from full-time undergraduate students. More than one-third of the participants are from the College of Arts & Sciences; more than a fourth were from the College of Engineering and about a one fifth from the College of Business. About 39% of the respondents had a part time job, which explains why about 73% stated their income levels were less than \$5,000.

Our results show that university students at the selected campus have a low level of (objective) financial literacy, 49.61% of correct answers. The mean scores per area were for general knowledge a 49.59%, credit with a 50.97%, savings with a 55.98% and investments with 41.88%. All areas reflect a low level of financial literacy, with scores lower than 60%. Our results are similar to Chen and Volpe (1998) as well as Beal & Delpachitra (2003); Lusardi, Mitchell & Curto (2010); Laborde, Mottner, & Whalley (2013); Lantara & Kartini (2015). It could be argue that these results are because there is no formal requirement of personal finance courses at university or high school levels [Insert Table 1]. Regarding the level of subjective financial literacy, the scores showed students' have an intermediate level of financial literacy with a 63.81%. Students believe they have a higher knowledge than what responses to factual questions reflect (objective financial literacy) [Insert Table 4].

The ANOVA results show there is a statistically significant difference in the level of financial literacy between business and non-business students, and the Tukey-Kramer multiple comparison test allowed us to identify which group is significantly different. Although the level of financial literacy of business students is higher than the level of financial literacy of nonbusiness students, the results were only significant when compared to students of Arts & Sciences and Agricultural Sciences. Test results showed there is a significant difference between students of Business Administration and Arts and Sciences, between students of Business Administration and Agricultural Sciences and between students of Agricultural Sciences and Engineering. For each of these comparisons, the p-value is less than 5%. Once again, our results are similar to those of Chen and Volpe (1998), Hanna, Hill and Perdue (2010); Chinen & Endo (2012); and Rodríguez (2013). Engineering students seem to have a higher level of financial literacy than students from agricultural sciences. [Insert Tables 2 and 3]

The regression analysis allowed us to identify the determinants of financial literacy level among university students. The OLS results showed that nonbusiness students have a lower level of (objective) financial literacy as compared to business students (this validates the ANOVA results). According to the results, undergraduate students with income levels lower than \$10,000, enrolled in their third year or less have lower levels of financial literacy. Although the results showed that male students have a higher level of financial literacy than female students, results are

not statistically significant, which contrasts greatly with prior studies (Chen & Volpe, 2002; Lusardi & Mitchell, 2008; Ford & Kent, 2010; Falahati & Paim, 2011). [Insert Table 5]

The t-test results showed there is statistical significant difference in the financial literacy level between male and female students, with male students having a higher level of financial knowledge (55.85%) than females (45.85%). Our results were similar to existent research [Chen & Volpe (1998); Chen & Volpe (2002); Oanea & Dornean (2013); Ergün (2018); Jacobsen & Correia (2019). When comparing the level of financial knowledge between undergraduate and graduate students, results reflected that graduate students have a higher level of financial literacy with a 61% against a 47% for undergraduate students [Chen & Volpe (1998); Beal & Delpachitra (2003); Thapa & Nepal (2015) .

To describe student's financial behavior in the areas of budgeting and expense control, students were ask to identify the frequency, using a 3-point Likert scale (never, sometimes, always), on how they performed certain activities. According to their answers, on average, around 73% of the students sometimes or always prepare a budget, and around 93% said that they monitor their expenses. When including behavior to explain financial literacy, results showed that preparing a monthly budget contributes positive and significantly to the level of financial knowledge of university students. We wanted to understand how motivated students were regarding certain financial decisions and they were ask about how motivated they were into pursuing financial planning, savings, debt management, spending control and investments. More than 65% of students strongly agree on being motivated to save for the future, on increase their savings and understand on how to invest their money. To determine whether their motivations determine the level of subjective financial literacy, results showed that those motivate to save for their future have a higher and slightly significant level of financial literacy.

IMPLICATIONS AND NEXT STEPS

This research allowed us to conclude that university students in the selected higher institution have a lower level of objective financial literacy and an intermediate level of subjective financial literacy. There are significant differences in the level of financial knowledge between business and non-business students; female and male students; and undergraduate and graduate students. It seems that financial behavior and motivation have a slightly impact on the level of financial literacy of university students. .Although limited in nature, the aforementioned results help to

justify the need to enforce personal financial education among university students to expose students to critical money management awareness. Furthermore, this research contributes to the small, but growing body of literature on financial literacy on the Island. Our work adds to the literature on student financial literacy, especially for Puerto Rico that is not usually included in national studies or research.

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Table 1: Financial Literacy Level

Financial Literacy Level			
	Low (<60%)	Medium (60-79%)	High (>80%)
<i>General Knowledge</i>			
Use of Financial Planning	55.77		
Financial Condition	44.87		
Financial Planning	39.74		
Expenses		69.23	
Debit Cards		79.49	
Social Security	28.21		
APR	28.85		
% of correct responses	49.59		
<i>Credit</i>			
Use of Credit Cards			91.67
Buying Power	47.44		
Credit Card - Penalty for loss		7.7	
Credit History	57.05		
% of correct responses	50.97		
<i>Savings</i>			
Savings	45.51		
Emergency Fund		71.79	
Best way to save		78.21	
Worst way to save	44.87		
Interest rates		62.82	
Interest rates and inflation	32.69		
% of correct responses	55.98		
<i>Investments</i>			
Risk	44.23		
Return	49.36		
Risk/volatility	48.08		
Diversification	47.44		
Financial Markets	22.44		
Stock Markets	39.74		
% of correct responses	41.88		
Financial Literacy Level	49.61		
<i>Based on Chen & Volpe (1998)</i>			

Table 2: Financial Literacy – Business vs. NonBusiness

		N	Mean	Standard Deviation	Mean Standard Error
Financial Literacy Level	Business	32	.6327	.17539	.03100
	<i>Non-Business</i>	124	.4628	.18057	.01622

Table 3: Tukey Kramer- Multiple Comparisons

Faculty (I)	Faculty (J)	Mean Difference (I-J)	Std. Error	Sig.
Business Administration (.6327)	Arts & Sciences	.19262*	.03905	.000
	Agricultural Sciences	.22583*	.04545	.000
	Engineering	.10746	.04143	.051
Arts & Sciences (.4401)	Business Administration	-.19262*	.03905	.000
	Agricultural Sciences	.03321	.04077	.848
	Engineering	-.08516	.03624	.091
Agricultural Sciences (.4069)	Business Administration	-.22583*	.04545	.000
	Arts & Sciences	-.03321	.04077	.848
	Engineering	-.11837*	.04306	.034
Engineering (.5253)	Business Administration	-.10746	.04143	.051
	Arts & Sciences	.08516	.03624	.091
	Agricultural Sciences	.11837*	.04306	.034

Table 4: Financial Literacy Level (Subjective)

	Financial Literacy Level		
	Low (< 60%)	Intermediate (60-79%)	High (> 80%)
Assessment of knowledge about personal finance	58.46		
Assessment of knowledge about personal finance (peers)	59.10		
Student's level of confidence in managing personal finances		73.88	
Financial Literacy Level		63.81	

Table 5: OLS Financial Literacy Level

	B	Std. Error	T	Sig
(Constant)	.967***	.172	5.630	.000
Male	.032	.029	1.134	.259
Age	.000	.005	.099	.921
Arts & Sciences	-.187***	.037	-5.030	.000
Engineering	-.110***	.041	-2.656	.009
Agricultural Sciences	-.208***	.045	-4.610	.000
Freshman	-.172***	.044	-3.960	.000
Sophomores	-.154***	.041	-3.758	.000
Juniors	-.118***	.045	-2.652	.009
Seniors	-.045	.040	-1.147	.254
Undergraduate	-.113**	.050	-2.269	.025
GPA2	.042	.029	1.427	.156
GPA3	.033	.038	.856	.394
GPA4	.054	.092	.584	.560
Lives at home	-.055**	.028	-1.993	.048
Students Income1	-.178**	.085	-2.107	.037
Students Income2	-.162*	.086	-1.882	.062
Students Income3	-.098	.096	-1.020	.310
Parents Income1	-.028	.044	-.629	.531
Parents Income2	-.016	.047	-.338	.736
Parents Income3	-.104***	.040	-2.612	.010
Parents Income4	.020	.038	.518	.606
R ²	.476			
F	5.459***			

***, **, * are significant at 1, 5 and 10 percent respectively