

Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2022.vol9.no10.0169

Gender, Education, and Financial Socialization as Determinants of Financial Knowledge: An Empirical Study

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Received: September 15, 2022 Revised: November 26, 2022 Accepted: December 05, 2022

Abstract

The main aim of the paper is to assess the level of financial literacy among business students. It further aims to investigate the role of external factors that may determine financial literacy. The external factors considered in this study are gender, grade point average, specialization, financial education, and financial socialization. Standard scales such as the Test of Financial Literacy, the Big Three, and other instruments were adapted to measure Financial Knowledge. Further, the study also explored relationships between several factors and the financial knowledge of students. These factors included a student's gender, specialization, number of finance or related courses studied, current Grade Point Average, and financial socialization. A total number of 303 valid responses were received through an online questionnaire administered to business students studying in a public university in the country. Statistical tests namely independent samples *t*-Test, one-way ANOVA, and correlation analysis were performed in SPSS 28.0. Results show that the overall financial knowledge of students is above average. Gender, number of finance or related courses, and financial socialization do not exhibit any significant relationship with financial knowledge. Current GPA and specialization show significant relationships. The findings of this study have important sectoral and research implications.

Keywords: Financial Literacy, Financial Behavior, Financial Socialization, Business Education, Saudi Arabia

JEL Classification Code: M21, A22, C10, D14, E71

1. Introduction

Financial literacy has been a popular term among varied institutions that, include development agencies, financial institutions, as well as grassroots organizations (Wise, 2013a). The term has been used interchangeably with financial knowledge. The need for individuals to possess financial skills has grown multifold in recent times due to the evolution of financial markets and financial instruments (Lusardi, 2019). Apart from dealing with an ever-changing and complex financial system, financial knowledge also aids in decision-making in various spheres of one life. Moreover,

students who do not possess adequate financial knowledge struggle in their careers.

The infamous financial crisis that occurred in 2007 proved to be a major reason for increased focus on the financial literacy of individuals so that they can discern the options available more rationally. Key developments in the financial market, such as the “availability of multiple products, deregulation, and easy availability of debt,” resulted in increased consumption and higher indebtedness (Lombardi et al., 2017). An excessively high level of debt is detrimental to a country's economy. Higher financial literacy has also been found to reduce debt defaults (Agarwal et al., 2015). It is established in the literature that financial knowledge increases the savings rate, which is important for economic growth (Ruhaak, 2013). Chen and Volpe (1988) in their study reported that there is a direct relationship between low financial knowledge and negative financial attitude. Many studies have confirmed this (Jorgensen & Savla, 2010; Shim et al., 2010). Many other problems of financial illiteracy such as lack of retirement planning and low assets have also been reported (Lusardi & Mitchell, 2007).

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Financial knowledge is also a prerequisite to successfully managing one's personal finance (Garman & Fogue, 2000). Financial education gained at educational institutions should result in higher financial knowledge and more effective decision-making (Altman, 2012). Further, it has also been seen to positively influence a person's financial health (Sohn et al., 2012). The knowledge of financial concepts is generally learned informally within one's family; and in educational institutions in a more formal way (Amagir et al., 2020). Research has shown that financial knowledge significantly influences both the "financial attitude" and "financial behavior" of an individual (Lusardi & Mitchell, 2007). Lusardi (2011) mentioned that the knowledge to "read and write financially" is essential for individuals across the socio-economic and demographic classes. An important implication of financial knowledge is entrepreneurship. Many studies have informed that low financial literacy adversely impacts entrepreneurship (Bosma & Harding, 2006). Entrepreneurship requires complex financial decisions that need an adequate level of financial knowledge (Kojo Oseifuah, 2010).

This study aims to assess the level of financial knowledge among university students in Saudi Arabia. Such an assessment has been not done earlier, as per the literature review carried out for this study. Further, it aims to understand the role of gender, education, and financial socialization on financial knowledge. University students are in greater need of financial knowledge as they enter professional lives after this stage, wherein they are required to manage their finance and also may deal with such professional responsibility (Shim et al., 2010). Therefore, the target group for this study is university students. As mentioned by Amagir et al. (2020), Douissa (2020), and Hassan Al-Tamimi and Anood Bin Kalli (2009), there are very few studies on financial literacy in the context of Arab countries. This study, therefore, aims to bridge that gap.

2. Literature Review

2.1. Financial Knowledge

The term financial literacy generally refers to the knowledge of "financial concepts and procedures". Literature shows that financial literacy can be viewed from various dimensions (Amonhaemanon & Vora-Sitta, 2020; Atkinson & Messy, 2015; Nguyen & Nguyen, 2020; Suyanto et al., 2021). Three different concepts namely, "financial literacy, financial capability, and financial inclusion" have been combined in the framework proposed by OECD (OECD, 2014). Remund (2010) mentioned that financial literacy includes five domains namely, "knowledge and financial concepts; ability to communicate about financial

concepts; aptitude in managing personal finances; skill in making appropriate financial decisions; and confidence in planning effectively for future needs." However, in literature financial literacy is used similar to financial knowledge (Huang et al., 2013) where it includes different "knowledge domains such as financial skill; self-efficacy; and explicit knowledge" (Warmath & Zimmerman, 2019). The definitions of Financial Knowledge found in the literature are presented in Table 1.

2.2. Past Studies

A study (Wise, 2013a) probed the relationship between "financial literacy, repayment of the loan and new venture failure". It confirms that financial knowledge positively impacts loan repayment and results in lesser venture failure. Chen and Volpe (1988) studied this subject quite early and found that there is a direct relationship between financial knowledge and opinion about financial instruments. Further financial knowledge also affects students' decision-making. Dahlia et al. (2009) found a significant relationship between financial knowledge and degree courses. In a study by (Cameron et al., 2014), a positive relationship between "student ability, financial experience and parental wealth" with "financial literacy". Amagir et al. (2020) considered five variables affecting financial literacy namely, "demographic, students' ability, socio-economic factors, financial socialization, and financial experiences". Lusardi and Mitchell (2014) reported: "an inverse U-shaped relationship" between age and financial knowledge. Aydin and Akben Selcuk (2019) investigated the relationship between "financial literacy, money attitudes, and time preferences" among university students in Turkey. They confirmed that higher financial knowledge results in positive financial attitudes and behavior.

Jorgensen and Savla (2010) and Shim et al. (2010) also tested the relationship between financial knowledge and financial attitude. Xiao et al. (2014) measured the financial knowledge of students and found that higher scores show greater avoidance of negative financial behaviors. In another study by Robb and Woodyard (2011), financial knowledge and credit card management practice were examined. The results were again supporting the theory that financial knowledge affects financial behavior. One study in Malaysia (Sabri et al., 2010) also showed similar results regarding the role of financial knowledge. Another measurement of financial knowledge is regularly conducted by JumpStart Coalition among school students. Financial knowledge research also saw the use of a "neural network for sensitivity modeling of the determinants of financial literacy and superannuation" (Samy et al., 2008).

Table 1: Definitions

Authors	Definition
Goyal & Kumar (2021)	<i>“the ability to make informed judgments and decisions regarding the use and management of money”</i>
Mahdzan & Tabiani (2013)	<i>“the ability to make informed judgments and to take effective decisions regarding the use and management of money”</i>
Wise (2004)	<i>“the ability to read, analyze, manage and communicate about personal financial conditions that affect material well-being”</i>
Suri & Purohit (2017)	<i>“financial education is the process by which individuals improve their understanding of financial products and concepts; and through information, instruction and/or objective advice develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial wellbeing and protection”</i>
Aydin & Akben Selcuk (2019)	<i>“familiarity with some basic financial terms and concepts which are needed to function daily in a society”</i>
Chen and Volpe (1998)	<i>“Financial literacy is the knowledge to manage finance in the financial decision”</i>
Hussain et al. (2018)	<i>“the knowledge of personal finance as well as the application of that knowledge”</i>

Few studies were found in the literature that measured financial knowledge in GCC countries. Ibrahim and Alqaydi (2013) examined the relationship between financial knowledge and attitude toward debt in UAE. Hassan Al-Tamimi and Anood Bin Kalli (2009) measured the financial knowledge of investors in the stock market considering a sample size of 290. They found that financial knowledge is influenced by “income, education, and workplace activity”.

2.3. Financial Knowledge Scales

The scale to measure financial knowledge has been the theme of several studies. Four prominent scales to measure financial knowledge were discovered in the present literature review. These scales have been adapted by researchers.

- i. Council for Economic Education (CEE) Test of Financial Knowledge (TFK) – This scale (Walstad & Rebeck, 2016) consists of forty multiple-choice questions. The test has two levels - lower-level measuring knowledge and comprehension; and higher-level measuring application.
- ii. Global FinLit Survey Standard and Poor developed a scale to measure financial knowledge (Klapper et al., 2015) that aimed at measuring people’s understanding of fundamental financial concepts.
- iii. Scale developed by OECD – This scale included three dimensions of financial knowledge namely,

“knowledge, attitude, and behavior” (Atkinson & Messy, 2015).

- iv. Financial Fitness for Life High School’ (FFFL-HS) test – This test was developed to measure the financial and economic knowledge of high school students (Council for Economic Education, 2018). The test has fifty questions consisting of ten items spread over five themes.

2.4. Research Hypotheses

Literature shows that the relationship between demographic characteristics, socioeconomic factors, education, and financial knowledge has been investigated in past studies. Jorgensen and Savla (2010) and Van Rooij et al. (2011) also considered the same variables. In a study on students in Turkey, Akben-Selcuk and Altiok-Yilmaz (2014) also analyzed and confirmed the role of “parental income, gender, and class standing” on financial knowledge. Cameron et al. (2014) considered a more comprehensive set of variables that included “students’ demographic profile, ability, socio-economic status, financial socialization, and financial experiences”.

Gender has been specifically considered as an independent variable in some studies (Lusardi et al., 2010; Mandell, 2008). The results are mixed. Some studies show that females have lesser financial knowledge (Lusardi et al., 2010; Lyons et al., 2006), while some found that

gender does not affect financial knowledge (Aydin & Akben Selcuk, 2019). A logical inference was drawn by Jorgensen and Savla (2010), who explained that the financial interests of males and females may be varying. Regarding gender, it is hypothesized that:

H1: *Males have a higher financial knowledge than females*

Academic performance (such as GPA, class ranking, etc.) has also been included as a factor of financial knowledge. A positive relationship has been confirmed in previous studies (Aydin & Akben Selcuk, 2019; Lusardi et al., 2010; Mandell, 2008). Amagir et al. (2020) investigated and confirmed a relationship between “math grades, financial attitude, and financial behavior”. It is hypothesized that:

H2: *Current GPA of a student is positively related to his/her financial knowledge*

Amagir et al. (2020) and Walstad and Rebeck (2017) also confirmed a positive relationship between “financial education and financial knowledge”. Students’ education level has been found to significantly influence financial knowledge (Ibrahim & Alqaydi, 2013). Regarding financial education, it is hypothesized that:

H3: *Degree specialization is significantly related to financial knowledge*

H4: *The number of finance courses taken is significantly related to financial knowledge*

Financial socialization is an important variable considered in several studies (Shim et al., 2010; Sohn et al., 2012). It has been established that financial socialization does affect the financial knowledge of an individual, especially students. Amagir et al. (2020) defined financial socialization as “the process by which young people acquire skills, knowledge, and attitudes relevant to their effective functioning as consumers in the marketplace”. The discussion above leads to hypothesize that:

H5: *Students with higher financial socialization have higher financial knowledge*

3. Research Methods and Materials

3.1. Data

The data set for this research was generated based on a structured survey in a public university in the Kingdom of

Saudi Arabia. This survey was published on Google Forms, and the link was shared with the business students at the diploma, bachelor, and master levels during the Spring semester of 2022. The questionnaire included English as well as Arabic text. The survey link was shared with about 2000 students. A total of 303 valid responses were collected, with a significantly higher concentration on male students.

3.2. Measures

As discussed in Section 2, various scales have been developed to measure financial knowledge.

Financial Knowledge

Financial knowledge was measured using nine questions adapted from various studies (Amagir et al., 2020; Chen & Volpe, 1988; Jorgensen & Savla, 2010; Van Rooij et al., 2011). The final instrument contained questions that covered various domains of financial knowledge. In all the nine questions, there is just one correct answer. For every correct answer, one point was allotted, and zero for the wrong choice. The sum of the total scores indicated the financial knowledge of the respondent.

Gender

Gender was included as the demographic variable. Females were coded 1 and males were coded 0.

Educational Profile

The variables included in the educational profile are – current Grade Point Average, Business specialization, and the number of finance or related courses studied to date. The GPA is measured out of a total of 4. Students were required to write their current GPA in the survey form. Students from three specializations, namely Business Administration, Marketing, and Tourism/Hospitality, were reached for the survey. Regarding several finance/related courses taken, students had to select from three options, namely no courses, 1–2 courses, and more than 1 course.

Financial Socialization

The financial socialization scale was adapted from Amagir et al. (2020). Two questions were included and the respondents were asked to rate on a scale of 1 to 7 (1 = never to 7 = always).

3.3. Analysis

The data set was organized in MS Excel and then exported to SPSS 28.0.0. Statistical tests such as descriptive analysis, *t*-test, ANOVA, and correlation analysis were all performed in SPSS.

4. Results

4.1. Sample Characteristics

A descriptive analysis of the data set shows that there were 266 male respondents (87.8%) and 37 female respondents (12.2%). Students from three specializations were recruited for this study. The number of respondents from business administration was 174 (57.4%), from marketing was 67 (22.1), and from hospitality/tourism was 62 (20.5%). The sample is representative of the population in the college. Students who did not take any finance or related course were 147 (48.5%), while 106 students (35%) had taken one or two courses and 50 students (16.5%) reported taking more than three courses. The students in the university are graded on Grade Point Average (GPA) system, with 4.00 as the maximum. Students were asked to report their current GPA. The mean value for the Grade Point Average of the sample was found to be 3.43 out of 4, with a standard deviation of 0.53.

4.2. Financial Knowledge Score

The financial knowledge score was calculated by adding the points earned by the respondent on the nine questions. Each question was worth one point. The average of all the respondents was calculated in SPSS. The overall mean financial knowledge score of all the respondents was 6.86 out of 9, with a standard deviation of 1.432.

4.3. Relationship between Gender and Financial Knowledge

An Independent sample *t*-test was applied to test the relationship between gender and financial knowledge (see Table 2). Results of Levene’s test show that $p > 0.05$, implying that there is equality in population variances. After confirming this, two-tail significance for this variable was calculated. Therefore, the hypothesis (H1) that there exists a relationship between gender and financial knowledge is rejected.

4.4. Relationship between Educational Profile and Financial Knowledge

4.4.1. Current GPA and Financial Knowledge

A Pearson correlation coefficient was computed to assess the linear relationship between current GPA and Financial Knowledge (see Table 3). It was found that there is a significant correlation between the two variables, $r = [0.121]$, $p = [0.035]$. Therefore, the hypothesis (H2) that there exists a relationship between students’ current GPA and financial knowledge is accepted.

4.4.2. Specialization and Financial Knowledge

To test the effect of business degree specialization on financial knowledge, a one-way ANOVA was performed. The result (Table 4) shows that there exists a significant

Table 2: Gender and Financial Knowledge

	Levene’s Test for Equality of Variances		t-Test for Equality of Means		
	F	Sig.	t	Df	Sig.
Equal variances assumed	3.34	0.069	-2.44	301	0.008
Equal variances not assumed			-2.12	43.16	0.020

Table 3: Correlation Between Current GPA and Financial Knowledge

		GPA	Score_FK
GPA	Pearson Correlation	1	0.121*
	Sig. (2-tailed)		0.035
	N		
Score_FK	Pearson Correlation	0.121*	1
	Sig. (2-tailed)	0.035	
	N	303	303

difference in financial knowledge between at least two groups ($F = 5.76$, $p = 0.04$). Therefore, the hypothesis (H2) that there exists a relationship between students' current GPA and financial knowledge is accepted.

For multiple comparisons, Tukey's HSD test was performed. Results show that the mean value of financial knowledge was significantly different between business administration and marketing specializations ($p = 0.02$, 95% C.I. = [0.21, 1.17]). No statistically significant difference was found between business administration and tourism/hospitality ($p = 0.679$) and marketing and tourism/hospitality ($p = 0.099$).

4.4.3. Number of Finance or Related Courses Taken and Financial Knowledge

To test the effect of the number of finance or related courses on financial knowledge, a one-way ANOVA was performed. The result (Table 5) shows that there exists no significant difference in financial knowledge between at least two groups ($F = 2.41$, $p = 0.092$). Therefore, the hypothesis (H4) that there exists a relationship between the number of finance or related courses taken and financial knowledge is rejected.

4.5. Relationship between Financial Socialization and Financial Knowledge

A Pearson correlation coefficient was computed to assess the linear relationship between financial socialization and financial knowledge (Table 6). No significant correlation was found between the two variables, $r = [0.075]$, $p = [0.195]$. Therefore, the hypothesis (H5) that there exists a relationship between financial socialization and financial knowledge is rejected.

5. Discussion

The mean score of all the respondents was found to be 6.86 out of 9, with a standard deviation of 1.432. Douissa (2020) cited a survey and showed that the percentage of adults in the UAE with adequate financial knowledge is 38%. He found this level to be 31.36%. Ibrahim and Alqaydi (2013) found the financial knowledge score to be 0.43 and mentioned that the average score from the literature is 0.5.

The result shows that there is no significant difference ($p = 0.08$) between gender and financial knowledge. An insignificant relationship has been reported in earlier studies too (Ibrahim & Alqaydi, 2013) and the context of students

Table 4: Specialization and Financial Knowledge

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.89	2	11.45	5.76	0.004
Within Groups	596.00	300	1.987		

Table 5: Number of Finance Courses and Financial Knowledge

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	9.77	2	4.89	2.41	0.092
Within Groups	609.13	300	2.03		

Table 6: Correlation Between Financial Socialization and Financial Knowledge

		Score_FK	Mean_FinSoc
Score_FK	Pearson Correlation	1	0.075
	Sig. (2-tailed)		0.195
	N		303
Mean_FinSoc	Pearson Correlation	0.075	1
	Sig. (2-tailed)	0.195	
	N	303	303

in UAE. Another study in UAE was contradictory (Hassan Al-Tamimi & Anood Bin Kalli, 2009). The general role of gender in financial knowledge has been ambiguous as discussed in Section 2.

The result shows that there exists a significant difference in financial knowledge between at least two groups ($F = 5.76$, $p = 0.04$). This is consistent with past studies (Amagir et al., 2020; Dahlia et al., 2009). No statistically significant difference was found between business administration and tourism/hospitality ($p = 0.679$) and marketing and tourism/hospitality ($p = 0.099$).

The result shows that there exists no significant difference in financial knowledge between at least two groups ($F = 2.41$, $p = 0.092$). The result implies that the students do not gain any substantial financial knowledge through the courses they take during the program. It was found that there is a significant correlation between the two variables, $r = [0.121]$, $p = [0.035]$. This result is consistent with Douissa (2020) and Suri and Purohit (2017) who also reported a significant relationship between the academic performance of a student and his/her financial knowledge.

No significant correlation was found between financial socialization and financial knowledge, $r = [0.075]$, $p = [0.195]$. The result contradicts the findings of (Amagir et al., 2020) who found a significant relationship between financial socialization and financial knowledge.

6. Conclusion

Various research directions emerge out of the current research. The role of financial knowledge on variables like entrepreneurship is an important area that needs to be studied, as also recommended by Kojo Oseifuah (2010). Assessment of the effectiveness of curriculum should also be examined to check its impact on financial knowledge, in line with Davidson (2006). Based on the results, pertinent authorities can envisage better financial training for students to increase their financial knowledge. Special programs for students with low GPAs should be formulated in high schools as well as universities. Financial knowledge is undoubtedly a critical skill a student must acquire to make correct decisions as well as discharge his professional duties.

This research explored the relationships between the independent variables and financial knowledge. Causal research would determine if the variables indeed cause the impact on financial knowledge or not. One aspect of the survey that could not be controlled was that students answered the financial knowledge questions without any external supervision. There is a possibility that they might have used external means rather than their knowledge. Secondly, the sample was collected from one university through convenience sampling. This affects the generalizability of the results. Extending the survey to non-business students will add more authenticity to the findings.

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