Journal of Management and Business Education

JMBE

DEMOGRAPHIC AND SOCIO-ECONOMIC DETERMINANTS OF MULTIDIMENSIONAL FINANCIAL LITERACY AMONG YOUNG ALGERIAN UNIVERSITY STUDENTS

DETERMINANTES DEMOGRÁFICOS Y SOCIOECONÓMICOS DE LA ALFABETIZACIÓN FINANCIERA MULTIDIMENSIONAL ENTRE JÓVENES ESTUDIANTES UNIVERSITARIOS DE ARGELIA

Nour El Houda Yahiaoui*
https://orcid.org/0000-0002-5604-7073 (ORCID iD)
Universidad Djillali Liabes (Argelia)

2023
Vol.6 Num. 2
199-221

Language: English
Received: 11 February 2023 / Accepted: 12 April 2023

ABSTRACT

Financial literacy is crucial for young university students to make sound financial decisions and improve their future well-being. This study examines demographic and socio-economic determinants of multidimensional financial literacy among young Algerian university students. The study employed a cross-sectional survey research design. It broadly adheres to the OECD definition of financial by segregating it into its main dimensions: financial knowledge, behavior, and attitude. Data was gathered from a sample of 368 university students and analyzed using multiple regression analysis. The study found a significant relationship between financial literacy, gender, the field of study, and bank account ownership. Female students are 3.64 times less financially literate than male students. Students majoring in scientific (hard) disciplines are 4.65 times more financially literate than non-scientific (soft) disciplines. Students with no bank account are 4.67 times less financially literate than those who own one.

Yahiaoui, N.E.H. (2023). Demographic and socio-economic determinants of multidimensional financial literacy among young Algerian university students. *Journal of Management and Business Education*, 6(2), 199-221. https://doi.org/10.35564/jmbe.2023.0010
*Corresponding author: nour_el_houda.yahiaoui@univ-sba.dz
http://www.nitoku.com/@journal.mbe/issues ISSN: 2605-1044

The study found a non-significant relationship between financial literacy and the variables: students' level of education, the field of specialty, work experience, family income, father's education level and mother's education level. What is noticed is that the financial literacy level of economics and major in business students does not differ from those students of other majors.

KEYWORDS

financial literacy, university young students, financial knowledge, financial behavior, financial attitude, demographic and socio-economic factors.

RESUMEN

La educación financiera es clave para que los jóvenes universitarios tomen decisiones financieras acertadas y mejoren su bienestar futuro. Este estudio tuvo como objetivo examinar los determinantes demográficos y socioeconómicos de la alfabetización financiera multidimensional entre jóvenes estudiantes universitarios argelinos. El estudio empleó un diseño de investigación de encuesta transversal. Se adhiere ampliamente a la definición financiera de la OCDE al segregarla en sus dimensiones principales: conocimiento financiero, comportamiento y actitud. Los datos se recopilaron de una muestra de 368 estudiantes universitarios y se analizaron mediante análisis de regresión múltiple. El estudio encontró una relación significativa entre la educación financiera, el género, el campo de estudio y la propiedad de una cuenta bancaria. Las estudiantes mujeres tienen 3,64 veces menos educación financiera que los estudiantes varones. Los estudiantes de disciplinas científicas (duras) tienen 4,65 veces más conocimientos financieros que los estudiantes de disciplinas no científicas (blandas) y los estudiantes que no tienen cuenta bancaria tienen 4,67 veces menos conocimientos financieros que los que tienen una cuenta bancaria. El estudio encontró una relación no significativa entre la educación financiera y las variables: nivel de educación de los estudiantes, campo de especialidad, experiencia laboral, ingreso familiar, nivel de educación del padre y nivel de educación de la madre. Lo que se nota es que el nivel de alfabetización financiera de los estudiantes de la carrera de economía y negocios no difiere del de otros estudiantes de otras carreras.

PALABRAS CLAVE

Educación financiera, jóvenes universitarios argelinos, conocimiento financiero, comportamiento financiero, actitud financiera, factores demográficos y socioeconómicos.

INTRODUCTION

Maintaining financial security throughout adulthood to help attain old age with ease is more important than ever in a contemporary era of long-life spans. However, only some achieve the same level of financial security. In most countries, people need to be adequately equipped to make sound and rational financial decisions since they need to understand principal financial concepts.

Financial literacy is critical in an era when financial products are easily accessible to a broad segment of people. According to Lusardi & Mitchell (2014), financial products and services are more widely available; financial markets have become more accessible for individuals and investors. Thus, understanding and mastering financial products and services requires a certain level of financial literacy. Understanding financial concepts of saving and investment, budgeting, income, and financial planning entitle one to essential skills to manage personal financial matters, make short-term financial decisions and shape sound long-term financial security (Lusardi & Mitchell, 2014). Financial literacy helps manage financial resources effectively; investors with weak financial literacy make irrational or unfavorable investment decisions (Son & Park, 2019). In contrast, financial literacy moderates the association between behavior biases and investment decision positively for both male and female investors (Adil, Singh, & Ansari, 2022) and help a literate investor neglect his biases and make sound financial decisions (Son & Park, 2019).

All the above put the young generation today in a challenging situation and made studies of financial literacy among young university students gain momentum. Financial literacy has a broad impact on young people, from their daily lives to their long-term well-being. Financial education and financial literacy are the main channels for addressing societal inequities, particularly career advancement gaps and gender wage (Park et al., 2021). Financial literacy is considered more vital for young university students who are financially dependent and are passing from a stage of dependence to a stage of independence in their financial responsibilities. They are at a phase of knowledge-gaining and skill development (Ana & Wan Ahmad, 2020). They face new challenges of managing their finances, earning their own money, and making independent financial decisions, including budgeting, managing income and expenses and paying bills (Ana & Wan Ahmad, 2020; Johan et al., 2020). Financial literacy enhances students' rational decision-making (Lusardi & Mitchell, 2014); it helps them focus on their financial resources, manage them, get the most out of them, and promote regular saving and rational spending (Ana & Wan Ahmad, 2020; Świecka, 2019). More recently, other studies showed financial literacy's direct effect on undergraduate students' financial self-efficacy (Herawati et al., 2020; Kartawinata et al., 2021). In turn has a significant effect on financial inclusion (Kartawinata et al., 2021). Although, young adults demonstrate low financial literacy levels (Brau, Holmes, & Israelsen, 2019).

Algeria enjoys a young demographic profile, with a population of 44.6 million habitats; the Algerian youth between the age of 15 to 29 years represents 23% of the total population, the equivalent of 9.77 million individuals and the share of the population of working age (15 to 59 years old) is about 59.6% in 2020 (National statistic office, 2020). However, Global Financial Literacy Excellence Centre study reports an apparent gap in people's financial literacy levels. Algeria has one of the lowest financial literacy rates. It is estimated that (33%) of adult men are financially literate against (28%) of women, compared to Canada, with the highest financial literacy rate among men (78%) and the United Kingdom, which has the highest financial literacy rate among women (72%) (Hasler & Lusardi, 2017).

In Algeria, empirical evidence related to financial literacy is limited; most recent studies are related to the general public financial literacy, e.g., Cherabi

(2018) and Babas & Fali (2020). Two other studies are related to young university students, e.g., Zaibet & Cherabi (2020) and Othmani & Larbi (2022). However, it does not discuss the demographic or socio-economic determinants of financial literacy among young university students. In response to this identified gap, this study examines the socio-economic and demographic determinants of multidimensional financial literacy among young university students from a broader perspective regarding its main dimensions: financial knowledge, attitude, and behavior. We adhere broadly our measures to the OECD's definition of financial literacy (OECD, 2017; Atkinson & Messy, 2012) by employing its comprehensive large-scale survey and methodology conducted in 2018 (OECD, 2018).

This study adds to the body of knowledge in three ways. First, it offers a theoretical framework of socio-economic and demographic financial literacy determinants among young university students. Second, in the Algerian context, this is a critical study investigating the determinants of multidimensional university young students' financial literacy from financial knowledge, attitudes, and financial behavior perspective. Finally, this study offers a good perspective on the levels of university students' financial literacy and the differences in this level based on demographic and socio-economic determinants.

The rest of our paper is structured as follows: Section 1 describes the theoretical framework and the hypotheses' development, Section 2 describes the research design and methodology, Section 3 discusses the data analysis and empirical findings, and then we conclude our research findings.

LITERATURE REVIEW

The term "financial literacy" was coined in the United States in 1787. It was first proposed in academic literature and championed as a theoretical construct in 1997 during a Jump$tart Coalition survey (Park et al., 2021). Since then, financial literacy has been interpreted from various fields of knowledge and measured by researchers mainly over the last few decades. Santini et al. (2019) addressed a meta-analytic study to determine the antecedents and consequences of financial literacy. The study collected data from seven databases. They used a search criterion of "Financial literacy", "Defining and measuring financial literacy", and "Measuring financial literacy" and identified 397 studies, where 141 were qualitative.

Financial literacy is the sum of financial knowledge, behavior, and attitude

Theoretically, the literature said much about financial literacy as a construct. However, in practice, financial literacy is a complex concept to measure. It has been operationalized in the academic literature to refer to financial knowledge about financial concepts and financial products, having the numeracy required for effective financial decision-making, and engaging in other activities like financial planning (Świecka, 2019).

The OECD was the first institution to provide an inclusive definition of financial literacy and to introduce its concept on a large scale: "Financial literacy is knowledge and understanding of financial concepts and risk and the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the

financial well-being of individual and society, and to enable participation in economic life" (OECD, 2017). The definition has two parts; the first refers to the kind of thinking and behavior characteristics, and the second refers to the importance of developing particular literacy.

Financial literacy is "a combination of awareness, knowledge, skills, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual well-being" (Atkinson & Messy, 2012). The International Network introduced this definition of Financial Education, which is now globally acknowledged. It was also endorsed by the G20 leaders in 2012 (Świecka, 2019). The Jump$tart Coalition identifies two key elements across different definitions of financial literacy. First, financial literacy is the knowledge of personal finance, and second, it concerns one's ability to use key information and resources to achieve and maintain financial well-being (OECD).

In PISA's terms, "literacy" refers not only to the capacity of a 15-years-old student to apply knowledge and skills in a key subject but also to the student's ability to analyze, reason, and communicate as they pose, solve, and interpret a problem in a variety of situations (OECD, 2017). According to Atkinson & Messy (2012), the definition makes it clear that "financial literacy is something more than knowledge; it also includes attitudes, behaviors, and skills. It stresses the importance of decision making – applying knowledge and skills to a real-life process – and indicates that it should improve one's financial well-being".

Financial knowledge is gained through education and refers to people's ability to recall financial concepts, such as decreasing expenses and debts, increasing income and assets, understanding financial concepts and procedures, and putting this knowledge to use in solving financial problems (Świecka, 2019). As a result, financial knowledge tends to improve financial literacy (Lusardi et al., 2011) and has an impact on the ability of someone to manage his income, expenses, and savings. Financial knowledge for students entails understanding simple but perplexing financial matters such as interest rates on their student loans, savings, and future savings returns (Ana & Wan Ahmad, 2020). They can also improve their financial knowledge by gathering financial information (Happ, Hahn, Jang, & Rüter, 2022).

Financial attitude is a collection of concepts and emotions associated with the proclivity to deal favorably with financial matters. The financial attitude dimension comprises a combination of judgment or proclivity and proclivity to respond positively or negatively to financial and money-related issues (Chaulagain, 2015). According to Atkinson & Messy (2012), the benefits of being financially literate are broader than knowledge and skills; it also expands to behaviors such as financial security and expenditure planning. Financial literacy depends on applying financial knowledge and skills to acquire a good attitude and behave according to it.

Financial attitudes and behaviors among young university students sometimes correlate with their financial knowledge and capability. Students who understand financial concepts (like saving) rather than practicing it, tend to overspend; they would like to spend on present consumption rather than saving for the future. Similarly, A financially responsible student who recognizes that saving is one way he can ensure his future may decide to save rather than consume (Ana & Wan Ahmad, 2020). Many factors significantly influence financial behavior, such as cultures, values, experiences, and environment (Chaulagain, 2015).

Thus, Atkinson & Messy (2012) considered that the incorporation and consolidation of these three dimensions: financial knowledge, attitudes, and behaviors result in a practical and measurable definition of financial literacy; it underpins sound financial decision-making and solid management of personal finance, which can be interpreted into financial security and well-being.

Socio-economic and demographic determinants of financial literacy

One of the aspects related to financial literacy among young university students is its relationship with their demographic and sociocultural background. Studies in different contexts studied financial literacy determinants among young university and college students. The theoretical framework used in this study uses a comprehensive literature review of previous studies. We define nine (09) determinants of financial literacy: gender, the field of study, the field of specialty, level of education, bank account ownership, family income, work experience, paternal education level, and maternal education level.

Socio-economic status is related to financial literacy; people with low levels of financial literacy are young, have low levels of education, are single, female, receive low incomes, or are unemployed (Johan et al., 2020). Financial literacy is associated with students' family income; low-income levels make it hard for people to save or spend (Loke, 2017; Lusardi, Mitchell, & Curto, 2010; Mandell, 2008a). Thus, one determinant of financial literacy is to be able to cover one's expenses. Along the same lines, the higher the parental socioeconomic status, the higher the students' financial literacy; students with parents of high socio-economic status have many opportunities to develop a wide range of skills that allow them to have high financial literacy levels (Herawati et al., 2020). In contrast, students from low socio-economic status families have low financial literacy levels (Amagir, Groot, Brink, & Wilschut, 2020). Students from affordable families are more familiar with financial issues; they seek financial information and are more flexible in allocating their resources to achieve the best possible outcomes (Lusardi & Mitchell, 2011; Atkinson & Messy, 2012). Financially capable families support their children financially, allowing them to learn how to deal with financial issues (Fazli Sabri et al., 2012).

We should understand sociocultural variables as a result of an in-depth comparison of their impact on each dimension of financial literacy. For example, Johan et al. (2021) found that income levels influence financial behavior but do not correlate with attitude or knowledge. His interpretation confirms the importance of income levels and living standards; we should consider the broader economic context for people living on low incomes and needing more resources to save or manage effectively.

Students used to deal with finance issues or are more exposed to personal finance issues are more financially literate (Mandell, 2008b). Many studies considered having a bank account as a predictor of financial literacy and found that those who had a bank account were more financially literate than those who did not (Liaqat et al., 2021; Nidar & Bestari, 2012). However, Douissa (2020) found that students with bank accounts are more financially knowledgeable than those without one. Students with a savings account, a current account, or both savings and current accounts are respectively more financially knowledgeable but do not have higher financial literacy levels. Furthermore, using a credit card to purchase improves financial literacy among students more than using a debit card only for purchases (Mandell, 2008b), and

students who used financial services (current account, debit card and investment services) have higher levels of financial literacy (Mändmaa, 2020).

Parental level of education is a significant indicator of a student's financial literacy. Studies on students' familial and academic backgrounds examined both parents' education levels and demonstrated that educated parents' financial literacy is positively associated with their high school teenager's financial literacy (Mandell, 2008a; Lusardi, Mitchell, & Curto, 2010). Parents with high academic levels of education are more involved in business and investment experiences; they impact their children's financial behavior through sound financial practices (Fazli Sabri et al., 2012). Students whose mothers have a university degree have more financial knowledge than students without a college degree are disadvantaged and have lower financial knowledge and do not possess the necessary attitude to apply this knowledge in daily financial decision-making (Amagir et al., 2020).

However, Douissa (2020) investigated this relationship among university students in UAE, and he found that parents' education levels do not correlate with any dimension of students' financial literacy except for the group of students whose mothers are at postgraduate levels, who are less financially literate than those whose mothers are at primary education levels. The maternal education level was negatively associated with financial attitudes to all student groups, implying that students whose mothers have higher education levels have poor financial attitudes. Douissa (2020) explained the insignificance of parental education levels as determinants of financial literacy by cultural and social factors in the Middle East. According to Islamic religion and Middle Eastern customs, males are financially responsible for the family; they receive more financial and psychological support during their instruction journey. Another explanation was that polygamy has a negative impact on fathers' participation in their children's education. For mothers in the Middle East, education is a strong determinant of women's financial independence, which leads to reluctance in children's education. Well-educated women tend to entrust their children's education to illiterate housemaids; as a result, children do not receive proper family education and learn bad personal finance habits, such as open budgets without supervision (Douissa, 2020).

Gender is an essential demographic determinant of financial literacy; it causes noticeable variation in financial literacy. According to most studies, male students have higher financial literacy levels than female students (Douissa, 2020; Fazli Sabri et al., 2012; Gutter & Copur, 2011; Hung, Yoong, & Brown, 2012; Kiliyanni & Sivaraman, 2018; Lantara & Kartini, 2015; Lusardi, Mitchell, & Curto, 2010; Mandell, 2008a) and have higher financial information literacy levels too (Liaqat et al., 2021). Financial literacy and gender relation takes many other details; for example, male students are more knowledgeable about insurance and loans, while females are more knowledgeable about managing money (Danes & Hira, 1987). Males make more financial decisions than females, so they are more financially knowledgeable and understand financial concepts much better (Ansong & Gyensare, 2012), while females are less knowledgeable about financial matters (Driva, Lu, & Winter, 2016). Male students are better performers in product selection and wealth accumulation, while female students are skillful at money management in the short term (Kempson, Perotti, & Scott, 2013). They differ in their attitudes towards money; male students score higher on power/prestige, thinking before acting and quality

for money, while females score higher on financial planning (Amagir et al., 2020).

Many other variables can influence gender and financial literacy relationship; Mandell (2008b) found in their second study that gender difference changes over time, with girls outperforming boys in financial literacy. This relationship can also be related to the place of origin; in social contexts where men are more financially literate, they tend to have the opportunity to manage everyday household financial matters while women are marginalized (Agarwalla, Barua, J, & Varma, 2013). Also, women from low-income households have higher financial awareness, whereas a student from urban has better financial attitudes (Ana & Wan Ahmad, 2020). Women are more financially literate when they have the opportunity for education and form personal financial responsibilities (Fazli Sabri et al., 2012). Women have higher personal financial knowledge compared to men when majoring in hard disciplines (Mändmaa, 2020). Nationality can influence this relation; when studying financial knowledge with to gender, (Happ et al., 2022) determined a gender difference in Germany but not in Korea; male students in Germany score higher financial knowledge levels than female students. Meanwhile, several studies have presented conflicting findings that found no difference in financial literacy levels between men and women (Shaari, Hasan, Mohamed, & Sabri, 2013).

Aside from socio-economic factors, formal financial education at school or informal financial education received at home are likely to influence young adults' financial knowledge and, as a result, their attitudes and behavioral intentions (Shim et al., 2010). Financial learning quality has a significant effect on students' level of financial literacy, and it is important to improve financial learning quality in both the cognitive aspect (knowledge) and the practical aspect (Herawati et al., 2020). Brau, Holmes, & Israelsen (2019) concluded that while some formal learning activities enhance literacy, the most significant impact is associated with experiential learning.

For the same reason, studies have examined the effects of the student's field of study or academic exposure to financial matters on their financial literacy levels. Existing literature confirms that economics, business, and finance students are more financially literate than non-business students. Business students studying business, finance, economics, or accounting outperform non-business students in financial knowledge, planning, and decision-making (Kiliyanni & Sivaraman, 2018; Lantara & Kartini, 2015). On the other hand, Douissa (2020) investigated this relationship and found that contrary to popular belief, economics, and business students are not different in financial literacy from their counterparts from other fields of specialty. He identified the field of study as another variable with a significant positive relationship with students' financial literacy, arguing that students majoring in scientific (hard) fields of study are more financially literate than those majoring in non-scientific (soft) fields of study, e.g., students studying civil engineering have higher financial knowledge compared to others, especially female students (Mändmaa, 2020).

The level of education is another variable that existing literature reported to have a significant relation with financial literacy; a higher level of education results in higher levels of financial literacy (Kiliyanni & Sivaraman, 2018; Lusardi et al., 2011; Mändmaa, 2020). Working experience allows students to learn about financial matters like money management. Learning by experience allows young students to gain a sense of responsibility and broaden their knowledge

and experience of money management. Work experience is a strong determinant factor of financial literacy, as it relates to various levels of financial knowledge, attitudes, and behavior. Johan et *al*. (2021) found that approximately four out of ten students had work experience, such as running a small business or a part-time job, and working students learned from the experience of managing money. Another important reason is that students who work have higher incomes and are thus more capable of managing their financial resources and thus score higher financial behavior (Johan et al., 2021; Shim et al., 2010; Xiao & O'Neill, 2016).

Reviewed literature yields contradictory findings regarding the relationship between levels of financial literacy and socio-demographic factors. Based on the stated purpose of the study and the literature review, we formulate our hypotheses as follows:

H1. Gender has a statistically significant impact on Multi Financial literacy score.

H2. Level of education (Postgraduate students/undergraduate) has a statistically significant impact on Multi Financial literacy score.

H3. Field of study (hard disciplines (scientific areas)/soft disciplines (non-scientific ones) has a statistically significant impact on Multi Financial literacy score.

H4. Field of specialty (Business Students/non-Business ones) has a statistically significant impact on Multi Financial literacy score.

H5. Owning a bank account has a statistically significant impact on Multi Financial literacy score.

H6. Work experience has a statistically significant impact on Multi Financial literacy score.

H7. Family income has a statistically significant impact on Multi Financial literacy score.

H8. High-educated fathers have a statistically significant impact on Multi Financial literacy score.

H9. High-educated mothers have a statistically significant impact on Multi Financial literacy score.

METHODOLOGY

Sample and Data collection

This study uses a cross-sectional design conducted among young Algerian university students. This study uses data from an online survey sent via student groups to a random sample of 3,500 students during the fall semester 2021-2022. The survey is in both languages (French/Arabic), so the student can choose the language to complete the electronic survey. The response rate was 10.60%. The result was 371 respondents, of which 63.9% were female students. The sample was generally representative of the Algerian university by gender and field of specialty background. The response rate was satisfying; it allows statistical inference on the university students' population.

Our sample size is large enough and representative; it adheres to different authors' guidelines for the number of cases needed for multiple linear regression. The formula used by Tabachnick & Fidell (2013, p. 123) to calculate sample size requirements takes into account the number of independent variables used: $N > 50 + 8m$ (where m represents the number of independent

variables) (Pallant, 2013, p. 142). Our study has nine (09) independent variables; we needed at least 132 cases.

Measures and instruments

In this study, we use the financial literacy concept following OECD definition: 'A combination of knowledge, attitude and behavior necessary to make sound financial decisions and achieve individual financial well-being (Atkinson & Messy, 2012). Thus, financial literacy is our dependent variable, conceptualized in three dimensions: financial knowledge, attitudes, and behavior.

Given the challenges of designing a questionnaire to measure financial literacy accurately, we adopted the methodology of the OECD (OECD, 2017; Atkinson & Messy, 2012) in measuring financial literacy from a broader approach; this should provide a more appropriate measure of financial literacy. We employed OECD comprehensive large-scale survey conducted in 2018 (OECD, 2018). Many other studies used this questionnaire, such as (Douissa, 2020). The measure has three dimensions: financial knowledge, behavior, and attitude. The multidimensional survey included the following categories of questions: General questions (10 questions), Financial knowledge (08 questions), Financial behavior (07 statements), and Financial attitude (03 statements).

We adapted the survey developed by OECD to fit the Algerian context since we consider financial literacy a concept that varies significantly between countries within the same region. Even though questions about inflation, the time value of money, and risk diversification are universal, other statements concerning financial behavior and attitude vary depending on the socio-economic aspects of each country (Douissa, 2020). Since students were not majoring in business or economics, the statements for the three dimensions were scaled back. As a result, rather than sophisticated financial concepts of corporate finance and capital markets, we emphasize simple personal finance aspects (Ana & Wan Ahmad, 2020).

We translated the questionnaire into Arabic and French. We also modified a few questions and statements to make them more appropriate to the Algerian university students, given that this questionnaire was developed for a general public survey in a developing country. For example, we used the Algerian Dinar currency (AD) to express money, and we introduced new questions in two dimensions to consider Algerian society's sociodemographic and economic aspects. We introduced one new question in the financial knowledge dimension related to the concept of Murabaha since it is the most used and known financial tool in the Algerian banking system. In addition, we added two new statements in the financial behavior dimension related to Islamic teaching in dealing with financial matters, mainly profligacy inspired by Ana & Wan Ahmad (2020).

In our study, financial knowledge refers to the ability to understand financial concepts and financial calculations. We measure financial knowledge using eight (08) questions focused on knowledge about the implications of interest rates, managing money, inflation, interest rates, diversification, investment, risk and return on investment. Financial knowledge grows into the abilities required to moderate people's financial behavior and attitudes (Johan et al., 2021). We primarily used multiple-choice questions and some true/false questions to assess financial knowledge. We give 1 point for each correct answer and 0 for

each incorrect answer. The financial knowledge score is calculated by adding the total scores obtained from correctly answering the questions. As a result, it falls between 0 and 8 (OECD, 2018, p. 40).

Financial behavior is the second dimension of financial literacy. It is defined as how people behave in personal finance and measures how they behave in financial transactions. Financial behavior assesses whether people use financial knowledge skillfully to make better financial decisions because the positive outcomes of financial knowledge depend on how positively people behave financially (Kadoya & Rahim Khan, 2020). To measure financial behavior, we used seven (07) qualitative statements. Respondents were asked how often, if at all, they behaved in certain ways. The statements were evaluated using a Likert scale with a five-point agreement scale, with 1 indicating strong agreement and 5 indicating strong disagreement. We give 1 point to respondents who rate themselves as 1 or 2 on the scale and 0 points to everyone else. Summing the total score yields the financial behavior score. As a result, it falls between 0 and 7. Higher scores were interpreted as a reflection of positive behavior (OECD, 2018, p. 40).

Financial attitude is another essential dimension of financial literacy because people often fail to translate their knowledge and skills into attitude. Most of the time, more than financial knowledge is needed to gain the necessary behavior when making financial decisions (Amagir et al., 2020). Thus, a financial attitude refers to a person's preferences, feelings, and beliefs regarding personal finance issues; it measures people's attitudes toward financial issues. To quantify financial attitude, we must understand that it refers to whether people devote enough attention to their financial concerns to secure future benefits. People's financial attitudes do not consider their ability to save more for the future. Instead, it is concerned with whether people place enough emphasis on future financial security (Kadoya & Rahim Khan, 2020). We included three statements that focused on whether people value the present or the future more. People are assumed to have a positive financial attitude if they prefer the future over the present, so prioritizing future savings over current consumption is a sign of a positive financial attitude (Johan et *al*., 2021). Statements were graded on a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree), where 1 indicates strong agreement and 5 indicates strong disagreement. The attitude score is calculated as the average response across three attitude questions: the sum of the three statement values divided by three. As a result, the attitudes score ranges from 1 to 5 (OECD, 2018, p. 40).

Measuring the three main dimensions of financial literacy makes it possible to construct a full measure of it. Overall financial literacy is measured by averaging the values of financial knowledge, behavior, and attitude values to get a multi-financial literacy score. This score is used as a dependent variable in this study.

Data Analysis Approach

When examining the data, we deleted the responses of three (03) students because they answered "Neutral" in all questions about financial behavior and financial attitude. As a result, the total number of respondents was reduced to 368 (response rate: 10.51%). The collected data were processed using Microsoft Excel and SPSS. Then, financial knowledge, attitude, and behavior summary scores and indexes were computed separately. The overall financial literacy score is calculated by adding the three previous scores: financial

knowledge (8), financial behavior (7), and financial attitudes (3). It can take any value between 1 and 18. It is normalized to 100 by multiplying by 100/18 (OECD, 2018, p. 40).

The survey responses for the 18 questions are used to calculate each participant's multidimensional financial literacy score as follows:

$$\text{Multi Financial literacy score} = \frac{\text{Financial Knowledge score} + \text{Financial Behavior score} + \text{Fin Attitude score}}{\text{Overall maximum score}} * 100$$

Financial Knowledge score = the total score of the 08 questions related to financial knowledge.
Financial Behavior score = the total score of the 07 statements related to financial behavior.
Fin Attitude score = the total score of the 03 statements related to financial attitude.
Overall maximum score = 18

We constructed our model to explore the impact of socio-economic and demographic factors on financial literacy using multiple linear regression analysis. The dependent variable is the composite score of financial literacy, while the independent variables are: gender (male/ female), the field of study (scientific (hard) disciplines/ non-scientific (soft) disciplines), the field of specialty (Economics-Business major/ non-Economics Business major), level of education (Postgraduate students/undergraduate), owning a bank account (yes or no), family income (22.500-30.000, 30.500-37.000, 37.500-43.000, +43.500 AD), work experience (yes or no), parental education level (primary and middle, secondary, undergraduate, postgraduate), and maternal education level (primary and middle, secondary, undergraduate, postgraduate). Accordingly, the following equation describes our multiple linear regression model:

$$Y = \alpha + \beta_1 X1 + \beta_2 X2 + \beta_3 X3 + \beta_4 X4 + ... + \beta_9 X9 + \varepsilon.$$

Y = Financial literacy (Multi Financial literacy score).
X1 = Gender (1 = male, 2 = female).
X2 = level of education (1 = undergraduate students, 2 = postgraduate students).
X3 = Field of study (1 = scientific (hard) disciplines, 2 = non-scientific (soft) disciplines).
X4 = Field of specialty (1 = Economics-Business major, 2 = non-Economics-Business major).
X5 = Bank account ownership (1 = yes; 2 = no)
X6 = Work experience (1 = work experience; 2 = no work experience).
X7 = Family income (1 = 22.500-30.000, 2 = 30.500-37.000, 3 = 37.500-43.000, 4 = +43.500).
X8 = Father education level (1 = primary and middle, 2 = secondary, 3 = undergraduate, 4 = postgraduate).
X9 = Mother education level (1 = primary and middle, 2 = secondary, 3 = undergraduate, 4 = postgraduate).
β1-9 = Regression Coefficient.
α = Constant.
ε = *Error*

We used descriptive analysis to examine the data's overall statistics and test multiple linear regression assumptions. Several tests were performed before the

multiple regression test, including normality and autocorrelation tests (tests in the appendixes), multicollinearity (results are discussed in table 4 in the bivariate analysis section), and homoscedasticity (Pallant, 2013, pp. 156-157). All tests performed well. We used multiple linear regression to figure out what factors influence financial literacy.

RESULTS

Descriptive statistics: univariate analysis

Table 1. Financial literacy descriptive statistics for the sample

Variable	Observations	Mini	Max	Mean	Std. Dev
Multi Financial literacy score	368	29,6296	100,00	66,7773	14,3647
Financial Knowledge	368	,0	8,00	4,280	1,5661
Financial Behavior	368	,0	7,00	4,726	1,7244
Financial Attitude	368	1,00	5,00	3,0144	,9449
Financial literacy	368	5,3333	18,00	12,0199	2,5856
N valid (list)	368				

Table 1 summarizes the main dimensions of financial literacy. The multi-financial literacy score was used as a dependent variable in this study. Respondents' average multi-financial literacy score, financial knowledge, behavior, and attitude scores are 66.73 (standard deviation (SD) = 14,36), 4,280 (SD = 1,56), 4,72 (SD = 1,72), and 3,01 (SD =,94), respectively.

Table 2. Independent variables and the distribution of the sample

		Frequency	Percent (%)	Cumulative Percent (%)
Gender	Male	133	36,1	36,1
	Female	235	63,9	100,0
	Total	**368**	**100,0**	
Education Level	undergraduate	236	64,1	64,1
	Post graduate	132	35,9	100,0
	Total	**368**	**100,0**	
Field of Study	Hard discipline	133	36,1	36,1
	Soft discipline	235	63,9	63,9
	Total	**368**	**100,0**	
Field of Specialty	Non-Economics-Business	237	64,4	64,4
	Economics-Business	131	35,6	35,6
	Total	**368**	**100,0**	
Work Experience	Yes	88	23,9	23,9
	No	280	76,1	76,1
	Total	**368**	**100,0**	
Bank Account ownership	Yes	149	40,5	40,5
	No	219	59,5	59,5
	Total	**368**	**100,0**	
Family Income	22.500-30.000 AD	95	25,8	25,8
	30.500-37.000 AD	66	17,9	17,9
	37.500-43.000 AD	59	16,0	16,0
	+43.000 AD	148	40,2	40,2
	Total	**368**	**100,0**	
Father Education Level	Primary and Middle	163	44,3	44,3
	secondary	96	26,1	26,1
	undergraduate	54	14,7	14,7
	Post graduate	55	14,9	14,9
	Total	**368**	**100,0**	
Mother Education Level	Primary and Middle	174	47,3	47,3
	secondary	121	32,9	32,9
	undergraduate	53	14,4	14,4
	Post graduate	20	5,4	5,4
	Total	**368**	**100,0**	

Table 2 summarizes the demographic and socio-economic backgrounds of the respondents. It indicates that more than half of the respondents are female (63,9 %). Most of the students are from soft disciplines (63,9 %), and most of their families earn an average yearly income of more than 43.000 AD. (76,1 %) of the students are unemployed and have no work experience. Regarding their parents' education level, both parents' and mothers' educational levels are primary and middle school (44,3 %) and (47,3 %), respectively.

Descriptive statistics: bivariate analysis

Table 3 shows the interrelationships between survey respondents' financial knowledge, attitude, and behavior. The results show a significantly positive relationship between financial knowledge and behavior, supporting the implications of the conceptual model of Shim, Barber, Card, Xiao, & Serido (2010), a significantly negative relationship between financial behavior and attitude, and a non-significant relationship between financial knowledge and attitude. These findings do not support the literature review that reported a significant positive relationship between financial knowledge, behavior, and attitude (Kadoya & Rahim Khan, 2020). The difference is that these studies

were conducted among the general public, not young university students. What is remarked also is that these correlations are low and are not higher than ,15.

Table 3. Relationship between financial knowledge, behavior, and attitude

	Financial Knowledge	Financial Behavior	Financial Attitude
Financial Knowledge	1		
Financial Behaviour	,104* (,046)	1	
Financial Attitude	,100 (,054)	-,151** (,004)	1

*. Significative correlation at level of 0.05 (bilateral).
**. Significative correlation at level of 0.01 (bilateral).
Note: p values within parentheses.

Table 4 reports Spearman's correlation matrix of categorical and ordinal independent variables. It shows that a correlation exists between a few variables. The correlation coefficients between different independent variables are less than ,7. The tolerance value for each independent variable is less than .10; therefore, we have not violated the multicollinearity assumption. The VIF values, which are well below the cut-off of 10, also indicate no multicollinearity problem in the model (Pallant, 2013, p. 150); therefore, all variables will be retained.

Table 4. Correlation matrix of independent variables

	Gender	Educ Level	Field Study	Field Special	Bank Acount	Work Exp	Family Income	Fath Edu	Moth Edu	Tolerance	VIF
Gender	**1,00**									,857	1,166
Educ Level	-,062 (,116)	**1,00**								,897	1,115
Field Study	,129 (,007)	,126 (,008)	**1,00**							,621	1,611
Field Special	,028 (,298)	-,024 (,326)	,559 (,000)	**1,00**						,658	1,519
Bank Acount	,002 (,487)	,063 (,115)	-,010 (,426)	,035 (,251)	**1,00**					,988	1,012
Work Exp	,334 (,000)	-,205 (,000)	,042 (,209)	,031 (,277)	,018 (,367)	**1,00**				,852	1,173
Family Income	,041 (,216)	-,052 (,162)	-,101 (,027)	,057 (,137)	-,044 (,202)	,006 (,454)	**1,00**			,864	1,158
Fath Edu	,121 (,010)	-,189 (,000)	-,164 (,001)	-,064 (,109)	-,013 (,401)	,083 (,055)	,335 (,000)	**1,00**		,592	1,689
Moth Edu	,081 (,060)	-,166 (,001)	-,180 (,000)	-,052 (,159)	-,024 (,325)	,055 (,147)	,241 (,000)	,594 (,000)	**1,00**	,635	1,576

Note: p values within parentheses

Estimation results of the econometric model

Table 5 reports the multi-regression model estimated coefficients for the demographic and socio-economic factors explaining financial literacy. The coefficients show a significantly negative relationship between financial literacy and gender, the field of study, and bank account ownership. The model estimates demonstrate no relationship between respondent students' level of education, the field of specialty, work experience, family income, father's education level, and mother's education level.

Table 5. Results of the multi-regression model estimation

	B	t	Sig
(Constant)	75,636	12,807	,000
Gender	-3,463	-2,112	,035*
EducLevel	2,514	1,566	,118
FieldStudy	-4,659	-2,417	,016*
FieldSpecial	1,862	,992	,322
BankAcount	-4,677	-3,129	,002*
WorkExp	1,123	,607	,545
FamilyIncome	,350	,551	,582
FathEdu	1,181	1,357	,176
MothEdu	,382	,370	,712
R			,273[a]
R^2			,074
Adjusted R^2			,051
F			3,198
Sig.			,001[b]

b. Predictors: (Constant), MothEdu, BankAcount, WorkExp, FieldSpecial, FamilyIncome, EducLevel, Gender, FieldStudy, FathEdu

DISCUSSION

We conclude from our discussion of the overall model fit and the significance of independent variables that the adjusted R squared, which indicates how the model explains the variance of the dependent variable, is relatively low (adjusted R squared=,051). Adjusted R squared low level means that the model is missing other independent variables that could help explain the variance of the dependent variable better.

In line with the bivariate analysis, Table 5 shows a negative relationship between gender and financial literacy (statistically significant at 5%), implying that female students are 3.64 times less likely than male students to be financially literate. This finding is consistent with the findings of (Mandell, 2008a; Lusardi, Mitchell, & Curto, 2010; Gutter & Copur, 2011; Hung, Yoong, & Brown, 2012; Fazli Sabri et al., 2012; Lantara & Kartini, 2015; Kiliyanni & Sivaraman, 2018; Douissa, 2020). This finding confirms H1.

Our findings support Hypothesis H3 and align with Douissa (2020) and Mändmaa (2020)'s findings; financial literacy has a negative relationship with the variable of the field of study (FieldStudy) (statistically significant at 5%), where scientific (hard) disciplines students are 4.65 times more financially literate than the non-scientific (soft) disciplines. Moreover, the variable bank account ownership (BankAcount) has a negative and significant relationship with financial literacy (statistically significant at 1 %), meaning that students with no bank account are 4.67 times less financially literate than those with a bank account. This finding confirms hypothesis H5 and is in line with (Nidar & Bestari, 2012; Liaqat et al., 2021; Mändmaa, 2020) and contradicts the findings of Douissa (2020).

Contrary to expectations, the remaining variables, such as level of education, the field of specialty, work experience, family income, father's education level, and mother's education level, are not significantly associated with the level of financial literacy. Therefore, hypotheses H2, H4, H6, H7, H8 and H9 are rejected. Economics and business students, unexpectedly, are not more financially literate than their non-business students, indicating that being

exposed to economics, business, and finance courses has no significant impact on the students' multidimensional financial literacy. This finding aligns with the literature in the Algerian context (Othmani & Larbi, 2022; Zaibet & Cherabi, 2020). At the same time, this finding does not validate the existing literature, which suggests that being exposed to a business, economics, or financial subject positively affects the financial literacy levels of university students (Lantara & Kartini, 2015; Kiliyanni & Sivaraman, 2018; Shim, Barber, Card, Xiao, & Serido, 2010). We consider this a fact that raises concerns that the Algerian university curriculums need reconsideration.

Furthermore, the fact that education level is not significantly associated with financial literacy means that there is no difference between postgraduate and undergraduate students. This finding contradicts Lusardi et al. (2011) and Kiliyanni & Sivaraman (2018). The variable family income is not significantly associated with the level of financial literacy; this result contradicts the findings reported by Lusardi and Mitchell (2011), Atkinson and Messy (2012), Douissa (2020), Herawati et al. (2020), and Amagir et al. (2020). The variable of work experience is not significantly associated with multidimensional financial literacy, which contradicts Shim et al. (2010), Xiao & O'Neill (2016), and Johan et al. (2021). This insignificance might be because working students usually work part-time jobs where their job requires no responsibilities or to gain any knowledge on financial issues. Another reason behind this insignificance could be a lack of exposure to financial matters, which may result in low levels of financial literacy. Kadoya & Rahim Khan (2020) argued that employed students are less concerned about financial matters to secure their future well-being because they have a guaranteed source of income in the short term.

Finally, the insignificance of the variables father's level of education and mother's level of education with financial literacy nullifies hypotheses H8 and H9 and contradicts the literature that suggests that parents with a high level of education positively influence their children's financial literacy (Mandell, 2008b; Lusardi et al., 201; Amagir et al., 2020). This insignificance might be due to the low educational level of both parents of most students in our sample or to the family's low income that leaves young adults no marge for personal financial management or the opportunity to practice financial management.

CONCLUSION

This study aimed to investigate the demographic and socio-economic factors that explain financial literacy among young Algerian university students. It also aimed to improve the understanding and implementation of financial literacy in a broader perspective using its three main dimensions, financial knowledge, behavior, and attitude, in line with OECD's definition and methodology. It is essential to note that first-generation studies used measures of financial knowledge in assessing financial literacy predominantly. However, in the last decade, most studies used the three dimensions of financial knowledge, behavior, and attitude. Thus, the findings of previous studies used in our literature review are relevant to our findings.

Our study concludes a significant relationship between financial literacy and gender, the field of study, and bank account ownership. It that concludes a non-significant relationship between students' financial literacy and level of education, the field of specialty, work experience, family income, father's

education level, and mother's education level. Unexpectedly, and in contradiction to the literature, economics and business students are not more financially literate than their non-business ones, which raises concerns that the Algerian university curriculums need reconsideration.

While interpreting our results, we should consider some limitations that open up new horizons for new studies. First, from our discussion of the model's overall fit and the significance of independent variables, we conclude that our model's explanation of the dependent variable is relatively low; we argue that the model is missing other independent variables that may contribute to a better explanation of the variance of the dependent variable. Financial literacy can also be increased through nonformal financial social learning and socialization, such as discussing financial matters with parents and peer groups or friends. Social learning may explain the gap between financial literacy among males and female students based on the assumptions of social learning and consumer socialization theory dictating that more socialized people tend to have more knowledge. Since men are more social than women, they are more likely than females to achieve financial literacy (Martin & Bush, 2000). Second, one of this study's limitations is that it examined and reported sociocultural determinants solely through a questionnaire survey, without asking students about their personal finance practices, financial decision-making, and financial issues; this limitation is a suitable venue for future studies. Third, many previous studies relied on cross-sectional data to measure the associations between different variables. To better understand financial behavior requires an examination of these associations across time. Plus, the reviewed literature concerning the relationship between financial literacy and formal education is based on correlational studies, when the causal effects of formal education on financial literacy can only be evaluated experimentally. Future studies can use experimental designs, such as randomized controlled trials, to evaluate the effectiveness of formal financial education and its impacts on young students' levels of financial literacy (Celli, 2022).

Finally, with the spread of the gig economy and the freelancing between Algerian students and access to financial trading online, English proficiency and the ability to comprehend and read files and invoices are associated with financial literacy among young university students. English is the language of data and information from the internet and the primary tool of international financial transactions; non-native speakers' low English levels are a barrier to understanding finance-related transactions. Thus, future studies could take English proficiency as a determinant of financial literacy. These new tendencies of young Algerian students make financial literacy more critical; it can help them keep better records and facilitate transactions. A financially capable young adult is likely to access the financial knowledge to understand finance-related transactions and gain the ability to perform basic financial calculations as well as in-depth risk diversification estimations (Morgan, Huang, & Trinh, 2019).

The need for high levels of financial literacy and financial responsibility among young university students seems more urgent. This fact makes it essential to run more in-depth studies to find which determinants are the most strongly associated with positive financial knowledge, attitude, and behaviors and to fill the literature gap in the Algerian context. The government should pay special attention to financial education programs in high schools and through national media and credible financial advisors' recommendations to improve

people's financial knowledge and help them develop positive financial behavior and attitudes.

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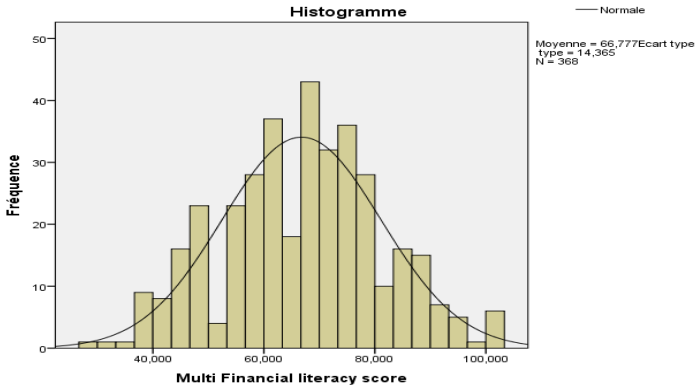
Appendix:

Linear Multi regression assumptions



Normality Tests						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistics	ddl	Sig.	Statistics	ddl	Sig.
Multi Financial literacy score	,043	368	,156	,993	368	,095
a. Correction de signification de Lilliefors						

Model	R	R-deux	R-deux ajusté	Erreur standard de l'estimation	Modifier les statistics					Durbin-Watson
					Variation de R-deux	Variation de F	ddl1	ddl2	Sig. Variation de F	
1	,273[a]	,074	,051	13,992585	,074	3,198	9	358	,001	1,826

ANOVA[a]						
Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	5635,684	9	626,187	3,198	,001[b]
	Résidus	70093,688	358	195,792		
	Total	75729,372	367			
a. Variable dépendante : Multi Financial literacy score						
b. Prédicteurs: (Constante), MothEdu, BankAcount, WorkExp, FieldSpecial, FamilyIncome, EducLevel, Gender, FieldStudy, FathEdu						

Modèle	Coefficients non standardisés		Coefficients standardisés	t	Sig.	Corrélations		
	B	Ecart standard	Bêta			Corrélation simple	Partielle	Partielle
(Constante)	75,636	5,906		12,807	,000			
Gender	-3,463	1,640	-,116	-2,112	,035	-,115	-,111	-,107
EducLevel	2,514	1,606	,084	1,566	,118	,031	,082	,080
FieldStudy	-4,659	1,927	-,156	-2,417	,016	-,145	-,127	-,123
FieldSpecial	1,862	1,877	,062	,992	,322	-,040	,052	,050
BankAcount	-4,677	1,495	-,160	-3,129	,002	-,154	-,163	-,159
WorkExp	1,123	1,852	,033	,607	,545	-,021	,032	,031
FamilyIncome	,350	,635	,030	,551	,582	,083	,029	,028
FathEdu	1,181	,870	,090	1,357	,176	,110	,072	,069
MothEdu	,382	1,033	,024	,370	,712	,091	,020	,019

DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

FUNDING

The authors received no financial support for the research, authorship, and/or publication of this article.

Cite

Yahiaoui, N.E.H. (2023). Demographic and socio-economic determinants of multidimensional financial literacy among young Algerian university students. *Journal of Management and Business Education*, 6(2), 199-221. https://doi.org/10.35564/jmbe.2023.0010