Financial Literacy among University Students

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ABSTRACT

The increasingly complex nature of the financial environment has prompted the need for individuals to be better equipped when making financial decisions. This study mainly investigated the financial literacy (FL) of university students and the role of university education as a tool in improving financial literacy. Alongside financial education, the study took into account different demographic factors prone to influence the level of FL among students. The data set for this study comprises a total sample of 401 students enrolled at Eastern Mediterranean University in their second, third or final year at the time the questionnaire survey. The data was analyzed using different statistical techniques consisting of descriptive statistics, test of means (ANOVA and independents samples t-test), Spearman rank order correlation, Chi-square test of independence and a multiple logistic regression. Similar to previous works, the results suggest that father's level of education, students' CGPA, gender, faculty of education, financial behavior and having previously taken a finance related course, are important factors in determining the students' performance in FL test. The case study provides no evidence in support of students' wealth as an influential factor in determining FL. The results provide institutional authorities with more guidance on how to improve the FL of university students by modifying the school curriculums.

Keywords: Financial literacy, financial education, ANOVA, logistic regression

ÖZ

Anlaşılması gittikçe daha zor hale gelen finans dünyası, bireylerin finansal kararlar verme aşamasında iyi bir donanıma sahip olmaları ihtiyacını doğurmaktadır. Bu çalışma, üniversite öğrencilerinin finansal okuryazarlık seviyelerini ve üniversite eğitiminin finansal okuryazarlığa etkisini araştırmaktadır. Çalışmada eğitimin yanı sıra, öğrencilerin finansal okuryazarlık düzeyini etkileyebileceği düşünülen demografik farklılıklar da incelenmiştir. Çalışmada kullanılan veri seti; Doğu Akdeniz Üniversitesinde eğitim gören 401 ikinci, üçüncü ve dördüncü sınıf öğrencisinin anket katılımlarıyla oluşturulmuştur. Oluşturulan veri; betimleyici istatistikler, ortalama testleri (ANOVA ve bağımsız örneklem t-testi), Spearman sıralama korelasyonu, Ki-kare bağımsız ve çoklu lojistik regresyon gibi çeşitli istatistiksel teknikler kullanılarak analiz edilmiştir. Sonuçlar, daha önce yapılan çalışmalara benzer olarak; babanın eğitim düzeyi, genel not ortalaması, cinsiyet, fakülte, finansal davranış ve daha önce finans alanında bir ders almış olmak değişkenlerinin, öğrencilerin finansal okuryazarlık performanslarının belirlenmesinde önemli rol oynadığını göstermektedir. Yapılan bu çalışmada, gelir düzeyinin finansal okuryazarlık düzeyi üzerinde istatistiksel olarak anlamlı bir etkisi olmadığı bulgusuna ulaşılmıştır. Sonuçlar, kurumsal yetkililerin rehberliği ile birlikte üniversite eğitim programında yapılacak düzenlemelerle, öğrencilerin finansal okuryazarlık düzeyinin geliştirilebileceğine işaret etmektedir.

Anahtar Kelimeler: Finansal okuryazarlık, finansal eğitim, ANOVA, lojistik regresyon

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Chapter 1

INTRODUCTION

The term financial literacy (FL) and financial knowledge have been used interchangeably to convey individuals' awareness of their financial environment, how it works and the consequences of related decision making on their overall economic well-being. Like every broad concept, there is no agreed-upon definition of FL. In their paper, "Defining and measuring financial literacy," Parker et al. (2009) outline that the existing literature on FL identifies it as being at least one of the following; a specific form of knowledge, an ability or skills to apply that knowledge, perceived knowledge, good financial behavior and even financial experiences. Most definitions of FL are derived on the basis of knowledge, with some requiring just familiarity with economic-related concepts (Moore, 2003 and the National Council on Economic Education, 2005). Additionally, other definitions stress on the ability to make informed judgments and decisions in FL (Mandell & Klein, 2007; Lusardi & Tufano, 2008). Nevertheless, in order to be consistent with most studies, this study uses the definition of Organization for Economic Co-operation and Development's (OECD) (2005) which describes FL as a process in which individuals (investors or consumers) become more familiar with finance-related concepts to improve the financial outcomes of their choices. [1]

[1] "Financial literacy is the process by which financial consumers/investors 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

The importance of FL has grown rapidly for the last several decades as the global economy faces increasing privatization, deregulation and competitive pressures in attracting funds. The nature of competition has been quite fierce particularly in the wake of the 2000's as most developed countries began to embrace more individual and liberal policies. Nurturing such an environment may do more harm than good in the long run for individuals without the requisite financial knowledge as they may indulge into making irresponsible decisions when left to their own subjectivity or at the mercy of ambitious fund managers. According to Bucher-Koenen and Ziegelmeye (2011), in periods of financial crises, individuals with lower levels of financial expertise are more likely to respond in a feeling of despondency by selling their securities with decreased value, making themselves worst off in the long run than if they patiently waited for the market to recover. As such, having a majority of the population with low FL in the present economic environment may stimulate undesired outcomes such as moral hazards and misallocation of funds. There is, therefore, a need to improve the level of financial knowledge as this could also improve the efficiency of the financial markets from the client's side perspective and also save the potential costs associated with the regulatory intervention. The main drive behind this idea emanates from the assumption that individuals must be familiar with basic financial concepts to make optimal decisions regarding recurrent economic activities such as saving, investment and debt settlement (Lusardi, 2014). However, most individuals are unfamiliar with core concepts essential for the efficient allocation of funds such as risk diversification, inflation, and interest compounding (Chen & Volpe, 2002; Lusardi & Mithcell, 2007; Lusardi & Tufano,

opportunities to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being" OECD (2005, p26).

2009; Lusardi & Mitchell, 2009; Jappelli & Padula, 2013; Lusardi & Mitchell, 2014; Almenberg & Dreber, 2015; Grant, 2016).

Also, the financial market's changing dynamics from the conventional form of intermediation to securitization has placed an additional burden on the individual's need to be financially informed. With the increase in securitization, most investors are almost not aware of their investment counterparts when purchasing these securities. The research work of Almenberg and Dreber (2015) supports the idea that the increasing spread of complicated financial products in the retail market, especially for derivative products and other assets such as mortgages, credit cards, student loans, stocks, pension accounts, have been problematic to understand for an ordinary investor. Though these innovations are very beneficial when used properly (such as when hedging and diversifying investments), a greater responsibility is laid on households in adopting prudent behaviors towards saving, borrowing and investing as increasing tailored contracts and access to credit are given. These concerns became more prominent in the wake of the recent Global Financial Crisis (GFC) as inadequate FL was suggested to be a contributing factor that pushed individuals in making poor decisions (Klapper, Lusardi & Panos, 2012).

The ability to save and accumulate wealth for retirement purposes is positively affected by adequate financial knowledge (Lusardi, 2008). Microeconomic theory suggests that all things equal, rational and well-informed individuals will consume less than their actual income in times of abundance in order to save for periods with falling income – for example, during retirement (Modigliani & Brumberg 1954; Friedman, 2008). Lusardi (2008) notes that the drift from Defined Benefit (DB) to Defined Contribution (DC) retirement plans have placed increasing responsibility on

individuals in assuring a stable retirement. According to the World Health Organization (WHO, 2016) report, the global life expectancy has grown by 5 years between the years 2000 and 2015; this places an even more pressing need for good retirement planning as individuals are expected to benefit from longer periods of retirement. Therefore, programs aiming to boost the level of FL will help individuals decide not only on the appropriate amount to save but also on how to do so in line with their personal retirement goals.

The efficient allocation of wealth requires investors to be familiar with basic financial concepts. For instance, in order to take advantage of favorable macroeconomic conditions or to hedge against possible economic downturns; investors need to understand how the economy reacts at different stages of the business cycle (Kollar, 2013). Also, familiarity with concepts such as inflation and diversification will enable individual investors to make better choices. This is particularly important for individuals desiring to distribute their wealth across a portfolio of assets that will optimize their personal goals (retirement, college funding.) at an acceptable level of risk. In addition, given the wide range of investment opportunities, inadequate financial literates may not clearly perceive signs of death-warrant investments. Such individuals may engage in overly optimistic mortgage obligations, commit to get rich quick plans or make high-risk investments. As such, survival for such individuals in the midst of fierce competition may become a matter of chance.

These growing concerns about inadequate FL have been addressed on an international platform. The framework of the OECD's Financial Education Project (FEP) is one of the most important and comprehensive examples. The FEP's main

objective was to improve the level of FL and education standards via the development of shared FL principles among OECD member countries. Though there has always been a subtle awareness of better financial knowledge worldwide, the documentation and joint collaboration of countries in addressing this issue were made material under the supervision of the OECD. Despite the young documentation, other non-OECD countries have increasingly followed this trend by encouraging governmental and non-governmental agencies such as the South African-based Association for Savings and investment in South Africa (ASISA) and Saudi Economic and Development Company (SEDCO) that will investigate and attempt to improve the level of FL.

The documentation and education on FL have been portrayed by many other national or transnational organizations across the globe. For instance, the OECD pioneered the application of an international 15-year old student base exam namely Program for International Student Assessment (PISA) in the year 2000. The PISA test was initially created to forge better educational policies and outcomes; but as a response to the increasing need to measure FL and enable cross comparability on an international ground, a financial module was included in the questionnaire in 2012. Other organization such as the Financial Literacy Education Consortium (FLEC) in USA, the Consumer Financial Education Body (CFEB) in England, Australian Securities and Investments Commission (ASIC) in Australia, Saudi Economic Development Company (SEDCO) in Saudi Arabia, the Financial Services and Markets Authority (FSMA) in Belgium, the World Bank, the IMF and different independent governments across the globe investigated the level of FL. In general,

findings around the world suggest that the score in FL is low for different age groups and genders.

Efforts to fill the gap in FL worldwide have been addressed increasingly in the recent years. The OECD pioneered such efforts by designing education guidelines and ethical practices in insurance and pension sectors. Also through the organization of high-end conferences in countries like India, Russia, and Turkey; by setting international networks and gateways accessible online, the OECD encouraged the promotion of FL internationally. In addition, some corporations via the implementation of financial education workshops and seminars have attempted to improve the level of FL among their employees especially in relation to pension plans. On the educational platform, a number of schools have considered the inclusion of financial education courses in their curricula. Despite all these efforts, there is still an existing challenge in making these programs more accessible to everyone. Promoting individual self-awareness for the need of FL might induce the desire to be more financially aware thus increasing accessibility; considering that FL is not just important for investors or employees of an organization but also for young entrepreneurs, individuals aspiring to enter the workforce and families with petty saving schemes.

Furthermore, financial literacy has been suggested as a tool in eliminating gender gaps by many researchers (Mottola, 2013; Bucher, Koenen, Lusardi, Alessie, & Van Rooij, 2017). Both men and women face an equal need in getting financially literate to efficiently participate in economic and financial activities that will benefit both their individual and family well-being. Nevertheless, previous studies have consistently identified a considerable gap between men and women's level of FL

(Chen &Volpe, 2002; Xiao, Ahn, Serido, & Shim, 2014). Most surveys performed observed a lower level of FL and access to financial products for disadvantaged groups such as women compared to men (Lusardi et al, 2010). These findings have negative economic implications as this represents an existing underutilization of labor resources for one segment of the population, particularly for societies where a large portion of production is based in home enterprises run by women. A Financial Industry Regulatory Authority study suggests that less financially literate women tend to behave irresponsibly with their credit cards as compared to their men counterparts; however, this gap is eliminated among men and women with high financial literacy (Mottola, 2013). Also, FL widens the platform for improving the relative economic empowerment within the household. Research carried in different countries across the world suggests that household resources which are managed by women are more likely to be spent on improving family well-being, especially that of children (see Haddad, Hoddinott, & Alderman, 1997; Rawling & Rubio, 2005; Doepke & Voena, 2012). According to the study of Lusardi and Mitchell (2008), women have more self-awareness regarding their lack of knowledge in basic finance, as such this creates a more open platform to attend to their needs for financial knowledge than men who most often self over rate. Women are there for specific targets when it comes to the need for FL.

Also, young[2] individuals in particular must cope with making complex decisions as today's financial environment becomes more demanding and 'financial illiteracy' may lead to negative consequences in the future. According to the 2015 Trans Union Industry Insights Report (TUIR), the young demographic groups are more likely to forsake their bill payments. Most often, when youngsters carry a heavy amount of

[2] This study defines young individuals as people ranging from 18-35 years of age on average.

debt at an early age the ability to accumulate wealth in the future become problematic (Lusardi, Mitchell & Curto, 2010). To help young individuals, it is essential to learn first about their level of FL. Also, youths are more open towards getting financial schooling when compared to their older counterparts. This, therefore, places the young population as an ideal segment for financial education programs.

The Turkish Republic of Northern Cyprus (TRNC) is home to a number of foreign higher education students. According to a media review published by the TRNC ministry of foreign affairs MFATRNC (2005), approximately 81,000 students were enrolled in TRNC universities within the academic year of 2015-2016. Of this, roughly 85% are from 114 different countries. These demographics give TRNC universities a unique advantage of multicultural diversity in order to better understand possible issues relating to FL. In addition, implementing better policies to improve the level of FL in university education may prove not only to be beneficiary for home nationals but for foreign nationals and consequently foreign economies as well.

The aim of this research is in threefold; firstly, it seeks to measure the level of FL among young individuals using a sample of students in their second, third or final year enrolled for university education in TRNC. Secondly, it will investigate if there is a significant difference between the FL of university students who took at least a finance related course and those who did not. Addressing such concerns can be proven to be of good relevance as it will provide insight into whether financial education at tertiary levels is an effective tool in increasing FL. If this is true, then introducing compulsory finance courses for all faculties may be an efficient way to

increase FL and encourage good economic behaviors. Lastly, it attempts to show if there is a gender gap; if for example young women are found to be less financially literate than young men. It is very important that the sources of such differences be identified as addressing these factors will improve gender equality and long-term economic well-being. Outlining the category of individuals that are less likely to be financially literate will provide insight to policymakers and help them identify the groups that need more emphasis.

The study investigated the previous questions using a sample of 401 undergraduate students from various faculties enrolled in either their second, third or final year at Eastern Mediterranean University (EMU). Undergraduate university students as young individuals represent an ideal case study for FL programs. This hypothesis is made because university students are believed to have better prospects towards financial independence (Lyons, 2004), cognitive abilities, familiarity towards the accumulation and acquisition of skills and knowledge. This therefore places them on a better pedestal as prospective entrepreneurs in today's competitive job environment where jobs cannot be secured (Collins, Hannon & Smith, 2004). Also, their role as knowledge producers often regarded as research centers places them as runners for innovative activities which in turn positively contribute to the economy (Cavdar & Aydin, 2015). In the same light, FL programs that target university women may be proven more effective in narrowing the existing gender gap, as women in this category may likely portray more enthusiasm in embracing knowledge and opportunities that will foster their economic independence.

As previously mentioned, EMU which is located in TRNC will serve as the sample in this study. It is the biggest publicly owned and most international university in

North Cyprus and is home alone to 20,000 students with each coming from 106 different nationalities. 90% of the programs are offered in English at the undergraduate levels. It is one of the few publicly owned universities in TRNC, which in great part helps the institution managers to focus on providing qualitative education to its students. EMU comprises 11 faculties of which 4 major ones were considered in implementing the current survey. The sample of data was collected randomly for each faculty via questionnaires and all analyses were performed using the SPSS statistical package. In other to analyze the data, descriptive statistics; test of means (ANOVA and independents samples t-test); Spearman rank order correlation and Chi-square test of independence for correlations; and lastly, multiple logistic regression was performed to understand the effect of some factors on the FL scores.

To the best of the author's knowledge, the current study will contribute to the existing literature as it is the first to analyze FL among university students within TRNC. Secondly, the questions used in obtaining the scores on financial knowledge could be used for cross comparison as they were drawn from the pilot study of Atkinson and Messy (2011) which was performed in OECD countries. In addition, the results of the current study will provide policy makers and academics with additional insights on the question of whether university education could serve as an effective tool in increasing the level of financial literacy of young individuals. Lastly, the study takes a glimpse at the distribution of FL performance within gender given its growing importance as a factor frequently considered when establishing financial education programs.

The following sections are as follows: the next chapter reviews the empirical literature on FL. Chapter 3 elaborates on the data and research design used in this

thesis. Chapter 4 summarizes the empirical findings, and lastly, chapter 5 gives the concluding remarks whilst placing forth some policy recommendations and future research.

Chapter 2

LITERATURE REVIEW

Many researchers have dedicated their work in understanding the main determinants of the FL. Among these, a subset has been specifically concerned in determining these factors among the young and educated people. These are multi-tier studies starting at international levels (PISA) to country-specific academic establishments. Though studies on youths in FL mostly covered high school education, the current study elected to narrow the spectrum of this literature by looking mostly at university education. This chapter begins by accentuating the importance of FL for youths. Next, it provides a detailed review of the empirical literature on surveys implemented on students as per countries. It then continues by looking into the general findings (non-specific to youths) on FL classified according to financial behaviors and gender. Lastly, it gives conclusive remarks which serve as a guide in establishing the research questions.

2.1 FL and Young Adults

The fundamental idea supporting the need for FL derives from the assumption that individuals possess the adequate financial knowledge required in exhibiting a rational saving and consumption behavior (Modigliani & Brumberg, 1954; Camerer, Issacharoff, Loewenstein, O'donoghue & Rabin, 2003; Lusardi, 2008; Börsch-Supan, Bucher- Koenen, Coppola & Lamla, 2015). Individuals expecting their incomes to grow with age may tend to borrow when young; similarly, individuals with excess funds in their youth will need to save with the common incentive of

stabilizing future consumption patterns (Lusardi, 2008; Lusardi, Mitchell, & Curto, 2010). In other words, to experience smooth consumption patterns over a lifecycle, it can be said that young adults, in particular, are expected to make rational financial decisions such as those related with wealth accumulation and credit management (Lusardi & Mitchell, 2014). Making rational economic choices may therefore prove challenging without adequate sense of judgment which is believed to be majorly affected by an individual's level of FL.

The lack of adequate FL could have a substantial negative impact on the attitudes of youths towards debt management in particular. In the USA, for example, where most studies have been done, many studies assert that young individuals have low FL which could be a principal cause for the observed increase in debt levels among the youths (Lusardi & Tuffano, 2009). A survey carried out by Reed (2008) found that undergraduate student loan debt increased by 58% ($9,250-$19,200) after adjusting for inflation; while the percentage average of undergraduate students graduating with loans rose by 6% ($18,976 to $20,098) between the years 2006-2007. More recently, the US in an attempt to solve the low levels in FL among youths, the assistance of financial advisors has constantly been sought. But given that young adults are assumed to be in a process of transition from parental assistance to financial independency, affording such services may not always be realistic and affordable. According to the survey studies of Bricker, Kennickell, Moore & Sabelhaus (2012) and Yew, Yong, Cheong & Tey (2017), less than one-third of respondents in the U.S. consult financial advisers. Even when the services of financial advisors are utilized, customers with low level of FL may act emotionally thus hindering their advisors from acting in their best interest during an economic turmoil. Thus, relying on the

services of a financial advisor cannot be assumed as a good substitute but rather an addition that complements more financial knowledgeable individuals (Collins, 2012).

2.2 Empirical Literature

For the purpose of this study, an empirical review on surveys that relate to FL in college and university education is provided. The following studies are explored and classified in table 1 below:

Table 1: Empirical Classification of Studies on FL in University and College Education.

Authors	Countries	Sample respondents	Methodology	Results
Chen and Volpe (1998)	USA	924 college students	Mean percentage, ANOVA, Logistic regression, cross tabulation and chi-squared analysis	People with less financial knowledge manifested misleading opinions that could have led them into making poor decisions the lack of knowledge about personal finance limited student's ability in making rational and informed decisions.
Lyons and Hunt (2003)	USA	271 community college students	Descriptive statistics	The students with higher FL scores were more likely to be financially fit.
Cude et al. (2006)	USA	An online survey of 1,891 college students	Multiple regression analysis	Community college students indicated a genuine interest in getting better financial education. Also, the students showed more preference in getting this education on one to one conversations than within class room settings.
Jorgensen (2007)	USA	462 university students	ANOVA, t-test and Pearson's correlation	The students' attitudes, behavior and influence from parents and peers were found as the principal factors affecting the financial knowledge of the students.
Furtuna (2008)	USA	367 college students	Descriptive statistics and multiple regression analysis	The students illustrated very low levels of financial knowledge, which might have negative consequences for them in the long run. Also, students who had not taken a finance related course in the past and who were enrolled in non-business courses showed comparatively lower performances.

Robb and Sharpe (2009)	USA	3884 university students	Descriptive statistics	Students that had relatively higher levels of financial knowledge were not significantly different from students with relatively lower levels of financial knowledge in terms of the probability of having a credit card balance. Overall, the findings of the study highlighted the complex nature of the relationship between personal financial knowledge and credit card behavior of the students.
Lusardi et al. (2009)	USA	7,138 college students	ANOVA and descriptive statistics	FL was low among youngsters and was strongly related to their socio-demographic characteristics and their family's financial sophistication
Mandell and Klein (2009)	USA	79 high school students	Descriptive statistics, ANOVA and multiple regression analysis	Taking full-time financial courses in high school did not make the students anymore financially literate that those who didn't after a period of four years. The findings raise questions about the effectiveness of high school financial education as a sustainable form of improving FL over the long-term.
McKenzie (2009)	USA	227 final year university students	Univariate and bivariate analysis	Most of the participants acquired their financial management skills either through self-teaching or via family interaction. The majority of participants obtained good scores in the FL test. Students in business majors performed relatively better than those who weren't. The study suggests that demographic factors can't be used as predictors for FL performance and debt level.

Tenaglia (2010)	USA	882 high school students	Descriptive statistics, multiple discriminant analysis and regression analysis	Financial education should begin in high school so that young adults could effectively manage credit. Young people would be able to improve their credit management skills by setting budgets and employing good credit management techniques.
Dempere et al. (2010)	USA	3765 undergraduate students	Descriptive statistics	The college administrators should be informed about the content that students wanted to learn in their undergraduate courses in order to offer them the curriculum that was most consistent with their specific needs and wants.
Altintas (2011)	Turkey	337 undergraduate students	Multiple linear regression	University students do not hold adequate knowledge on the management of personal finance. They found that rank, family, age, family income, parents and students discussions on finances had an overall significance on the FL of students.
Bartley (2011)	USA	224 college students	Descriptive statistics, regression analysis, t-test	Students with more experience of dealing with financial products had higher levels of FL as compared to those students who had never dealt with financial products.
Falahati et al. (2011)	Malaysia	2340 high school students selected from 6 private and 5 public schools	Multiple regression analysis	Men were more knowledgeable about credit and risk management, whereas women were found to be more knowledgeable with respect to the general performance in FL tests.
Lalonde and Schmidt (2011)	USA	192 college students	Descriptive statistics and multiple regression analysis	Modifying the curriculum was seen as an effective tool in addressing the issue of FL among students.

Sabri (2011)	USA	2519 college students	Descriptive statistics, multiple regression analysis, ANOVA and t-test	The involvement of children in personal and family financial decision at a young age led to better FL levels and better money management skills.
Ludlum et al. (2012)	USA	725 university students majoring in business	Descriptive statistics and Chi-squared statistics	The level FL significantly differed on the basis of the student's knowledge credit cards, marital status, employment status and stock owner ship. Gender and student's faculty showed not differences.
Nidar and Bestari (2012)	Indonesia	400 university students	Descriptive statistics and logistic regression	The FL of university students was found to be very low while parental income and level of education were found as significant factors affecting the level of FL.
Boyland and Warren (2013)	USA	92 first and second-year university students	Descriptive statistics and t-test	The FL of foreign students significantly differed from that of home students. Also, there was no evidence in support of gender differences with regards to FL. Colleges and universities should take into account cultural and ethnical backgrounds prior to forming FL mentoring groups.
Aggarwal and Gupta (2014)	India	180 private university students	Descriptive statistics and ANOVA	The level of education and discipline has a positive influence on the FL of the students. Also, male students had higher levels of financial awareness in comparison to female students.
Amari and Jarboui (2015)	Tunisia	289 university students majoring in economics	Descriptive statistics	Students do not have adequate knowledge on personal investment. This study also provides evidence for the correlation between FL, wealth accumulation and investment portfolio choices.

Kaur, et. al (2015)	India	108 university students	Independents sample t-test, descriptive statistics, and one way ANOVA	University students that have commerce and management background have fairly good FL levels. FL is not related their demographic profiles but mainly to the composition of the course curriculums. Thus suggesting FL could be improved through interdisciplinary training.
Máté, et. al (2016)	Hungary	142 bachelor (43 men and 99 women) business administration students	Multiple regression analysis, binary logistic regression and descriptive statistics	Improving financial education in universities is an effective policy with the response from both sexes to empower decision making of consumers financial markets.
Wingfield (2016)	South Africa	373 university students	Multivariate and univariate analysis	South African students have a moderate level of FL.
Isomidinova and Singh (2017)	Uzbekistan	110 university students	Descriptive statistics, Pearson correlation, and multiple linear regressions	Financial education and socialization are important agents in increasing FL levels. However, Uzbek students money attitudes have no significant impact on their FL.
Er, et. al (2017)	Turkey	1267 university students with an open education system	ANOVA, descriptive statistics and factor analysis	The FL of open education students are knowledgeable of financial assets especially credit cards. FL varies among gender. Internet, personal knowledge, marketing, bank branch, asset specialist, and internet are the most important sources of financial knowledge.
Jayakumar, et. al (2017)	USA	1052 medical school students	Descriptive statistics, ANOVA and logistic regression	Higher FL was associated with being a male, pursuing both a medical and MBA degree simultaneously, haven pursued a finance related undergraduate program, confidence in matters of personal FL and

		self-access financial knowledge. 1% point increase in the performance in FL will increase the odds of contributing to retirement planning by 3%.

2.2.1 General Findings

From the findings in Table 1 above, the level of FL among college and university are displayed as generally low. Despite the low levels in the students' FL performance, interest in getting personal finance management training has been recorded (Cude et. al, 2006). The surveys also suggest that majoring in finance related course increased the potential to score higher in FL test (Furtuna, 2008, Tenaglia, 2010, Dempere, 2010; Altinas, 2011; Amari & Jarboui, 2015; Kaur et al., 2015; Mate et al., 2016; Jayakumar et al., 2017). In addition, studies show that this potential could be even improved given an introduction financial concepts at much younger ages (Sabri, 2011).

Other prominent factors that seem to influence the level of FL are family and parental influence (Jorgensen, 2007; Lusardi & Mitchell., 2009; Mc Kenzie, 2009; Nidar & Bestari, 2012), student grades (Lyons & Hunt, 2003), income (Altinas, 2011) and gender (Falahati, et al., 2011, Argawal & Gupta, 2014; Er et al., 2017). Most of the surveys suggest that financial independence, inclusion in financial decision making, income, peers & family and education are strong drivers in the determination of the level of student's FL. With respect to gender, the differences in FL were mostly present in developing economies, (India, Turkey and Malaysia) in contrast to developed economies like the USA where the effect of gender was almost insignificant (Boyland & Warren, 2013). Lalonde and Schmidt (2011) and Altinas (2011) suggest a modification in school curriculums to improve the level of FL.

2.2.2 Financial Behaviors and FL

Making sound financial management decisions is known to be one of the positive financial behaviors associated with having adequate FL (Hilgert, Hogarth & Beverly,

2003; Dvorak & Hanley, 2010; Agarwal et al., 2015). For instance, some studies suggest that individuals with adequate FL skills stand greater chances in meeting up with their financial obligations as compared to those who do not have the adequate skills (Gathergood, 2012; Agnew & Harrison, 2015). Also, financially apt individuals take more sophisticated measures when managing their finances such as engaging into foreign exchange and stock exchange transactions (Van Rooij, Lusardi & Alessie, 2011); this broadens their earning potential. Similarly, other findings suggest that individuals who are financially educated and apt in numeracy are more likely to be active in financial markets as well as invest in stocks (Christiansen, Joensen & Rangvid, 2008; Christelis, Jappelli & Padula, 2010; Almenberg & Dreber, 2015). Other studies like that of Hastings and Mitchell (2011) claim that advanced financial literates are more likely to invest in mutual funds with lower fees. These findings all suggest that individuals with better financial skills are exposed to wider opportunities in terms of investment choice and strategy.

Other behaviors likely to positively affect an economy such as wealth accumulation or savings (Dvorak & Hanley, 2010; Bucher-Koenen & Lusardi, 2011; Lusardi & Mitchell, 2011; Jappelli & Padula 2013; Anderson, Baker & Robinson, 2015), are also well documented in the literature. Many studies identified a significant positive correlation between the ability to save and FL (Dvorak & Hanley, 2010; Bucher-Koenen & Lusardi, 2011; Lusardi & Mitchell, 2011; Jappelli & Padula, 2013; Anderson et al., 2015). For instance, after a comprehensive research in several countries, Lusardi & Mitchell, (2007) reveal that both young and old individuals are financially under-informed which in turn adversely affects mortgages, retirement planning, saving, and other decisions. Similar findings are portrayed in the research

of Klapper et al. (2013) who investigated the linkage between the ability for individuals to absorb economic shocks and FL in Russia. Their results suggest that financially informed individuals are more likely to absorb economic shocks mostly due to better saving attitudes. Most importantly, the linkage between FL and the ability to save has often been investigated by looking at its impact on retirement preparations; a major part of these studies confirmed a correlation as well as causation from FL to retirement planning (Lusardi et al., 2007; Hastings & Mitchell, 2011; Lusardi & Mitchell, 2011; Agarwal et al., 2015).

By extension, over-indebtedness and poor FL have been found to positively correlate (Lusardi & Tuffano, 2009; Lusardi et al., 2010; Lusardi, Mitchell & Oggero, 2017). Individuals with low levels of FL have been found to engage in high-cost transactions, incurring higher fees and frequently using high-cost borrowing options such as credit cards due to lack of knowledge on interest rate compounding (Lusardi & Tuffano, 2009). Most youths in developed countries accumulate a large amount of debts due to credit card borrowings which in great part hinder their ability to save (Bar-Gill & Warren, 2008). Whereas, when debt is invested in education such as student loans the probability for future wealth accumulation increases.

2.2.3 Gender and FL

Many studies on FL have identified misalignments between men and women, with men usually having the upper hand on average (Lusardi & Mitchell, 2008; Lusardi & Tufano, 2009; Van Rooij et al., 2011; Prast, Torricelli & Sansone, 2015; Almenberg & Dreber, 2015; Bannier & Neubert, 2016). Gender differences in FL could be perceived as a common trend around the globe as it is observed in Germany, Switzerland, the Netherlands, and USA (Lusardi, & Mitchell, 2014). This trend is

noticeable for all age groups (Chen &Volpe 2002) and proves to be consistent irrespective of the degree of sophistication or simplicity of financial knowledge evaluation (Parker et al., 2009; Lusardi et al., 2010). However, there are also other studies that could not find any evidence for gender gap in FL (Jorgensen, 2007; Lusardi & Mitchell, 2008; Anderson et al, 2015; Bottazzi, & Lusardi, 2016; Bannier, & Neubert, 2016).

Abundance of empirical findings about gender gap raised concerns regarding the need for further in-depth investigation in order to explain the plausible causes. One of the theoretical models explaining the reasons for accumulation of FL suggests that these differences are influenced by the cost and benefits of acquiring financial knowledge (Bucher-Koenen et al., 2016). This model explains these differences so far as men's cost and benefits differ from that of women. In the same light, Hsu (2011) argues that a rational explanation for this discrepancy could arise from the fact that married women specialize in household production at the early stage of their marriage and as such may only develop an interest in gaining financial knowledge at a more advanced age or when they are widows. This view would imply that the level of misalignment in gender literacy would vary across different cultural and social norms.

Another area where misalignment between men and women has been observed is with respect to their financial service consumption. Burton (1995) claims that the difference in consumption patterns of financial services between men and women could plausibly be explained by the perception some women give to the purchase of these services as a "masculine activity", this hypothesis was also suggested by other

researchers (see Mahajan & Ramola, 1996; Chen & Volpe, 2002; Spathis, Petridou & Glaveli, 2004).

More recently, some studies suggest that the way people perceived themselves positively correlated with their level of FL which under the influence of different societal constructs may vary across gender (Asaad, 2015; Anderson, et al., 2015; Allgood & Walstad, 2016). Allgood and Wallstad (2016) suggest that although actual FL positively affects the financial behavior of individuals, perceived financial knowledge can also strongly predict the financial outcome of most individuals. Anderson et al. (2015) argue that self-perception has a strong predictive power among less financial literate people than actual FL. Women have notably showed lower self-perception as compared to men who are often overconfident about their capacities when asked to self-rate (Lusardi and Mitchell, 2008; Anderson et al, 2015). These findings could be a source of further explanation as to why women sometimes manifest lower FL scores when compared to men.

2.3 Variable Selection

The variables included in this study were selected on the basis of previous similar works. These variables consist of the student's field of major (Kaur et al., 2015; Mate et al., 2016; Er et al., 2017; Jayakumar et al., 2017), gender (Jorgensen, 2007; Lusardi & Mitchell, 2008; Anderson, et al., 2015; Bottazzi, & Lusardi, 2016; Bannier, & Neubert, 2016), wealth (family and individual income) (Chen & Volpe, 1998; Lusardi et al., 2010; Altinas, 2011; Arceo-Gómez & Villagómez, 2017) and class rank (Chen & Volpe, 1998; Dempere, et al., 2010; Er et al., 2017).

In addition, the study used Social and Economic status (SES) proxies to see if there were any differences between the FL of students. Family property, student monthly income and rent expense were the main proxies for SES given that the sample comprised mainly of college students (76% between the ages of 18-22) and parental income may best represent the construct of SES and the influence of parents across the sample. The study of Lachance and Choquette-Bernier (2004) shows that SES influences the level of consumer knowledge by forcing the youngsters with constrained resources to improve their knowledge in order to avoid costly mistakes. This differs from the findings of Davies and Lea's (1995) study on credit card usage which states that students with more resources had more knowledge because of the increase in familiarity acquired from constant usage (for example, credit cards). Both hypotheses may be founded based on the student's personality and attitudes toward finances (Hayhoe, 2002). Altogether, these findings suggest that knowledge, behavior, and attitude can be influenced by characteristics such as gender, class rank and SES.

Worth to mention is that the current study does not treat geographical distribution as a factor likely to influence the students' performance in FL. Though some previous researchers may have considered it for inferential purposes, the author here does not think it is applicable for this case study as the research questions do not address cultural aspects in understanding FL. Instead, the students' geographical distribution is accounted for in the descriptive statistics. Also, the author believes that accounting for the student's diversity increases the validity and applicability of the present research.

Extensive investigation of the literature and other sources revealed that surveys on FL in university education are nonexistent in TRNC. In that light, this research will provide additional insight and set a base for future researchers on the issue of FL in university education.

Chapter 3

RESEARCH DESIGN AND METHODS

3.1 Research Design

The study employed quantitative research design from a phenomenological perspective to explore the level of FL in relation to different demographic and economic factors. To collect the data, a questionnaires survey was designed. This method of data collection was chosen due to its advantage in terms of accessibility to respondents, the scope of coverage and time used in answering the survey questions (Goodman, 1997). The survey was composed of two main parts. The first part included questions on the demographic profile of students. The second was designed to test the FL of students through a set of several multiple choice questions. All respondents voluntarily participated in the research without being subjected to any form of pressure.

3.1.1 Participants

The sample used in this study comprises undergraduate students that were enrolled in either their second, third or final year at a state university in Northern Cyprus. Our research focuses on undergraduate students. However, we assumed that as newly registered students, freshmen were not suitable in assessing the impact of financial education on FL[3]. The total population of the four faculties namely; the school of computing and technology and faculties of business and economics, engineering,

[3] Given that most questions required practical familiarity with finance related concepts and knowledge on previously taken finance courses, the researcher esteemed that the financial knowledge of 1st year students would not be adequate enough to be considered in the present analysis.

tourism comprised of approximately 5670 students. Most of the respondents are aged between 18 and 22. A total of 401 questionnaires were filled. Participants that provided partial responses were also considered in this analysis. The effect of partial responses was minimized by performing a missing data analysis on SPSS.

3.1.2 Missing data

143 items out of 25263 expected inputs of the questionnaire were not answered by those who participated in the survey. The total missing inputs account for less than 1% of the total amount of data provided by the questionnaire. This percentage was considered insignificant enough to justify the omission of the data provided by the incomplete questionnaires during the analysis.

3.1.3 Instrumentation

The College Student Financial Literacy Survey (CSFLS) developed by Jorgensen (2007) and the OECD Financial literacy questionnaire developed by Atkinson and Messy (2011) were used as main guides when formulating the current questionnaire. CSFLS was designed to collect information about the FL of students and has been applied on few campuses in investigating FL. The CSFLS investigates FL using a total of 51 questions based on four main scales; financial behaviors, financial attitudes, financial influences and financial knowledge. This questionnaire was selected because it was considered to be reliable (consistent) and valid (measure its intended purpose) (Jorgensen & Savla, 2010).

Atkinson and Messy (2011) designed a pilot study comprising of 8 questions to investigate the financial knowledge of students. Alongside a few demographics, their study mainly accessed basic financial knowledge by questioning the concepts of division, time value of money, interest paid on loans, calculation of interest and

principal, compound interest, risk and return, inflation and diversification. The knowledge score was computed following the OECD guidelines by summing up and averaging the number of correct responses to the questions assessing financial knowledge.

For the purpose of this study, the questionnaire used comprises a total of 26 questions. Although it shares some similarities with the CSFLS and the pilot study of Atkinson and Messy (2011) the current questionnaire is not exactly identical to those previously mentioned. Similar to the CSFLS it is divided to incorporate the scales of financial behaviors, financial attitudes, financial influences and financial knowledge in investigating FL among young adults. The first section related to demographics was based on the following inputs: gender, age, academic standing, geographical distribution, marital status, childbearing, faculty, parents education level, college financing, birth order, income (property owned, monthly pocket allowance, rent expenditure, place of meal consumption) and the cumulative average grade point (CGPA). The second section evaluates the financial attitudes and self-perceptions (FASP) with a total of 5 multiple choice questions. The third section evaluates financial behavior (FB) with 5 questions using a Likert scale range of 1-5. Section four evaluates the financial influences with a set of two multiple choice questions that have 7 subsets each on a Likert scale from 1 to 5 as well. Lastly, the fifth section evaluates financial knowledge using a set of 8 multiple choice questions. The questions used in this section are similar to those used in the pilot study of Atkinson and Messy (2011) with some adjustments made on the numerical values.

3.2 Data Collection and Procedures

An application form was forwarded to Eastern Mediterranean University's Scientific Research and Publication Board (RPB) to evaluate and approve the questionnaire prior to conducting the survey. The questionnaire was formulated in compliance with the ethical standards proposed by the RPB. The questionnaires distribution was performed manually through a field survey. Participants were randomly selected as per their faculties. Majority of the questionnaires were handed out in classrooms and the remaining ones were given individually by the researcher to students within the confines of the university campus.

3.3 Data analysis

Both descriptive and inferential statistical methods were used to analyze the data provided by the questionnaires. The statistical package SPSS 20 was used. Descriptive statistics were provided for the demographic variables; gender, geographical distribution, age, marital status, academic standing, childbearing, faculty of education, parents' education, school tuition, birth order, family properties, rent expenditures, money pocket allowance and CGPA (See Table 1). Other statistical methods including the independent sample t-test, ANOVA, Spearman's rank order coefficient, Pearson's chi-square test and a multiple logistic regression were used in making inferences about the population.

3.3.1 Composite Variables

Individual items were combined to get composite scales for financial knowledge, family properties, and financial behavior. The student's financial knowledge was measured by asking basic questions on the topics of division, time value of money, interest paid on loans, calculation of interest and principal, compound interest, risk and return, inflation and diversification respectively. As previously mentioned, the

composite score for financial knowledge was derived by finding the average of the correct responses to the financial knowledge questions. Also, another composite nominal variable for financial knowledge was created by assigning a value of 1 to score equal to and above 70% and 0 to a score below 70%. This nominal variable was created to suit the assumptions of some tests later mentioned in the current chapter. The financial behavior (measured on a Likert scale) and family property (measured on a multiple response set) composite variables were derived by finding the means and summation answers respectively.

3.3.2 Test of Means

The presence of a statistical difference in the level of financial knowledge among various factors (gender, has taken a financial course, faculties, level of father's educational attainment, level of mother's educational attainment, geographical distribution, college finance, monthly allowance, birth order, rent expense, CGPA, location of meal consumption) is tested using the student's t-test and ANOVA. The student's t-test is used to test the equality of means for the case of variables with dichotomous categories. Similarly, the ANOVA is used to test for equality of means with the exemption that ANOVA is not restricted to test only for variables with dichotomous categories. Since both tests assume for equality between variances, Levene's test of equality is performed to check if that assumption holds.

3.3.3 Testing for Relationships between Variables

The Spearman's rank order coefficient and the Pearson's chi-square test of independence were used in testing for association between the financial knowledge score and the variables of interest. Both tests are non-parametric means of testing association between a set of variables.

The Pearson's chi-test of association is used to determine whether there is an association between the outcome of scoring 70% and above or not for the nominal independent variables. The Chi-square test does not provide information on the strength of direction for the association between variables. This is because the chi square test for independence between two variables and only indicates the presence or absence of an association between the variables of interest.

The Spearman's rank order coefficient is used to measure the strength and direction of the monotonic association between financial knowledge score and other categorical variables. This test is performed over variables that assumed at least an ordinal scale of measurement or usually those that do not meet up with the chi-square test assumptions. Similar to chi-square, rejecting the Pearson's test with the null hypothesis of no association would mean that the variables are related.

3.3.4 Logistic Regression

Binary logistic regression is employed in the analysis of passing or failing the financial knowledge test since the occurrence of this event is dichotomous in nature. For dependent variable Y with dichotomous outcomes of either 1 or 0, the logistic model focuses on how the natural log of odds (i.e. Y=1) varies as a function of the independent variable or predictor. Logistic models make no prior assumptions on the distribution of predictors as such normality and homogeneity in variances of predictors are not a necessity. The predictor and independent variable do not assume a linear relationship; instead, a logistic regression with a logit transformation of Ω is used in estimating the response of Y, where Ω is the coefficient of the linear association between the predictor's variability in odds of occurrence on basis of a change in the independent variable. A coefficient that is non-statistically significant

would imply that the model's predictions are no more valuable than that resulting from chance (McDonald, 2009).

$$logit[\Omega(x)] = log\left[\frac{\Omega(x)}{1-\Omega(x)}\right] = \alpha + \beta_1 x_1 + \beta_2 x_2 \cdots + \beta_n x_n + \mu_i \quad (1)$$

Logistic regression provides information on the relationships and strengths among variables as well as the contribution of each predictor to the model's power in determining the variability in Y. The results of the analysis are interpreted in forms of odds ratio due to the fact that logistic regressions calculate the probability of success over failures.

Chapter 4

EMPIRICAL RESULTS

This chapter presents the results of the analysis. The first section covers the descriptive results including demographics and financial knowledge performance by gender and faculty. The second section presents findings from a test of means ANOVA and independent sample test of means. The third section presents the test of associations. Lastly, the results from the probit regressions are interpreted. The chapter concludes with a short summary. Conclusions and implications are discussed in the next chapters.

4.1 Descriptive Statistics

4.1.1 Individuals Demographics

As seen in Table 1, the demographic profile of the sampled EMU students revealed a wide diversity of various economic status and social backgrounds. The gender distribution revealed that 23.2% more males (61.6%) participated in the survey as compared to females (38.4%). The minimum age limit was restricted to 18 with no constraints on the maximum age. Most respondents (98%) fell in the age category of 18-30. This age distribution falls into the category of young adults which is the main group of interest in this study. The distribution of respondents within academic standing is almost equal. A slight majority of respondents were enrolled in their final years. The sample of respondents were very diverse as approximately one third of the respondents are of African descent (35.8%) forming the largest group, followed by

Turks and northern Cypriots (25.3%)[4], then by Arabs (18.5%), Persians (6.5%) and minority belonging to Central Asian countries forming a total of just (2.5%). Most respondents were single (94%) largely differing from those who are married (6%). The faculties and department expected to be familiar with financial concepts comprised of 46.1% of the total respondents (faculty of business and economics (33.4%) and industrial engineering (61 %). The remaining faculties account for 43.4%: engineering (except industrial engineering) (16%), tourism (14.7%) and the school of computing and technology (12.7%). 10.5% of the respondents did not identify in any of the faculty of interest. A summary of the individual demographics are illustrated in table 2 below.

Table 2: Individual Descriptive Statistics

Variable	Category	Number of Respondents	Valid percentage of respondents %
Gender	Male	247	61.6%
	Female	154	38.4%
Age	18-22	238	59.5%
	23-29	154	38.5%
	30 and above	8	2.0%
Academic standing	2nd year	120	29.9%
	3rd year	125	31.2%
	4th year	156	38.9%
Geographical distribution	Turks including Northern Cypriots	101	25.3%
	Persian	26	6.5%
	African (excluding some north African countries)	143	35.8%
	Arabs (including some north African countries)	74	18.5%
	others	45	11.3%

[4]Due to similarity in major geographical influences, Turks and Cypriots in the northern part of the island where combined during the analysis.

	Central Asian (Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Afghanistan)	10	2.5%
Marital status	Single	377	94.0%
	Married	24	6.0%
Have children	has no child	387	96.5%
	have at least 1 child	14	3.5%
Faculty	Engineering(except Industrial Engineering)	64	16.0%
	Business and Economics	134	33.4%
	Tourism	59	14.7%
	Industrial Engineering	51	12.7%
	Other	42	10.5%
	School of Computing and Technology	51	12.7%

Source: Author's own data generated from SPSS.
Note: The valid percentage represents the percentage of respondents in each category adjusted for missing data.

4.1.2 Family

According to the responses, most parents held a bachelor degree as their highest educational form of achievement with a total percentage of 37.5 for fathers slightly lower than the mothers with 37.9%. The results also demonstrate that fathers were more educated than mothers as 64% of fathers held at least a bachelor degree compared to mothers with 55.5%. The family descriptive is summarized in table 3 below.

Table 3: Parental Descriptive Statistics

Variable	Category	Number of Respondents	Valid percentage of respondents
Level of father's education	less than high school	37	9.2%
	high school or high school equivalent	102	25.5%

	Bachelor's degree	150	37.5%
	Masters, Doctorate or Professional degree	106	26.5%
	Other	5	1.2%
	less than high school	50	12.6%
	high school or high school equivalent	124	31.2%
	Bachelor's degree	151	37.9%
	Masters, Doctorate or Professional degree	70	17.6%
Level of mother's education	Other	3	0.8%

Source: Author's own data generated from SPSS
Note: The valid percentage represents the percentage of respondents in each category adjusted for missing data.

4.1.3 Income and Grades

The Income and living conditions of students mostly assumed average values for the variables capturing economic conditions. A majority (49.2%) of students had a monthly allowance between 800 and 1500 TRY[5], 26% had less than 800 TRY per month, 16.2% had between 1500 and 2500 TRY, 6.5% had between 2500 and 5000 TRY and small remnant (1.5%) having above 5000 TRY per month. 61.4% said they preferred to consume their meals at home while 36.3% said they consumed their meals in either school cafeterias or restaurants. How much students pay in rent was distributed almost equally with more students spending below 600TRY per month (28.2%), 26.2% spending between 600 and 1000 TRY and 25.9% paying above spending 1000TRY each month. Most students (87.3%) finance their education with some form of parental assistance, 7.2% of the students were self-financed and 5.5% fell in the "other" category in which most identified as benefiting from a scholarship.

[5] Nominal exchange rate was given as; 1 USD = 3.6313 TRY on 01/03/2017 at 15:30. *Source: Central Bank of the Republic of Turkey (TCMB).*

Roughly above half (51.7%) of the participants, were ranked as honors with 22.6% scoring above 3.5 and 29.1% scoring between 3-3.5 CGPA. The other half (48.2%) consisted of 14.8% students scoring below 2 and 33.4% students scoring between 2.5 and 3 GPA points. Based on the GPA, a prior expectation on the overall FL scores can be estimated since it has been observed to correlate with FL scores (Cude et al., 2006). In addition, out of the total respondents, 66.6% of students said to have previously enrolled in a finance related course. Table 3 below gives the respondents' descriptive summary for income, grades and previous enrolment into finance related courses.

Table 4: Descriptive Statistics for Income and Academic Standing

Variable	Category	N	%
Monthly allowance	below 800TRY	106	26.5%
	800-1500TRY	197	49.2%
	1500-2500TRY	65	16.2%
	2500-5000TRY	26	6.5%
	5000TRY and above	6	1.5%
Rent expenditure	Family pays rent	78	19.6%
	600 TRY and below	112	28.2%
	600TRY - 1000TRY	104	26.2%
	1000TRY and above	103	25.9%
Location of meal consumption	at home	245	61.4%
	at school cafeterias	74	18.5%
	at restaurants	71	17.8%
	others	9	2.3%
College finance	Self	29	7.2%
	Parents	279	69.8%
	Mostly self (x>50%)	13	3.2%
	Mostly parents (y>50%)	27	6.8%
	Equal contribution (x=y)	30	7.5%
	Other	22	5.5%
CGPA	below 2.5	59	14.8%
	2.5 - 3	133	33.4%
	3- 3.5	116	29.1%
	Above 3.5	90	22.6%
Finance related	Has not taken	134	33.4%

course(s)			
	Has taken	267	66.6%

Source: Author's own data generated from SPSS
Note: The valid percentage represents the percentage of respondents in each category adjusted for missing data.

4.1.4 Financial Knowledge Scores and Gender

Altogether, respondents obtained an average of 59.03% on the total FL score. Men (60.77%) outperformed the women (56%) with a difference of 4.77%. The scores obtained per questions were respectively ranked from highest to lowest as: return and risk (83.3%), simple division (80.5), inflation (70.5%), diversification (62.5%), simple interest rate (calculation) (59.3%), interest rate (logical reasoning) (42%), time value of money (39.9%) and interest rate compounding (calculation) (35.9%). The averages revealed that students performed better in conceptual questions as compared to mathematical questions.

Males dominated the total scores in all questions. Where men performed the most (return and risk 84.8%), females also performed the most (81%) and where they performed least (interest rate compounding 39.1%), females equally did (30.7%). Table 5 below illustrates the results.

Table 5: Descriptive Statistics of the Financial Knowledge Test Scores.

		Total Respondents		Gender			
				Male		Female	
Questions		N	%	N	%	N	%
Simple division	correct	322	80.5%	202	82.1%	120	77.9%
	wrong	78	19.5%	44	17.9%	34	22.1%
Interest rate (logical reasoning)	correct	168	42.4%	104	42.8%	64	41.8%
	wrong	228	57.6%	139	57.2%	89	58.2%

Time value of money	correct	159	39.9%	102	41.8%	57	37.0%
	wrong	239	60.1%	142	58.2%	97	63.0%
Simple interest rate (calculation)	correct	235	59.3%	148	60.9%	87	56.9%
	wrong	161	40.7%	95	39.1%	66	43.1%
Interest rate compounding (calculation)	correct	142	35.9%	95	39.1%	47	30.7%
	wrong	254	64.1%	148	60.9%	106	69.3%
Return and risk	correct	330	83.3%	206	84.8%	124	81.0%
	wrong	66	16.7%	37	15.2%	29	19.0%
Inflation	correct	280	70.5%	181	74.2%	99	64.7%
	wrong	117	29.5%	63	25.8%	54	35.3%
Diversification	correct	248	62.5%	155	63.5%	93	60.8%
	wrong	149	37.5%	89	36.5%	60	39.2%
Composite FL Score (Mean score= 59.03 %)				60.77%		56.25%	

Note: The valid percentage represents the percentage of respondents in each category adjusted for missing data

4.2 Test of Means

4.2.1 Independent Samples T-test Results

The independent samples t-tests were used in comparing the FL mean score difference with respect to gender. Prior to interpreting the t-test results, the assumption of homogeneity between sample variances was tested for gender and those that took a finance related course using the Levene's test. According to the results in Table 6 below, the p-value for Levene's test for gender is 0.79 and for previously taking a financial course is 0.75. With both having p-values greater than .05, the test concludes that both samples do not provide enough statistical evidence in claiming equal variances for FL scores within categories for gender and those who previously enrolled for finance related courses.

According to the t-test results there isn't sufficient evidence for rejecting the hypothesis of equal population means in FL scores with respect to gender, t (398) = 1.92, p>.05, .009. At a 5% level of significance, these results assert that the FL of

EMU students do not vary significantly according to gender (Wagland & Taylor, 2009; Boyland & Warren, 2013).

The results also show that including a finance related course on the curriculums could significantly alter the FL levels of EMU students t (398) =-5.02, p<.05, .06. The results match our prior expectations and are confirmed in the works of previous researchers (Lusardi & Mitchell, 2007; Dempere, 2010; Lalonde & Schmidt, 2011; Kaur et al., 2015; Máté.et. al, 2016). The effect size of the difference between the groups accessed by partial eta squared was medium as taking a financial course accounted for 6% of the variation in the financial knowledge scores. The results of the Levene's test and independent sample t-test are summarized in Table 6 below.

.

Table 6: Independent Sample T-test for FL Scores with Respect to Gender and Taking Finance Related Courses

Independent Samples t-Test

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig(α) (2-tailed)	Mean Difference	Std. Error Difference
Gender							
Equal variances assumed	.08	.79	1.92	398	.06	4.37	2.28
Equal variances not assumed			1.93	331.64	.06	4.37	2.26
Have taken a Finance related course							
Equal variances assumed	.10	.75	-5.02	398	.00*	-11.48	2.29
Equal variances not assumed			-5.02	266.74	.00*	-11.48	2.29

Note: Levene's test of equality: H_0: Homogeneity between sample variances; Independent Sample t-test: H_0: Population means of samples are equal ($\mu_1=\mu_2$). * indicates that the test statistics is significant at α of 5%; gender is significant at 10%.

4.2.2 Mean Differences with Respect to Faculty

The one-way ANOVA test was performed to access the relationship between the students' financial knowledge score and their faculty. The independent variable was faculty; Engineering (except industrial engineering) (M=60.16, SD=24.89), Business and Economics (M=65.67, SD=21.16), Tourism (M=51.48, SD=21.15), Industrial Engineering (M=56, SD=20.39) and the School of Computing and Technology (M=57.60, SD= 20.79). The ANOVA results conclude that there is a difference in FL score on basis of student's faculty, F (5, 394) =5.33, p<.05, .06. The strength of the relationship between the variables accessed by partial eta squared was medium accounting for 6% of the variation in the financial knowledge scores.

Table 7: ANOVA for Differences in FL Scores on Basis of Faculty

Source	SS	df	MS	F	Sig.	Eta Squared
Between groups	12493.98	5	2498.8	5.33	.00*	.06
Within groups	184616.96	394	468.57			
Total	197110.94	399				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.3 Mean Differences with Respect to Father's Education Level

Using the one way ANOVA, the relationship between financial knowledge score and father's education level was accessed. Father's education served as the independent variable; primary education (M=50.33, SD=22.14), high school education (M=53.71, SD=22.23), bachelor's degree (M=62.17, SD=22.01) and masters, doctorate or professional degree (M=61.91, SD=20.54). The ANOVA results conclude that student's FL score significantly differ on basis of their father's level of educational

attainment, F (4, 394) = 4.26, p<.05, .04. The strength of the relationship between the variables accessed by partial eta squared was small accounting for 4% of the variation in the financial knowledge scores.

Table 8: ANOVA for Differences in FL Scores on Basis of Father's Education

Source	SS	df	MS	F	Sig.	Eta Squared
Between groups	8177.35	4	2044.33	4.26	.00*	.04
Within groups	188674.93	394	478.87			
Total	196852.28	398				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.4 Mean Differences with Respect to Mother's Education Level

Using the one way ANOVA, the relationship between financial knowledge score and mothers' education level was assessed. Mother's education served as the independent variable; primary education (M=46.25, SD=20.55), high school education (M=62.19, SD=22.51), bachelor's degree (M=60.33, SD=20.87) and masters, doctorate or professional degree (M=60.35, SD=22.72). The ANOVA results conclude that student's FL score significantly differ on basis of their mother's level of educational attainment, F (4, 392) = 4.26 p<.05, .04. The strength of the relationship between the variables assessed by partial eta squared was medium accounting for 4% of the variation in the financial knowledge scores.

Table 9: ANOVA for Differences in FL Scores on Basis of Mother's Education

Source	SS	df	MS	F	Sig.	Eta Squared
Between groups	11178.03	4	2794.51	5.94	.00*	.06
Within groups	184509.94	392	470.69			
Total	195687.97	396				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.5 Mean Differences with Respect to Student's Academic Standing

The one way ANOVA test was conducted to determine the relationship between financial knowledge score and student's CGPA. Student's CGPA was the independent variable; below 2.5 (M=55.51, SD=19.86), 2.5-3 (M=55.55, SD=21.39), 3-3.5 (M=59.91, SD=21.59) and above 3.5 (M=65.03, SD=23.99. The ANOVA results conclude that student's FL scores significantly vary based on the student's CGPA, F (3. 393) =3.94, p<.05, .03. The strength of the relationship between the variables accessed by partial eta squared was small accounting for 3% of the variation in the financial knowledge scores.

Table 10: ANOVA for Differences in FL Scores on Basis of Student's CGPA

Source	SS	df	MS	F	Sig.	Eta Squared
Between Groups	5636.375	3	1878.8	3.935	.01*	.03
Within Groups	187619.293	393	477.4			
Total Variance	193255.668	396				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.6 Mean Differences with Respect to College Financing

The one way ANOVA test was conducted to determine the relationship between financial knowledge score and student's source of college financing. Student's source of college financing was the independent variable; self-financed (M=56.90, SD=21.02), parents (100%) (M=59.90, SD=22.66), mostly self (x>50%) (M=53.13, SD=20.72), mostly parents (y>50%) (M=61.57, SD=21.91), equal contribution (x=y) (M=53.75, SD=21.81) and scholarship (M=55.68, SD=20.31). The ANOVA results conclude that there is no significant difference in student's financial knowledge score on basis of source of college financing, F (5, 393) =0.81, p>.05, 0.1.

Table 11: ANOVA for Differences in FL Scores on Basis of College Financing

Source	SS	df	MS	F	Sig.	Eta Squared
Between Groups	2012.1	5	402.6	.81	.54	.10
Within Groups	194839.29	393	495.78			
Total Variance	196852.29	398				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.7 Mean Differences with Respect to Monthly Allowance

The one way ANOVA test was conducted to determine the relationship between financial knowledge score and student's size of monthly allowance. Student's size of monthly allowance was the independent variable; below 800TRY (M=62.14, SD=22.43), 800-1500TRY (M=58.19, SD=21.84), 1500TRY-2500TRY (M=58.26, SD=22.12), 2500-5000 (M=59.61, SD=18.13) and 5000TRY & above (M=39.58, SD=34.83. Against prior expectations, the ANOVA results conclude that there is no

significant difference in student's financial knowledge score on basis of size of a monthly allowance, F (4, 394) =1.79, p>.05, .02.

Table 12: ANOVA for Differences in FL Scores on Basis of Monthly Allowance

Source	SS	df	MS	F	Sig.	Eta Squared
Between Groups	3473.35	4	868.34	1.79	.13	.02
Within Groups	191475.75	394	485.98			
Total Variance	194949.09	398				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.8 Mean Differences with Respect to Rent Expenditures

The one way ANOVA test was conducted to determine the relationship between financial knowledge score and students' amount of rent expenditure per month. Students' amount of rent expenditure was the independent variable; family pays rent (M=57.85, SD=22.26), 600 TRY and below (M=58.70, SD=22.05), 600TRY-1000TRY (M=60.67, SD=21.61), 1000TRY and above (M=58.25, SD=23.25). The ANOVA results conclude that there is no significant difference in student's financial knowledge score on basis of rent expenditures, F (3, 392) =.31, p>.05, .00.

Table 13: ANOVA for Differences in FL Scores on Basis of Rent Expenditures

Source	SS	df	MS	F	Sig.	Eta Squared
Between Groups	458.781	3	152.93	.31	.82	.00
Within Groups	194971.695	392	497.38			
Total Variance	195430.477	395				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.9 Mean Differences with Respect to Family Property

The one way ANOVA test was conducted to determine the relationship between financial knowledge score and students' family property. Students' family property was the independent variable; no major asset (M=53.75, SD=25.03), the family owns one of the major assets (M=59.37, SD=21.62), the family owns 2 of the major assets (M=57.45, SD=23.24), the family owns all three major assets (M=61.42, SD=21.03). The ANOVA results conclude that there is no significant difference in student's financial knowledge score based on the size of family property, F (3, 395) =1.04, p>.05, .01.

Table 14: ANOVA for Differences in FL Scores on Basis of Family Property

Source	SS	Df	MS	F	Sig.	Eta Squared
Between Groups	1537.885	3	512.63	1.04	.38	.01
Within Groups	195560.329	395	495.09			
Total Variance	197098.214	398				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.10 Mean Differences with Respect to Location of Meal Consumption

Lastly, the one way ANOVA test was conducted to determine the relationship between financial knowledge score and where students often consume their meals. Location of meal consumption was the independent variable; most often at home (M=60.39, SD=22.22), most often at school cafeterias (M=55.57, SD=22.95), most often at restaurants (M=59.15, SD=21.85) and other locations (M=52.77, SD=10.41). The ANOVA results conclude that there is no significant difference in student's

financial knowledge score based on where students often consume their meal, F (3, 394) =1.15, p>.05, .01.

Table 15: ANOVA for Differences in FL Scores on Basis of Location of Meal Consumption

Source	SS	df	MS	F	Sig.	Eta Squared
Between Groups	1691.872	3	563.96	1.15	.33	.01
Within Groups	192791.49	394	489.32			
Total Variance	194483.36	397				

* p>.05, η^2= 0.01, 0.06, 0.14 demonstrate small, medium and large effects respectively.

4.2.11 Summary of ANOVA Results

A one-way ANOVA was used to determine the existing differences in the FL scores of students on the basis of their faculties, parents' level of education, the source of college finance, monthly allowance, birth order, rent expense, place of meal consumption and family properties. The test results show that students FL scores vary significantly as per their faculty, fathers' educational attainment and student's CGPA at a 5% level of significance. Also according to the test results, there is not enough evidence that FL scores vary in respect to, the student's gender, range of monthly pocket allowance, rent expenses, birth order, frequent place of meal consumption, the amount of property owned by family and who finances college education at alpha 5%. Also, from the ANOVA results the performance of EMU students does not significantly differ according to their wealth (family and personal), level of rent expenditure, monthly allowance and college funding sources. These results could provide support on the findings of Potrich, Vieira, and Kirch (2015) and Monticone (2010) which suggest that wealth has just a minor but positive effect on

the level of FL. Also, Isomidinova and Singh (2017) found that Uzbek students' FL is not significantly affected by their spending habits

4.3 Testing for Relationships among Variables

Prior to performing the multiple logistic regression, the strength of association between a set of variables (financial behavior, confidence in matters of finance, parental schooling, CGPA, monthly income, rent expense, gender, faculty and previously taking and finance course) and FL score was determined using two tests of associations. The results were used as guides in specifying a model for binary regression. The first test Spearman rank correlation was performed on ordinal and scaled variables on the variable FL score calculated by following the OECD guidelines of Atkinson and Messy (2011). The second, Pearson's chi-square test of independence was performed on the nominal variables on the binary outcome of either having a score of 70% or above or less than that in the FL test. The binary coding (1(x>= 70%) and 0(x<70%).

4.3.1 Spearman's Rank Order Coefficient

The Spearman's rank test was performed to know the relationship between financial behaviors, confidence in matters of finance, parental schooling, CGPA, monthly income and rent and the FL score of students. The results show (in table 16) that FL scores are positively associated with students' self-confidence (Lusardi & Mitchell, 2017; Allgood & Walstad, 2016; Perry & Morris, 2005), good financial behaviors, father's education (Altintas, 2011; Jorgensen, 2007), and the students' CGPA (Er et al., 2017; 2009; Chen & Volpe, 2002). Similar to what Arceo-Gómez, and Villagómez (2017) found, the results provide no clear evidence of an association between financial knowledge scores and the wealth of EMU students.

Table 16: Spearman's Rank Order Coefficients on FL scores

Correlations

			FL Score	FB comp	FASP1	FE	ME	MI	RE	CGPA
Spearman's rho	FL Sc	Corr. Coeff	1.00	.31**	.254**	.18**	.09	-.09	.02	.17**
		Sig. (2-tailed)	.	.00	.00	.00	.07	.09	.69	.00
		N	400	392	393	399	397	399	396	397

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

FE: father's education level; ME: mother's education level; MI: monthly income; RE: rent expense; FASP1: confidence in matters on finance; FB: financial behavior.

4.3.2 Pearson's Chi-Square Test of Independence

The link between FL scores and nominal variables namely gender, faculties and previously taking a finance course was analyzed using the Pearson's chi-square test of independence (in table 17 below). The test results show that a performance of 70% and above or below in the knowledge test was associated with all the variables investigated at a 5% level of significance. The results are consistent with the results provided by the tests of means in tables 6 and 7. These results also support the works of some previous researchers that the faculty of education (Altinas, 2011; Kaur et al., 2015), gender (Chen & Volpe, 2002; Almenberg & Derber, 2015; Bannier & Neubert, 2016; Bottazzi & Lusardi, 2016; Er et al., 2017) and financial education (Tengalia & Yobachio, 2010; Lusardi and Mitchell, 2010; Mate et al., 2016; Ismodinova & Singh, 2017) affects FL.

Table 17: Chi-Square Test Results

Chi square test	Value	df	Asymp. Sig. (2-sided)
Gender	6.53[a]	1	.01
Faculty	25.8[a]	5	.00
Has taken a finance course	21.11[a]	1	.00

4.4 Binary Logistic Regression

A multiple binary logistic regression was employed to analyze how the variability of a set of factors could influence the odds of scoring 70% and above or below in the financial knowledge test. The significant variables from tests of association, gender, faculty, taking a finance course, father's education, good financial behaviors, self-perception on confidence in matters of finance and CGPA were included in the binary model as predictors. The results obtained from the Nagelkerke pseudo-R square measure seen in table 19 suggest that the estimated model can predict approximately 28% of the variability in either failing or passing the FL test.

Table 18: Nagelkerke and Cox & Snell R-square Coefficients

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	410.119a	0.21	0.28

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001

Table 19 illustrates the model's statistical significance in predicting the probability of passing (70% or above) or failing (below 70%). Out of all the predictor's investigated the students' CGPA, gender, faculty, father's level of education, financial behavior and previous enrollment in a finance course significantly added to

the model's predictions. Controlling for all other factors, table 20 below shows that 1 unit increase in good financial behaviors will increase the odds scoring higher in the FL by a factor1.08. The results also show that the odds of scoring 70% or above in the FL test are greater for students whose parents had at least obtained a bachelor degree or higher form of educational achievement by factors of 2.20 and 1.69 respectively than those with parents that had less than a high school diploma. Students whose parents had a high school diploma had lesser odds of scoring better at the test than those whose parents had less than a high school diploma. A unit increase in the students' CGPA increases1.64 times the odds of scoring better in FL tests. One unit increase in a student's self-confidence would increase the odds of scoring better by 1.15 times. Students in engineering (FAC (1)) and business faculty (FAC (2)) had greater odds of scoring better by factors of 2.16 and 2.18 respectively. Meanwhile, those in tourism and industrial engineering had lesser odds of scoring better by factors of o.67 and 0.89 respectively. The output also shows that male students face 1.88 greater chances in obtaining better FL scores than female students. Lastly, those that did not previously enroll in a finance related course have lesser odds in scoring better in FL test than those that did enroll by a factor of 0.48. All results are consistent with previous literature and provide additional support for previous empirical findings.

Table 19: Logistic Regression Results

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	GEN(1)	0.63	0.28	5.06	1.00	0.02*	1.88	1.08	3.25
	FAEDU			9.96	4.00	0.04*			
	FAEDU(1)	-0.11	0.54	0.04	1.00	0.84	0.89	0.31	2.58
	FAEDU(2)	0.79	0.50	2.43	1.00	0.12	2.20	0.82	5.91
	FAEDU(3)	0.52	0.52	1.02	1.00	0.31	1.69	0.61	4.65
	FAEDU(4)	1.95	1.30	2.24	1.00	0.13	7.03	0.55	90.40
	FASP1	0.14	0.12	1.38	1.00	0.24	1.15	0.91	1.46
	FB compo	0.08	0.03	8.19	1.00	0.00*	1.08	1.02	1.14
	FAC			14.93	5.00	0.01*			
	FAC(1)	0.77	0.49	2.49	1.00	0.11	2.16	0.83	5.62
	FAC(2)	0.78	0.42	3.48	1.00	0.06	2.18	0.96	4.93
	FAC(3)	-0.40	0.52	0.58	1.00	0.45	0.67	0.24	1.86
	FAC(4)	-0.12	0.51	0.06	1.00	0.81	0.89	0.33	2.39
	FAC(5)	-0.12	0.59	0.04	1.00	0.84	0.89	0.28	2.80
	CGPA	0.50	0.13	14.38	1.00	0.00*	1.64	1.27	2.12
	FC(1)	-0.74	0.35	4.37	1.00	0.04*	0.48	0.24	0.95
	Constant	-2.94	1.45	4.13	1.00	0.04	0.05		

a. Variable(s) entered on step 1: GEN, FAEDU, FASP1, FBcompo, FAC, CGPA, and FC. Where * denotes significance at a 5% level.

The next section discusses the implications of the previous findings, conclusions and place forward recommendations for future research.

Chapter 5

CONCLUSION

The trends of financial services sophistication, financial deregulation and international competition have pressured the consumers of these financial services to be adequately equipped when making financial decisions. In response, governments across the globe have continually sought for ways to improve the level of FL amongst individuals. As a first step, previous researchers and institutions sought to know the general level of financial literacy among targeted groups as well as the factors that are most likely to influence these levels prior to providing solutions. Also, various education programs and policies have been set in place to reduce the gap between financially trained individuals and those who are not. Youths, in particular, have appeared to be a major target group among researchers and policymakers in implementing financial education programs as this is thought to be relatively easier, less costly and more sustainable through the medium of educational institutions. This thesis investigated university education as a medium for accessing and providing financial education. The aim of this thesis was organized in three folds. Firstly, it aimed to measure the general level of financial literacy among university students and understand the factors that were most likely to influence it. Next, it aimed to evaluate whether financial education made any difference by using faculty and the fact of being previously enrolled in a finance related course as proxies. Lastly, this paper aimed at examining the FL across gender in order to identify the existence of possible gender gaps.

The dataset comprised a sample of 401 Eastern Mediterranean University students enrolled in either their second, third or final year. The data was collected using a questionnaire survey approach. The data were analyzed using different statistical techniques all present in the SPSS 20 statistical package. These techniques included descriptive statistics, test of means (ANOVA and independents samples t-test), Spearman rank order correlation, Chi-square test of independence and a multiple logistic regression. First, the descriptive statistics were organized according to demographic factors and performance of the students in the financial knowledge test. Next, the means of the variables with dichotomous sub-categories and more than two sub-categories were tested for differences in mean financial knowledge score using the independent sample t-test and ANOVA respectively. Subsequently, tests of association were performed to analyze the relationship between the performance in the financial knowledge test and a set of different factors using the Spearman rank order correlation, and Chi-square tests. Alongside theory, the results obtained from the tests of association guided the researcher in the specification of the logistic model. Lastly, a multiple binary logistic regression was performed to examine the collective and individual contribution of each factor in predicting the performance of students in the financial knowledge test.

5.1 Findings

With a general average score of less than 70%, the students' performances were pretty unsatisfactory. This clearly illustrated a need to improve their knowledge on matters relating to personal finance. The mean average score for correct answers for all students was 59.03%; according to Atkinson and Messy (2011), this would be considered low as the questions posed were basic. With average scores of 80% and above, the students relatively performed most in questions on risk and return, and

simple division. Meanwhile, questions on interest rate compounding and the time value of money had the least correct answers with approximate averages of 40%. These results could mean that the students are not adequate in implementing conceptual knowledge in calculations. Despite the fact that students' confidence on matters relating to personal finance correlated with the FL scores, the logistic regression revealed that this factor was not significant enough in influencing the outcome of a better FL score. The general findings suggest that there is a need to improve the FL among the young and educated. This finding correlates with the work of previous researchers (Chen & Volpe, 2002; Lusardi & Mithcell, 2007; Lusardi & Tufano, 2009; Lusardi & Mitchell, 2009; Lusardi & Mitchell, 2010; Altintas, 2011; Jappelli & Padula, 2013; Almenberg & Dreber, 2015; Grant, 2016).

Another objective was to understand the role of financial education in improving the level of FL. It was postulated that financial education has an effect on the students' performance in the financial knowledge test (Lusardi & Mitchell, 2010; Tengalia & Yobachio, 2010; Mate et al., 2016; Ismodinova & Singh, 2017). Students who had taken finance related courses before and who were enrolled in a finance-related faculty had better chances of obtaining higher scores in the test. These findings are consistent in both the correlation tests and regression analysis. Similar to the work of Lalonde and Schmidt (2011) and that of Dempere et al. (2010), this study concludes adjusting school curriculums to incorporate personal finance courses as a must could significantly and positively affect the financial knowledge of students and consequently their financial behavior as well.

On the one hand, the demographic variables geographical distribution, mother's level of education and other income related factors such as rent expenditures and monthly

allowance did not portray major differences in averages within the subcategories. On the other hand, fathers' level of education had a positive effect on the outcome of obtaining better scores in FL test. These findings are most likely due to the fact that most of our respondents are nationals of developing countries where fathers hold the main responsibility in financing household consumption. Among all demographics, women (Lusardi et al, 2010), groups with the lower level of parental education (Jorgensen, 2007), lower CGPA (Chen & Vlope, 2002), in faculties not familiar with financial concepts (McKenzie, 2009; Jayakumar et. al, 2017) and lesser family wealth (Nidar & Bestari, 2012) showed to be less financially acquainted than their male counterparts.

As we mentioned previously, our study investigated gender within the context of FL in university education so as to observe and give insights into possible gender misalignments. The results showed no major significant difference between men and women in terms of FL score. A plausible explanation lies in the fact that the respondents were all university students (Boyland & Warren, 2013). As such, if one assumes that the access to course materials and teaching methods are equal regardless of gender, substantial differences are not much expected. Furthermore, the correlation tests and logistic regression showed that the students' gender have an impact on the FL test performance with men having the greater chances of scoring better (Ludlum et. al, 2012; Er et. al, 2017).

5.2 Implications

Given that the average score was relatively lower by 20% from what is at least expected from financially trained students, this study contends that there is an existing need for improvement in the financial training provided at the university

level. It is important that universities put more consideration in including a compulsory personal FL course in their curriculums during the students' first year of schooling. A course that will not just passively introduce general financial concepts but that will also highlight the important role played by individuals for self and societal benefit in managing their finances properly. This is particularly crucial for young adults obtaining university education as they represent prospective candidates for the labor market and as they transition to gain more financial autonomy in an ever increasing sophisticated financial market. This is not only important to the individual but for the economy as well as this will encourage economic growth and will be a more cost-effective way of providing financial education. In line with some researchers, this research provides additional insight for university education as a medium through which FL can be improved (Tengalia, 2010; Lusardi and Mitchell, 2010; Altinas, 2015; Kaur et al., 2015; Mate et al., 2016; Ismodinova & Singh, 2017).

Given the cost associated with questionnaire survey and other several limitations during the process of collecting data, only one university was considered as a sample for the study. Future research may consider incorporating more universities in their data set for more robustness. Also for more exploration, a longitudinal survey could be applied on first-year students in non-finance related faculties that were enrolled in a personal finance course. This will provide researchers with more insights on the sustainability of taking personal finance elective courses to get good FL scores over time.

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