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FACULTY OF BUSINESS AND ECONOMICS

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Exploring Financial Literacy
An Empirical Framework for Lebanese-Armenian Minority Students

DOCTORAL DISSERTATION

Supervisor: Dr. Zsófia Vörös

Pécs, 2023

Declaration of Originality

I, the undersigned, certify that this dissertation comprises my original work toward the degree of Ph.D. in Business Administration and that other materials used are appropriately referenced throughout the text.

Robert Mesrob K. DerMesrobian

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Publications

Journal Articles

DerMesrobian, R. M. (2023) *Exploring Trends of Financial Literacy Research: A Bibliometric & Topic Modeling Approach.* International Journal of Economics and Finance Studies, 15(2), 246-277. https://doi.org/10.34109/ijefs.20231521

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DerMesrobian, R. M. (2022) *A Model for Financial Literacy Education in Lebanon*, Journal of International Scientific Publication: Economy and Business, 16, 399-406.

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DerMesrobian, R. M. (August 2022), *A Model for Financial Literacy Education in Lebanon*, International Scientific Events 22nd International Conference On Economy & Business, Burgas, Bulgaria

DerMesrobian, R. M. (July 2023), *The Financially Literate Hedonist: When Living a Lavish Life Is Better Than Saving for Retirement*, Armenian Economic Association, The 13th Annual Meetings.

Abstract

Understanding the best ways to manage one's financials has been an imperative phenomenon from the day money was introduced to civilization. In contemporary times, research works found that financial literacy which is the knowledge, behavior, and attitude in making sound financial decisions, plays a significant role in shaping people's financial well-being. This raised its importance to become a frequently discussed topic in academia. Nonetheless, most of the research works conducted in this field have focused on the adult populations such as those nearing retirement, those employees receiving defined contributions to their retirement plans from their employers, and those who would like to either invest in the financial markets or save money differently. Most of the works are also focused on well-developed countries with established financial markets such as the United States of America, the United Kingdom, and the Netherlands. Similarly, most research works have used financial literacy as an independent variable to explain different financial decisions people undertake. Unlike conventional research works, this study delves into understanding the financial literacy antecedents of Lebanese-Armenian high school students. By doing so, I enrich the academic literature with information about the financial literacy of a minority group in a developing country and make it clearer to understand the main antecedents of this population segment's younger generations' financial literacy formation. Through providing financial literacy pieces of training, and asking the students to fill out the questionnaires, financial literacy is positively related to financial knowledge and cognition. I also find that knowledge-based financial education could not make much of a difference in the Lebanese-Armenian youth's financial knowledge by noting that they already possess a reasonable amount of such knowledge. Hence, there is a need for different sorts of interventions to elevate their total financial literacy levels. In addition, the research framework turns out to be highly significant, with cognition mediating the relationship between financial knowledge and financial literacy, and confidence moderating this relationship. This study provides practical recommendations to policymakers and researchers who would like to explore the research question further.

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Acknowledgments

Writing an acknowledgment section at the start of any dissertation has become a customary act all around the world. That is because it might be the only place where a person can officially present his or her gratitude to those who joined the march. However, my will to dedicate a part of my dissertation to thanking all those who encouraged, supported, guided, mentored, and assisted me in accomplishing this doctoral journey is far from my desire to continue a tradition.

Since the very start of my doctoral studies at the University of Pécs in September 2019, unthinkable and unforeseen events have taken place, which make my gratitude letter quite sincere. First, I started the program not knowing if I was going to complete it due to the severe health problems I faced back then. Soon after my attendance at the first set of seminars, the nationwide protests and riots in Lebanon took place which triggered multiscale crises in the country. This was followed by the COVID-19 pandemic during which we lost my dear grandmother, Veronica. The instability in the country led me to take the risk and travel to Armenia, the land of my ancestors, which in its own sense was a unique challenge. Hence, my heartfelt thanks to you all for your trust in my capacity to do a Ph.D. in Business Administration at the University of Pécs.

Primarily, I would like to thank my family members for being my backbone and support system. My parents, Krikor and Salpy, my sisters, Nathalie and Vera, my brother-in-law, Nichan, and my fiancée, Talar. I am sure I would not have reached this far without your constant support and love. Thank you to my baby nieces, Nina and Noémie, for becoming part of our family when we were deeply in need of such amazing joy.

I would like to acknowledge the challenging work of all the educators I have encountered throughout my life. Being one myself, I profoundly know that teaching is a mission and not a simple job. For a start, I would like to thank Dr. Samih Azar and Dr. Annie Tortian, who supported my candidacy for a doctoral program from the very beginning. Unfortunately, Dr. Azar left this world without seeing my doctoral accomplishments. A special thanks to Dr. Zsuzsanna Vitai, the director of the International Ph.D. in Business Administration program, who made sure to keep our educational process as smooth as possible in globally turbulent times. Similarly, I would like

to recognize the efforts of all the professors at the University of Pécs who were eager to transfer their extensive and rich knowledge to us: Dr. József Vörös, Dr. Gyöngyi Bugár, Dr. Iván Bélyácz, Dr. Mónika Kuti, Dr. Ferenc Kruzslicz, Dr. Kármen Kovács, Dr. Zsófia Ásványi, Dr. Krisztián Szűcs, Dr. Gábor Rekettye, Dr. Dániel Kehl, Dr. Mónika Galambosné Tiszberger, Dr. Gábor Kőrösi, Dr. László Szerb, Dr. Csaba Makó, and Dr. Vivien Csapi. They all creatively enriched my knowledge of different business disciplines which are already coming in handy for my teaching and research endeavors. A particular thank you to my dissertation supervisor, Dr. Zsófia Vörös, who was always there for me when I needed clarification or guidance. Thank you for your constructive comments, and supportive suggestions. Likewise, I would like to thank Dr. Mónika Kuti and Dr. Marietta Kiss for their valuable comments on the pre-review of this dissertation. I would also like to thank the remaining Ph.D. candidates at the University of Pécs, notably Haneen, Abdallah, and Valdrina, for their support over the last 4 years. I would equally like to thank Réka Ábrányi for her hospitality, assistance, and trust during my time in Pécs.

I would like to extend my thankfulness to the directors and to the students at the schools who accepted my research proposal. I am sure that without your cooperation, I would not have finished the required tasks of the program. Specifically, I would like to thank Mr. Aram Karadaghlian, the director of the Armenian Catholic Holy Cross Harboyan High School, for his support of my doctoral endeavors and for his personal endorsement of my research proposal to most of the remaining Lebanese Armenian school directors.

Unique thanks to Dr. Gurgen Aslanyan and Dr. Rita El Meouchy, who provided me with the very first opportunities to hold teaching positions at higher education institutions. Thank you both for your constant encouragement and mentoring. Likewise, a profound thanks to the Central Bank of Armenia's Consumer Rights Protection and Financial Education Center's team who provided me with excellent practical opportunities and insights into financial education.

Finally, I would like to thank all those who contributed directly or indirectly to my successful accomplishment of this doctoral degree. I hope I can be of much help to you when you need it.

Abbreviations

AEA – American Economic Association

AFI – Alliance for Financial Inclusion

ANOVA – Analysis of Variance

AR – Arabic

BDL – Banque du Liban / Central Bank of Lebanon

BNT – Berlin Numeracy Test

CRT- Cognitive Reflection Test

CFPB – Consumer Financial Protection Bureau (USA)

FR – French

GFC – Global Financial Crises (2007-2009)

JEL Code – Journal of Economic Literature Code

LMFA – Lebanese Micro-Finance Association

MENA – Middle East and North Africa

NSFE – National Strategy for Financial Education

NSFI – National Strategy for Financial Inclusion

OECD – Organization for Economic Cooperation and Development

PACFL - The US President's Advisory Council on Financial Literacy

PCA- Principal Component Analysis

PISA/INFE – Programme for International Student Assessment/International Network for Financial Education

US or USA – The United States of America

Exploring Financial Literacy
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1. Introduction

1.1. Research Background

The importance of managing one's money has existed since the latter's inclusion in peoples' lives thousands of years ago (Braudel, 1997). Historical accounts attest to this by showing the existence of numerous sources in which financial matters are discussed. One of these sources is the collection of holy scriptures, such as the Holy Bible, and religious sermons, which contain a rich discourse on money and economic management (Wojciechowski, 2014). An interesting example could be Ecclesiastes 11:2 "*Invest in seven ventures, yes, in eight; you do not know what disaster may come upon the land*" which presents the ideas of risk diversification and portfolio management (Kobrich Leon & Pfeifer, 2013). This verse from the Old Testament is quite in accordance with the contemporary Capital Asset Pricing Model (CAPM) and the Modern Portfolio Theory (MPT).

Other sources also exist proving people's acknowledgment of money's importance in their lives such as literary works and other publications (Poovey, 2009; Wagner, 2010). According to research, people's increased interest in amassing wealth throughout the ages has led to their demand for instructive information (Clarke, 2010). For centuries, due to the lack of literacy, this has been given through oral means such as popular sayings (e.g., "*He who saves in little things can be liberal in great ones*") and theatrical plays (e.g., Shakespeare's The Merchant of Venice) (Christy, 1888; Pfister, 2018; Holderness, 2020). However, with the increase in people's general reading abilities, world-renowned authors have included financial discussions in their works after which whole books dedicated to financials started being published (Poovey, 2002; Henry & Schmitt, 2009). The likes of Charles Dickens, Jane Austen, Emile Zola, and other world-renowned authors have all integrated financial discussions in their works (Hopkins, 1994; Henry & Schmitt, 2009; Hume, 2013; Caya, 2015; Rutterford & Sotiropoulos, 2016; Henry, 2018).

Nonetheless, the information in these works and the recommendations presented to the masses were based on personal or societal observations. In other terms, they were not based on scientific methods with hardly any data-driven discussions whatsoever. To solve this issue, the academic body produced a new terminology for the discipline around 250 years ago (Gross & Knoll, 1973). This was a personal finance topic, a term that is still in use and explained as the art of responsibly managing individual and family finances and setting financial goals. Though many adopted this terminology, others preferred using different wordings such as family economics, consumer economics, consumption economics, household finance, and consumer education (Schuchardt, et al., 2007). The American Economic Association (AEA), a non-profit scholarly association dedicated to the field of economics, has similarly adopted the terminology of "Household Finance" in its JEL Code [1] classifications under "Financial Economics" and denoted it by G5 (AEA, 2023). Regardless of what terminology a researcher uses, the endpoint is the same: understanding people's financial dealings and decisions.

The discipline of personal finance has grown over time, especially with many findings and interesting results using interdisciplinary approaches. Hence, it became too broad, and researchers started narrowing it down by dividing it into different subtopics. Some focused on understanding how people make decisions by primarily integrating principles of psychology into it. This formed the field of behavioral finance. Others focused on understanding the reasons why people make such financial decisions. After a good amount of research, a consensus answer arose for this question which is people's knowledge of financial principles, their different financial behaviors, and attitudes toward finances. To make things simpler, academia produced a new terminology "financial literacy[2]" to include all these three which subsequently became its key components: knowledge, behavior, and attitude. This formation has been explained extensively by many researchers and entities. Some of these works are Atkinson and Messy (2012) and Lusardi and

[1] The JEL code classification system is a standard classification method developed by the Journal of Economic Literature to scholarly classify the literature in the field of economics. For more information, please visit the American Economic Association's website at www.aeaweb.org/.

[2] At the start of academic research on financial literacy, those based in British English talking nations used the term financial capability. This term got evolved over time to set itself apart from the traditional understanding of financial literacy.

Mitchell (2014). Later, financial literacy branched itself into many parts which made it gain a special location in AEA's JEL Codes, G53.

Compared to other divisions of personal finance research, financial literacy attracted the attention of the academic body only a couple of decades ago (Lusardi & Mitchell, 2014). A recent bibliometric analysis showed that its discussion in academia started late 1990s (DerMesrobian, 2023b). In relation to this, academics discuss some important incidences and changes that forced academia to reconsider financial literacy. First, simple observations showed that more modern financial transactions were not as simplistic as they used to be some decades earlier (Preda, 2001; Finel-Hongman, 2010; Rutterford & Sotiropoulos, 2016). The number of available financial products in the markets increased tremendously along with the increase in the types and numbers of financial services providers. The second reason, which is more based on the American example but also holds true in many other parts of the world, according to Lusardi and Mitchell (2007, 2014) is the change of retirement plans from defined benefits to defined contributions. Employers were no longer responsible for managing their employees' retirement plans, rather people had to make their own decisions. These two reasons increased the interest of authors in financial literacy. However, DerMesrobian (2023b) shows that the spark was the third reason, that is the consecutive macro financial problems, notably the global financial crisis (GFC) which occurred in late 2007. After ample research, it has been asserted that such crises could be avoided if only people were more aware of what they are getting into when dealing with their savings, loans, and mortgages (Lusardi & Mitchell, 2014).

Discussing financial literacy among scholars has become normal in recent years with the number of financial and economic turmoil augmenting (Kimiyaghalam & Safari, 2015). Researchers have concluded that the initial and the outmost cause of the crises is people's lack of financial literacy which consequently leads them to make irrational financial decisions (Lusardi & Mitchell, 2014; Cole, et al., 2016). This means a weakness in at least one or all of its three components: knowledge, behavior, and attitude. Though these terms

are self-explanatory, the coming paragraphs will briefly present each separately. In the later parts of this research, each is more thoroughly discussed.

The knowledge component is the recognition, understanding, and comprehension of financial principles related to personal finances. Some examples are the knowledge of what inflation means and how it affects people's lives, or what the different bank accounts are used for. It is often regarded as the base component of financial literacy because the other two components (behavior and attitude) are formed in relation to it (Huston, 2010; Remund, 2010; Kimiyaghalam & Safari, 2015). The most common way for a person to improve his/her financial knowledge is by enrolling oneself in curriculum-based educational initiatives, such as seminars, classes, or training sessions. Teaching financials at schools is one such example. The other way is a learning-by-doing acquirement of financial knowledge such as individual experiences and socialization with parents and peers (Tang & Peter, 2015; Lyons & Kass-Hanna, 2019; DerMesrobian, 2023a).

The behavior component includes the actions involved in managing one's financials. A financially literate individual should necessarily engage in appropriate financial behaviors. Some examples are a higher propensity to save (Klapper, et al., 2013), better preparedness for retirement (van Rooij, et al., 2012; Lusardi & Mitchell, 2014), increased informed financial decisions (Zait & Bertea, 2014), and higher participation in the financial markets (van Rooij, et al., 2011; Bucher-Koenen & Ziegelmeyer, 2014).

The attitude component represents a person's state of mind on finances. This is where people's backgrounds show up, in terms of their psychological maturity, cultural norms, and preferences. It is important to discuss financial attitude because it is how a person enhances his/her intentions to learn more about finances and engage in certain financial behaviors. Some researchers found that this component is a real changemaker in the scope of financial literacy (Bhushan & Medury, 2015)

Studies have also shown that financial literacy's benefits are similarly multi-layered (Zait & Bertea, 2014). Recent research works such as Grohman et al. (2018) and Lyons and

Kass-Hanna (2019) assert that better financial literacy leads to higher financial inclusion i.e., the easy access of the masses to financial services that can help them build wealth, including savings, credit, loans, equity, and insurance (McKinsey & Company, 2023). Nowadays, most people enjoy access to financial services which have become complex with the inclusion of technological advancements in the financial field (Lusardi, et al., 2010; van Rooij, et al., 2011; Skagerlund, et al., 2018; OECD, 2019). Such complexities require a thorough evaluation of the related terms, conditions, and details by consumers who hardly do it due to their lack of the necessary knowledge (van Rooij, et al., 2011). The inability of many to acquire the tools to make these assessments leads them to commit bad personal financial decisions which eventually cause personal, national, and international financial disasters such as the GFC (Cole, et al., 2016). Hence, the need for people to make informed financial decisions to reach healthy personal finance is impartial (Klapper, et al., 2013; Bucher-Koenen & Ziegelmeyer, 2014).

In addition, it is noteworthy to mention that people with low financial literacy especially the ones with low cognitive abilities, are more prone to suffer from falling into financial biases and become more susceptible to fraud (Klapper, et al., 2013; Bucher-Koenen & Ziegelmeyer, 2014). Without the knowledge of key financial principles and an understanding of how the financial system works, decisions are mostly reliant on heuristics and rules of thumb (Guiso & Viviano, 2015). Research shows that a financially literate individual is well-equipped to defend his/her own interests and to report any inadequacies in financial services to the concerned authorities (Makdissi, et al., 2020). This means that financial literacy empowers one's personal financial well-being i.e., having financial security and financial freedom of choice, in the present and in the future (CFPB, 2015).

Financial literacy is also important for business owners as they make several financial decisions in running their businesses such as managing expenses, checking out loans, and assessing profitability, which has strong influences on their personal financial well-being (Lusardi, 2019; Makdissi, et al., 2020). That is why it is significant on the organizational level too. Moreover, because securing a sustainable economy for a society is the result of

its people's financial awareness (Mawad, et al., 2022), financial literacy becomes the underlying cause of the stability and development of a certain country's economy (Zait & Bertea, 2014).

After having a good understanding of what financial literacy is, and why it is important for all economic agents, researchers started checking its levels among people. Consequently, early researchers concluded that people are not well-equipped with the necessary tools to make correct financial decisions and raised red flags on this matter (Lusardi, 2003). Not so long after, the GFC reaffirmed that people's financial literacy is low, as most people were unaware of their financial status while applying for different credits (Kuzina, 2011; Klapper, et al., 2013; Guiso & Viviano, 2015). The Standard and Poor's Global Financial Literacy Survey run in 2014 has likewise shown that less than a third of the world's population can be regarded as financially literate (Klapper, et al., 2015). These occurrences and findings captured the eyes of researchers and policymakers alike to increase people's financial literacy rates.

To improve people's understanding of financial concepts and principles, many called for financial education mandates (Walstad, et al., 2010; Skagerlund, et al., 2018; Lind, et al., 2020). This means having a well-prepared set of educational interventions to provide people with financial tools to make sound financial decisions. Governments, international organizations, and private entities have engaged themselves in realizing this within a couple of years of these results. Nonetheless, the primary medium was curriculum-based financial education, specifically those targeting the younger generations (OECD, 2019).

There are two principal factors that made decision-makers resort to this approach. First, the governmental institutions have easy access to this target group through traditional education institutions (schools, colleges, and universities). So, including financial education in the national curriculums was easily doable on a large scale. Second, researchers agree that financial literacy is a lifelong process (Skagerlund, et al., 2018) that should begin in childhood. Some even regard it as important as basic literacy i.e., the ability to write and read (Lusardi, 2019). That is because people's financial choices

accompany them throughout their lives, making the younger generations the ones most in need, as their decisions will influence all of us for decades (Lusardi, 2003). In addition, Mawad et al. (2022) argue that the younger generations are the backbone of the economy's bright future. They add that the young's behaviors and decisions have the biggest impact on advancing as a country as they represent a decent portion of today's consumers and the foremost investor prospects in financial markets (Mawad, et al., 2022). That is why, in recent years, financial literacy has become an important 21st-century life skill (Skagerlund, et al., 2018). An excellent representative example of this is the introduction of financial literacy in the United Nations Educational, Scientific and Cultural Organization's list of life skills training materials (UNESCO, 2020) and its incorporation recommendations to national K-12 curricula.

The embodiment of financial education in the national policies of most nations has resulted in the emergence of National Strategies for Financial Education (NSFE)[3]. An NSFE is a multi-year and multi-stakeholder public policy project that provides implementation guidance and effectiveness benchmarking (or evaluation) tools for financial education (OECD, 2022). Contrary to this stand-alone strategy, some countries have integrated financial education within the larger scope of their National Strategy for Financial Inclusion (NSFI) (AFI, 2021). There also exists a stand-alone program type of financial education planning which is considered a precursor to realizing an NSFE through which a country designates target groups to financially educate them, yet without any precise monitoring and evaluation system (AFI, 2021). Regardless of how a country implements its financial education program, tens of leading international organizations and consultancy firms, such as the Organisation for Economic Cooperation and Development (OECD), the Alliance for Financial Inclusion (AFI), and the European Commission have provided technical assistance to different countries to realize it.

There are still some countries that do not have any financial education programs incorporated into their national policies. They claim that their main reason not to have any is the lack of evidence that financial education makes positive changes in people's

[3] Some countries use the terminology National Strategy for Financial Literacy

financial literacy (Kaiser & Menkhoff, 2021). Based on the data, this is not false**.** Results show that financial literacy rates are still quite low and some even claim that financial education failed to deliver the desired results (Skagerlund, et al., 2018; Lind, et al., 2020)**.** Millions of dollars have been spent to turn the situation upside down without any serious effects. Willis (2011) explains that even well-knowledgeable and well-informed individuals in financial matters often fall into financial biases. Even if it may seem logical to them at that moment, heuristics, and emotional states play a key role in people's decision-making process (Willis, 2011)**.**

Though such claims are evidenced by data, they mostly lack any global outlook on it. I will present the available literature on this matter extensively in the coming parts, but to what concerns here, it is important to note a couple of things. Financial education, just like any type of education, requires some time to make a change. There exist few exceptions where financial education produces undesired results, but Kaiser and Menkhoff (2020) argue in their meta-analysis that often, it either causes no effects or works to amplify people's financial literacy.

The issue of having the idea of mixed reports running around the effectiveness of financial education programs put it at the top of the list for the subtopics discussed in the financial literacy research (DerMesrobian, 2023b). More recently, research works have started checking the reasons for this and found out that the inclusion of varied factors within the scope of the research is recommended. For example, Yong et al. (2018) found that the outcomes of financial education differ for people of distinct cultural backgrounds. Researchers such as Walstad et al. (2010) and Cole et al. (2016) argued alike and proposed new variables to be included while dealing with financial literacy. Robert Solow, the Economics Nobel Laureate, had already discussed this matter decades ago by saying that people's customs, beliefs, and attitudes are the roots of all their actions, including financial ones (Solow, 1985). Therefore, to deeply understand people's current financial behaviors, researchers argue the necessity of visiting the roots of these behaviors (Solow, 1985; Poovey, 2002)**.** Henceforth, modern research works have added cognitive and non-

cognitive factors in relation to financial literacy to be able to capture a better outlook towards it.

When it comes to cognitive abilities, it is common to see them being approached by different denotations. Yet, they all are under the umbrella of quantitative reasoning (Demetriou, et al., 2020). The most recurrent terms are numeracy (Hung, et al., 2009; Skagerlund, et al., 2018), mathematical skills (Cole, et al., 2016), and rationality (Carpentier & Suret, 2012). Whereas for the non-cognitive factors, researchers have used psychological factors such as confidence (Robb & Woodyard, 2011; OECD, 2019) and sociodemographic factors such as gender (Atkinson & Messy, 2012; Lusardi & Mitchell, 2014; Castaneda, et al., 2022). Through the integration of these additional factors, the research on financial literacy became richer and more clarified (Liaqat, et al., 2020; Castaneda, et al., 2022).

After having provided a historical glimpse into the evolution of the scientific theme of financial literacy, and having explained what it means, what it is composed of, and what it is good for, it is time to narrow down the topic to this research's empirical endeavors. I have selected to target a minority group of the Lebanese population, those who are ethnically Armenian. As I am part of this society, I have firsthand knowledge of the difficulties people face in managing their financials. Having worked in a community school, I similarly have firsthand knowledge and motivation towards the Lebanese Armenian younger generations' need for financial education. However, there is not a single academic work, to the best of my knowledge, that tries to find a framework to realize this.

My aim through this research is to explore financial literacy and put into force the findings to the Lebanese Armenian younger generations. The goal is to find the factors influencing their financial literacy and how these factors are linked to it. I realized this by running an intervention and asking the students to fill out a survey. My intervention is the provision of a financial education session which lasts for around 40 minutes. I will discuss the necessary details in the coming parts of this dissertation.

1.2. Research Originality

This research contributes to the literature on personal finance by its nature**,** primarily because it is based on studying a developing country's minority youth's financial literacy. Three originalities are presented in the previous phrase, and I explain each one separately in the below paragraphs**.**

First, most of the existing research works have been conducted in more advanced economies to the extent that most of this research's literature review is even forcibly based on Western countries' research results. This could create mismatches in results and interpretations. For instance, the availability and the provision of financial products differ between developed and developing countries (Bonte & Filipiak, 2012), and while the perception of financial literacy is of a complementary nature to consumer protection in developed countries, the perception becomes more pressed towards financial inclusion in developing countries (Xu, 2012). That is why, there is still a lot of obscurity in the field of financial literacy in developing countries, though, based on the recent findings of Lyons and Kass-Hanna (2019), there is a growing interest in understanding all the aspects of financial literacy in the Middle East and North Africa (MENA**)** region. As Lebanon is part of this region, I found it to be meaningful to focus on it.

The second originality is the focus on minority groups. I have explained about the Lebanese Armenia society quite thoroughly in later parts of this dissertation, but it is worth saying that like many other minority groups, research is hardly conducted on them. To the best of my knowledge in this matter, this dissertation is the only academic work treating the financial literacy of Lebanese Armenian high school students.

The third originality is the focus on youth. Most of the research works on financial literacy are based on the adult population (Walstad, et al., 2010)**.** Youth is primarily discussed when financial education is involved and, in such circumstances, financial literacy is more of an independent variable than a dependent variable.

This research also makes a methodological contribution to the field of personal finance, and more accurately to the academic discourse of financial literacy. I succeeded in developing a reliable instrument to check the financial knowledge of high school students in Lebanese Armenian schools. I also succeeded in finding an exceptionally reliable model linking the influencing factors of financial literacy together and showing each relation's sign and strength. The presentation of a highly significant moderated mediation framework towards the antecedents of financial literacy of the youth can also be regarded as a milestone for this work. There is not much work done on finding a certain framework not following a simple linear relationship**.**

In addition, this research focuses on understanding the antecedents of financial literacy rather than its consequences. The literature is quite rich with discussions of how financial literacy leads to the development of financial systems which itself is a principal factor to ignite economic growth (Levine, 1997; Cole, et al., 2016). However, there is not as much discussion on what financial literacy is formulated for, which opens the doors to another originality. Not only is the composition of financial literacy under-discussed but how these composites are linked to each other is even much less discussed. The frameworks available showing the relationships between the different variables are scarce, and this inhibits understanding the path on which financial literacy is accumulated. Some works have provided good examples of how this is realized which I regard as the first step towards accomplishing my research. But again, their number is small and sometimes simplistic. For instance, Huston (2010) provided a framework of financial literacy, which is presented in later parts of this research. Even though it is one of the most referred works in the field of financial literacy (DerMesrobian, 2023b), it discusses the topic without presenting any necessary detail as to how the mentioned variables are related. On the contrary, Skagerlund et al. (2018) used multiple regression to check the correlation between financial literacy and cognitive abilities, numeracy, anxiety, and self-efficacy. Lusardi et al. (2010) also used multivariate analysis and differences of means in checking the significant relationships between sociodemographic characteristics, familial and peer socialization, and cognitive abilities.

Moreover, this research focuses primarily on the financial knowledge component as an antecedent for financial literacy and disregards the other two components. That is because the idea that financial education's primary goal is knowledge development has been long established (Hastings, et al., 2013; Lusardi & Mitchell, 2014). Instead of contending with what has already been found, I invest in ameliorating the literature and enriching it with other latest information. I also precisely distinguish financial knowledge from financial literacy. Some works studying financial literacy have taken into consideration people's financial behaviors as an outcome, which could be quite self-contradictory and confusing to other researchers who would like to engage in comparative work (Walstad, et al., 2010).

1.3. Research Question

As a researcher in the field of financial literacy, I noticed that there is a reasonable number of publications that discuss the lack of consensus regarding what we mean by financial literacy. Some of these works are Hung et al. (2009), Huston (2010), Remund (2010), and Zait and Bertea (2014). Based on these well-known publications, many authors have preferred not to explicitly define it in their research works and simply use a general approach towards it. To avoid such a methodology, noting that these claims come from works published several years ago, I have raised a question for investigation even before embarking on full-scale empirical research. This question is composed of two parts: what is financial literacy and is there still a lack of consensus on its definition?

Nonetheless, the primary aim of this research is to understand the financial literacy antecedents of the Lebanese Armenian youth and to find the framework connecting all these antecedents. So as financial literacy is at the heart of this research, the previously investigatory question becomes more necessary to be carefully conducted. Although there is not a single work concentrated on this segment of the population, to the best of my knowledge, I resort to the results of other research works conducted in Lebanon and in foreign countries to grasp the possible antecedents. As explained throughout this work, this kind of research is of much importance because minorities have been found to exhibit lower financial literacy and because the financially well-preparedness of the youth is the

key to sustainable finance in the future. Therefore, the research question that this research addresses could be consolidated into one sentence as follows:

Research Question: What are the significant antecedents of the Lebanese-Armenian high-school students' financial literacy, and how are they connected?

1.4. Research Motivation

On a personal level, studying the topic of financial literacy engages both my academic and professional experiences which makes me quite motivated to accomplish it. My academic training is in economics, finance, and general business management whereas my professional career is in education and more recently in policymaking. When I wanted to engage in research, primarily for my master's degree and later for my doctoral ambitions, I aimed to find a topic that corresponds to both of my quite-liked spheres. By simply using the two words, finance, and education, I got acquainted with financial education which I then realized was an antecedent to the hot topic of financial literacy. Since then, I have become an enthusiast of financial literacy and since then an advocate for financial education. What intrigued me at the beginning, is my observation of the lack of general financial understanding in Lebanon regardless of the age factor. At the start of my research, I was teaching at the high school level in Lebanon and holding the head position for the technical and vocational department. When I heard some of my students discussing financials in incorrect ways, I knew that it was time to educate them to the best of my abilities. Hence, this work's training sessions. It is worth mentioning that at the time of the training sessions, I was no longer their teacher, which removes any external factors inhibiting the authenticity of this research.

On an academic level, my motivation to research financial literacy in Lebanon was similarly high from the beginning. Regardless of some programs by both the public and private sectors, financial education is nonexistent in Lebanese school curriculums (Aflatoun International, 2022). Based on previous research findings, this puts the younger generations under the threat of making misinformed financial decisions later in their lives. Similarly, the peer effect financial education in schools has on the connected adult

population would be missing. Regardless of the latter, Lebanon's financial literacy rates have come up quite competitive regionally (Klapper, et al., 2015; Kokkizi, et al., 2017). This was quite intriguing for me because one can observe that the Lebanese population receives its financial education from non-curriculum-based means. In other terms, it might be that the learning-by-doing knowledge acquirement methods I had already discussed prevail in the country. This was the main reason I added cognitive and non-cognitive variables to this research.

Although I was highly motivated to run my doctoral research, it was intensified due to an unexpected series of events, namely the pandemic, financial crises, and riots. This made the whole experience a more challenging yet much-needed process. The reason I am saying this is because my focus on a minority group, the ethnic Lebanese Armenians, is by itself an interesting approach as significantly fewer research works are conducted on minority groups. Likewise, conducting behavioral research in times of trouble could also show research findings that could not be received in other more tranquil times. What was quite interesting for me is the mixture of these both: a niche population with a specific macroeconomic setting.

1.5. Dissertation's Structure

This dissertation contributes to the expansion of scholarship in the financial literacy theme with a geographical focus on Lebanon. The contents of the remaining parts of this work are as follows.

Chapter 2 provides the literature review required for this research and it is composed of three parts. The first part discusses the definitions and measurements of financial literacy along with its antecedents. The investigatory question raised is apparent here. This part also discusses financial education matters and its relationship with the youth as well as the relationship of financial literacy to its commonly discussed outcomes such as financial well-being, financial resilience, and financial inclusion. The second part discusses financial literacy in Lebanon. The discussion starts with presenting the Lebanese context. That is quite important because the Lebanese setting is obscured and misrepresented by

foreigners. It is also important to discuss it even if briefly to have a better understanding of the social, economic, financial, and educational setting of this research. This is followed by the financial literacy research works in Lebanon and the financial education initiatives in Lebanon. The third part sets the hypotheses based on the previously presented literature. A total of 10 hypotheses are derived and tested afterward.

Chapter 3 presents the methodology of this research**.** I start with the research framework by briefly presenting the Lebanese-Armenian community and the Lebanese-Armenian high schools. Then I present the research methods used to answer the set hypotheses from instrument selection to data collection, sampling, and details on the training sessions. The last part presents the statistical methods used to assess and evaluate the collected data, the principal component analysis**,** and scale reliabilities. Lastly, I discuss the descriptive results of this research before going into the research findings.

Chapter 4 investigates the research findings by concentrating on hypothesis checking and model reliability**.** I start with hypothesis testing, realize if the tests show any noteworthy results, and later, this research provides the final framework of the antecedents of financial literacy of the Lebanese-Armenian youth which is the main idea of this whole research**.**

Chapter 5 corresponds to the discussion of the research findings. This part is quite important because it tries to make sense of the abstract numerical findings. It provides a good descriptive explanation of the research findings by comparing them to the already available results in academia. The framework is similarly discussed in this part.

Chapter 6 concludes the research by summarizing the main findings, listing the limitations, providing recommendations for future research, and displaying the implications**.**

Thereafter, I list the references of the sources and materials used in this research. I also present in the 4 appendices the respondents who were removed from the research, either because they are incomplete or because they are outliers, the permission letter sent to the

school directors, the survey questionnaire, and the PPT presentations of the training sessions.

2. Literature Review

2.1. Financial Literacy

2.1.1. Definition

The introduction part of the dissertation explains why the topic of financial literacy could be regarded both as an old topic and a new topic. It is old because people have always been interested in understanding financials. But it is also new because it was branched out from the personal finance field a couple of decades ago. Most researchers, however, tend to agree with the idea of financial literacy being a young topic in the academic discourse (Hastings, et al., 2013; Lusardi & Mitchell, 2014)**.** This has contributed to financial literacy going by throughout the years without having a proper definition, often confusing readers with what it truly means. This has also confused the academic world because each researcher proposed a definition that suits their research needs most (Hung, et al., 2009)**.** Due to this, some researchers even preferred to avoid defining it in their works.

However, if one visits the definitions provided by the different prominent authors in this field, it is possible to see a certain direction towards the development of a final definition. At the start of the academic interest in financial literacy in the 1990s and early 2000s, researchers mostly approached it from the angle of financial knowledge. Examples are Kim (2001) and Hilgert et al. (2003). Along with financial knowledge, some researchers have included the concept of skill or ability to use this knowledge as part of their definition such as one of the very first on-topic works, Noctor et al. (1992), who defined financial literacy as "the ability to make informed judgments and to take effective decisions regarding the use and management of money". This knowledge and skill definition approach prevailed during that period especially because of the launch of the Jump$tart Coalition in the US in 1995 to "develop a strategic plan for improving the quality and extent of curriculum modules for personal finance education in the nation's schools, grades K-12" (Jump$tart Coalition for Personal Financial Literacy, 2014)**.**

The idea of financial behavior similarly existed within the different definitions of the pre-GFC period, under the designation of making financial decisions. Yet it was quite overshadowed by financial knowledge. It becomes more apparent when Lusardi and Mitchell (2007) name two behaviors in their definition: investment and savings. After the GFC, the definitions presented become more complex through the inclusion of the outcomes of financial literacy within its borders. Primarily, the concept of financial well-being has been included. Some examples are Hung et al. (2009) and Atkinson and Messy (2012).

A similar discussion to the one in previous paragraphs has been raised by different authors who tended to understand what we mean by financial literacy by visiting a suitable number of definitions. By this time, the standard economic models of human behavior in which people make informed and rational choices have been refuted and good efforts have been made to understand people's behaviors (Jappelli & Padula, 2013). These works turned out to be groundbreaking with their interesting and well-rounded basis for financial literacy.

First, they started differentiating between the proposed conceptual and operational definitions of financial literacy (Remund, 2010; Kimiyaghalam & Safari, 2015). While the conceptual definitions targeted abstractly expressing what the "financial literacy" phenomenon is about, the operational definitions were trying to get measurable instruments to quantify the latter. Through this act, at least part of the confusion was avoided. In this part of the discussion, the focus will be on the conceptualized definitions, whereas in the following part "2.1.2. Measuring Financial Literacy" will discuss and represent the operational definitions.

Second, it was impartial to clearly understand the underlying words of the term under discussion. According to Huston (2010), literacy designates the knowledge and the ability to understand, analyze**,** and evaluate a given situation. It was primarily used to denote people's ability to write and read, but its vast acceptance motivated researchers to find other sets of skills people need in their daily lives such as computer literacy and

health literacy (Huston, 2010; Remund, 2010). However, with the increase in the academic importance of personal finance and financial economics in general, researchers added financial literacy to the above list.

Third, academics visualized the development of the definition by categorizing it into groups (Kimiyaghalam & Safari, 2015). By this, they aimed to have a structural approach to finding a proper and holistic definition of it. This reasoning also showed how the proposed definitions complemented each other rather than combatting each other. Remund (2010) argues that the synonymizing of the term financial literacy as being represented by people's financial knowledge is the earliest interpretation of the term. Being the most obvious component of financial literacy, this approach can hardly be claimed to be of no use to us anymore. Yet, it was too simplistic and vague to researchers. Therefore, they supplemented this knowledge with people's ability to use it to make inferred decisions, which soon got updated to the latter's occurrence in the sphere of personal finance management. Furthermore, cognitive factors, such as skill, intelligence, or aptitude, were added to get apart from the sole factor of knowledge. The last stage explains Remund (2010), was the integration of psychological factors, such as confidence, into the definitions.

To bring this research close to these prominent works (Hung et al. (2009), Huston (2010), and Remund (2010)), I have formed a table in which the different ruling definitions of financial literacy are presented. The organization of the conceptual definitions through chronological order showed that apart from the opposing opinions different researchers presented in the attempt to explain financial literacy, certain keywords were repeated. The term "ability" and its synonyms, for instance, appeared in the many offered definitions in the light of having the ability to obtain and analyze the necessary information and to act accordingly. Another term that repeatedly appeared in the definitions is "knowledge" along with its synonymous words such as "understanding" or "information." Yet, its discussion is far more complex than "ability". While some authors referred to it as being general financial or economic knowledge, others tackled extremely specific knowledge such as the one people could possess about

opening a bank account or applying for a loan. Later, composite terms, such as financial security and well-being became common in the proposed definitions. Table (1) presents a rich list, one of the longest to date, of the different definitions presented by researchers or organizations since the very first start of financial literacy research. These keywords are underlined to reassert how recurrently they appeared in definitions.

Source	***Year***	***Definition***
Noctor, Stoney, and Stradling	1992	Financial literacy is the ability to make informed judgments and to take effective decisions regarding the use and management of money
Jump$tart Coalition	1995	The ability to use knowledge and skills to manage one's financial resources effectively for lifetime financial security
Mason & Wilson	2000	Financial literacy is an individual's ability to obtain, understand and evaluate the relevant information necessary to make decisions with an awareness of the likely financial consequences.
Vitt, et al.	2000	Personal financial literacy is the ability to read, analyze, manage, and communicate about the personal financial conditions that affect material well-being.
Kim	2001	Financial literacy is a basic knowledge that people need in order to survive in a modern society
Hilgert, Hogarth, & Beverly	2003	Financial Knowledge
FINRA	2003	The understanding ordinary investors have of market principles, instruments, organizations, and regulations
Moore	2003	Individuals are considered financially literate if they are competent and can demonstrate they have used the knowledge they have learned.
Emmons	2005	Financial literacy is the ability to keep track of cash resources and payment obligations, knowledge of how to open an account for saving and how to apply for a loan, a basic understanding of health and life insurance, the ability to compare competing offers, and plan for future financial needs
National Council on Economic Education	2005	Familiarity with basic economic principles, knowledge about the U.S. economy, and understanding of some key economic terms
Mandell	2007	The ability to evaluate the new and complex financial instruments and make informed judgments in both choice of instruments and extent of use that would be in their own best long-run interests
Lusardi and Mitchell	2007	Familiarity with the most basic economic concepts needed to make sensible saving and investment decisions
Lusardi	2008	Knowledge of basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basics of risk diversification

Servon and Kaestner	2008	Financial literacy refers to a person's ability to understand and make use of financial concepts
Hung et al.	2009	Knowledge of basic economic and financial concepts, as well as the ability to use that knowledge and other financial skills to manage financial resources effectively for a lifetime of financial well-being.
Task Force on Financial Literacy	2009	Access and awareness of the tools needed to make sound financial decisions.
The President's Advisory Council on Financial Capability	2009	The ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being.
Huston	2010	Measure of how well an individual can understand and confidently use personal finance-related information
Remund	2010	Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions
OECD (PISA/INFE)[4]	2012	The knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.
Zait & Bertea	2014	The concept of financial literacy includes knowledge of financial concepts, the ability to understand communication about financial concepts, the ability to manage personal/company finances, and the ability to make financial decisions in certain situations.
AFI	2021	The awareness and knowledge of financial concepts and products required for managing personal finances, considering one's economic and social circumstances
Cambridge Dictionary	2023	The ability to understand basic principles of business and finance
National Financial Educators Council	2023	Possessing the financial knowledge, behaviors, systems, team, and plan to confidently take effective action that best fulfills an individual's personal, family, and global community goals
European Commission	2023	Financial literacy means the knowledge and skills needed to make important financial decisions.

Table 1 List of Financial Literacy Definitions

Source: (Hung, et al., 2009; Huston, 2010; Cambridge Dictionary, 2023; European Commission, 2023; NFEC, 2023) and author's preparation

[4] The definition given by the OECD is also commonly referred to Atkinson and Messy (2012) as they are the authors of the report.

In this lengthy list of definitions, financial literacy has extended its importance to organizational, societal, and national levels. While it has been quite traditionally individualistic, the definition presented by OECD within its Programme for International Student Assessment's International Network for Financial Education is the first to mention the extension of personal financial well-being to that of society's financial well-being. By this, the National Financial Educators Council in the US stretched the benefits of personal financial literacy to the realization of personal, family, and global community goals.

Moreover, some authors have provided the world with a conceptual framework so that everyone better understands what financial literacy is and how it works. For example, Hung et al. (2009)'s conceptual framework is represented in Figure **(**1**)**. They have argued that financial literacy is the use of financial knowledge and skills to efficiently manage one's financial resources. In their representation, financial skills and perceived knowledge are mediators of financial knowledge, which itself is the primary independent variable influencing the dependent variable, financial behavior. Hung et al.'s (2009) conceptual framework also shows how people earn financial knowledge from their financial experiences.

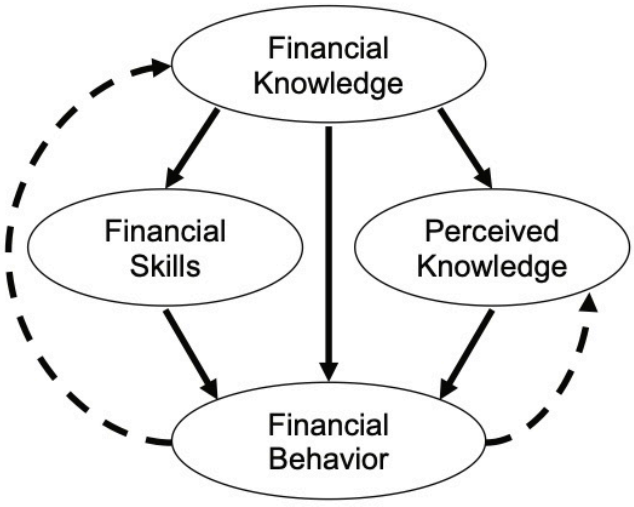

Figure 1 Conceptual Model of Financial Literacy

Source: Hung et al. (2009)

Another representation is the one proposed by Huston (2010). Her work is often cited and regarded as one of the foundational works on the topic of financial literacy. This is mostly due to the call for differentiation she raised between financial literacy, financial knowledge, and financial education. Figures (2) and (3) show her proposed frameworks. Huston (2010) was keen to emphasize the two dimensions of financial literacy, the knowledge dimension, and the application dimension. Her proposed framework also considers external factors such as cultural aspects, economic conditions, and time preferences.

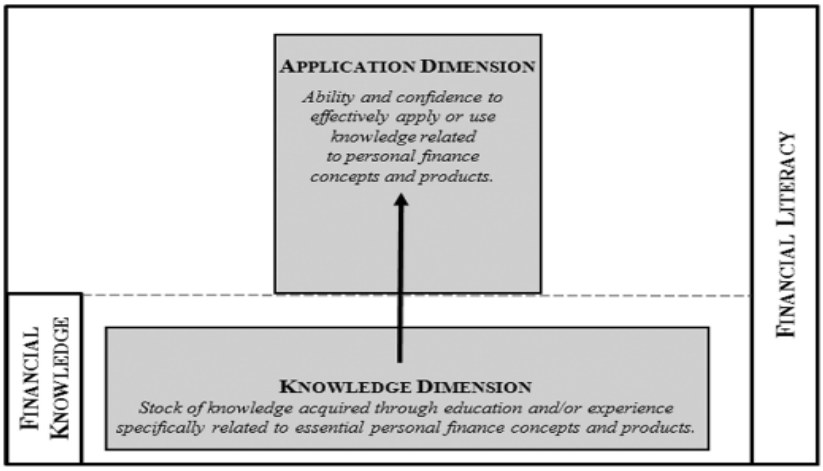

Figure 2 Concept of Financial Literacy

Source: Huston (2010)

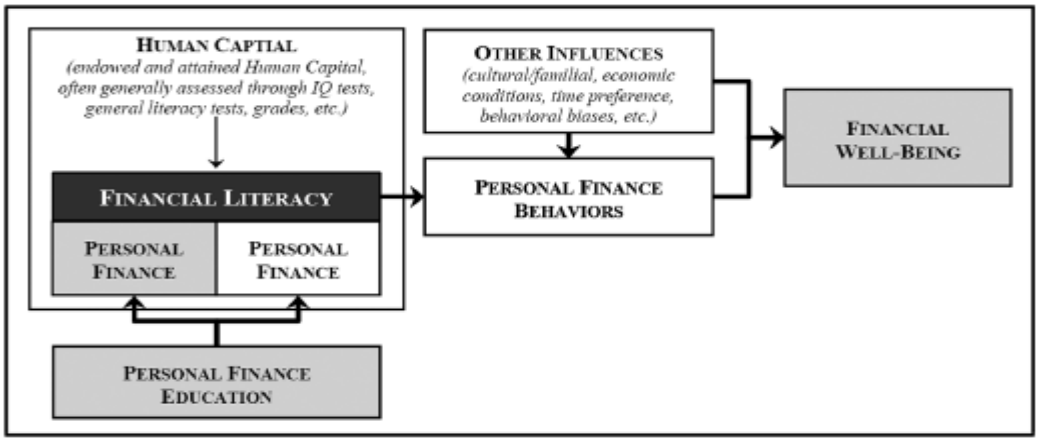

Figure 3 Relations among Financial Literacy, Knowledge, Education, Behavior and Well-Being

Source: Huston (2010)

Having presented a rich picture of the discussion of financial literacy by academics, organizations, and policymakers, it is hard to claim that financial literacy is without a concrete definition. Even though there might still be some space for amelioration (NFEC, 2023), the understanding of financial literacy is quite clear. It is based on three components: knowledge (including skills), behavior, and attitude (Atkinson & Messy, 2012; OECD, 2019), has personal and societal dimensions, and influences people's financial well-being. In this research, financial literacy will be explained by a person's knowledge of financial principles, market dealings, and novelties, and the ability to confidently use this knowledge in making sensible and informed financial decisions**.**

2.1.2. Measurements

Measuring people's financial literacy started in the early 1990s with the Consumer Federation of America running a set of surveys on "Consumer Knowledge" which included personal finance topics such as credit, banking, insurance, and budgeting (Kimiyaghalam & Safari, 2015). Yet, the Jump$tart Coalition's 1997 survey was the first work focusing primarily on high-school students (Jump$tart Coalition for Personal Financial Literacy, 2014; Kimiyaghalam & Safari, 2015). Though, the diversity in the conceptual definitions of financial literacy has made its measurement methods vary as well (Hung, et al., 2009). Remund (2010) raised the question: "*How can researchers and educators work toward greater literacy without measuring it and re-examining that measure across various populations and over periods of time?*". This is a very valid question, not just in the context of financial literacy, but true for any phenomenon that does not have a fixed measurement instrument.

According to Zait and Bertea (2014), categorizing the conceptual definitions was necessary to reach a good understanding of a concrete operational definition. In her study, Huston (2010) observed that certain domains in financial literacy rule measurement instruments. These are personal finance basics, borrowing, saving/investing, and consumer protection. Based on her 71 observed studies, at least a quarter covered all these four. Nonetheless, Huston (2010) claimed that inclusion is not

always the best solution as researchers could mitigate by asking tens of questions in these four domains to have a valid construct. She called for researchers to keep the number of questions concise, somewhere between 12 to 20 questions. This was also argued by Remund (2010) who proposed focusing the financial literacy measures on budgeting, saving, borrowing, and investing.

There are two common methods for measuring financial literacy, performance tests, and self-reported tests (Hung, et al., 2009). While performance tests focus on the knowledge people possess based on the conceptual meaning in use, self-reported tests are focused on people's perceived knowledge and confidence (Hung, et al., 2009). Table (2) represents a list of several instruments used to measure financial literacy. It includes data on the measurement strategy (whether self-reported or performance tests) and the content domains (savings, investments, and debt).

Publication	*Year*	*Operational Definition*	*Measurement Strategy*		*Content Domain*		
			SA	PT	S	I	D
Volpe, Chen, & Pavlicko	1996	Percent correct on 10 multiple-choice items		X		X	
Chen & Volpe	1998	Percent correct on 36 multiple-choice items		X	X	X	X
Volpe, Kotek, & Chen	2002	Correct responses on 10 multiple-choice items		X		X	
Hilgert, Hogarth, & Beverly	2003	Percent correct on a knowledge test		X	X	X	X
FINRA	2003	Correct responses to 10 true/false items	X	X			
Moore	2003	Correct answers to questions on financial knowledge, financial experiences, financial behavior, debt confidence	X	X	X	X	X
Mandell	2004	Percent correct on a 31-item knowledge test		X	X	X	X
Agnew & Szykman	2005	Number of correct responses to 10 multiple-choice and true/false items. Also, self-rated investment knowledge relative to others on 1-10 scale	X	X		X	

NCEE	2005	Percent correct on 24-item test		X	X	X	X
Lusardi & Mitchell	2006; 2008	Correct responses to 3 multiple-choice and true/false item		X	X	X	
Lusardi & Mitchell	2007a	Correct responses to 3 computational items		X		X	
Lusardi & Mitchell	2007b	A single weighted average of correct/incorrect responses (based on factor analysis) of 5 multiple-choice basic financial literacy items and 8 multiple- choice sophisticated financial literacy items. Separately considered a 7-point item on perceived knowledge.	X	X	X	X	
Mandell	2007	Percent correct on a knowledge test		X	X	X	X
Van Rooij, Lusardi, & Alessie	2007	Two weighted averages of correct/incorrect responses for a 5 multiple-choice basic financial literacy items and 11 multiple-choice sophisticated financial literacy items		X	X	X	
Lusardi & Tufano	2008	Correct responses to 3 individual multiple-choice items	X	X			X
OECD (PISA/INFE)	2012	40 items divided into short answers, calculations, and checking a box		X	X	X	X

Table 2 List of Financial Literacy Measurements

Source: Hung et al. (2008)

Notes: SA: self-assessed, PT: performance test, S: savings, I: investments: D: debt

Table (2) shows that the inconsistency in the measurement instrument does not only exist between researchers but also within the different works of the same researchers. The way a person's financial literacy rate is calculated (total correct answers or the percentage of correct answers), the content of the questions, the measurement strategy, and the number of questions differ. The works of Lusardi and Mitchell could be the best examples for this part of the discussion. They started with a construct composed of three questions, 2 multiple choice questions, and 1 true/false question, which was later called the "Big Three". It covered questions on interest compounding, inflation, and risk diversification (Skagerlund, et al., 2018; van Rooij, et al., 2011). Later, they differentiated between basic and sophisticated financial literacy questions and raised the

total number of questions to 13 (5 basic, and 8 sophisticated). Even though the authors augmented the original number of their questions, the "Big Three" remains the most used and accepted measurement of financial literacy (Lusardi & Mitchell, 2014).

2.1.3. Components

2.1.3.1. Financial Knowledge

Financial knowledge is the awareness and knowledge of financial concepts and products required for managing personal finances, considering one's economic and social circumstances (AFI, 2021). It is a core component of financial literacy to the point where many researchers have used these terms interchangeably (Huston, 2010; Remund, 2010; Kimiyaghalam & Safari, 2015). The basis of all the definitions of financial literacy remains the knowledge approach (Hung, et al., 2009), however, there has been a good understanding of their difference for at least a decade now (Huston, 2010).

Financial knowledge can be acquired through several sources with financial education being its primary source (Huston, 2010). According to Loke (2015), the latter is the only intervention that could be mandated for people to increase their financial knowledge. Lusardi (2019) also argues that financial education should be provided to the masses on a large scale and continuously. There exists a vast list of financial principles that come in handy for a person willing to make an informed financial decision. Yet, it is unrealistic to force people to learn all these principles and end up not using them. That is why researchers in the circle of financial literacy education have saturated the necessary knowledge of personal financial management topics such as interest, inflation, and financial markets (Knoll & Houts, 2012).

An alternative to acquiring financial knowledge through a well-organized curriculum is the set of individual experiences a person goes through in his/her life (Tang & Peter, 2015; Lyons & Kass-Hanna, 2019; DerMesrobian, 2023a). This could start with financial socialization within someone's household. Modern research works have shown that older family members have a strong influence on raising the financial knowledge of their younger family members (Tang & Peter, 2015). Yong et al. (2018)

argue that along with financial socialization, financial knowledge could be acquired by following financial news. Moreover, according to Tang and Peter (2015), interactions in the financial markets lead to a person acquiring financial knowledge. However, some research works have found that this experiential knowledge exhibits itself differently than formal financial education. For example, financial knowledge acquired through experience reduces the willingness of a person to become indebted (Tang & Peter, 2015), and it allows people to manage their life resources in a better way (Lusardi, et al., 2017).

Based on rich academic literature, by acquiring the necessary financial knowledge, people are eventually more financially literate, permitting them to engage in healthier financial behaviors and make better financial decisions (Lusardi & Mitchell, 2007; Remund, 2010; van Rooij, et al., 2011; Willis, 2011; Knoll & Houts, 2012; Skagerlund, et al., 2018; Brown, et al., 2018; Lusardi, 2019). In a study on over 3,500 young adults, Tang and Peter (2015) reaffirm this by finding that whether financial knowledge is accumulated through a specific curriculum or a hands-on learning experience, it is of much importance in their current and future financial well-being. For instance, Loke (2015) found that the lack of financial knowledge reduces people's willingness to be actively involved in personal and corporate financial planning. In addition, Hilgert et al. (2003) found that an increase in knowledge improves a person's tendency to follow recommended financial management practices. Moreover, Clark et al. (2015) found that financially knowledgeable investors hold better financial portfolios than their least knowledgeable counterparts. Furthermore, Lusardi et al. (2017) accounted for the differences in people's financial knowledge to explain the phenomenon of wealth inequality.

However, people are sometimes in a position that disallows them from putting into practice their financial knowledge (Kuzina, 2011; DerMesrobian, 2023a). This causes an important change in people's perspective toward the position of financial knowledge about people's financial literacy and financial behaviors. Financial knowledge as the most obvious antecedent to financial literacy also failed to completely explain people's

differences in their financial literacy, as some people without any financial education have made better decisions than those who received one which is proper (Willis, 2011). Moreover, financial knowledge was found to be affected by exogenous factors such as cultural traits and socioeconomic status (Loke, 2015). This led financial literacy researchers to widen the scope of their explorations to find interrelated or correlated variables other than financial knowledge (Knoll & Houts, 2012).

2.1.3.2. Financial Behavior

In the scope of OECD's measurement of people's financial literacy, the component of financial behavior has the highest load with a total of 9 out of 21 questions (Atkinson & Messy, 2012). This shows how critical people's sound financial behaviors are for personal finance researchers. Yet, this does not mean that financial behavior is the most vital component because academics and professionals have already concluded the component of financial knowledge is the basis of people's financial behaviors and attitudes (Hilgert, et al., 2003). The number is big mostly because the list of financial behaviors that show a person's good financial management is long.

I start my discussion with the savings behavior. Elliehausen (2019) explains that academia divides people's savings behavior into three categories: contractual, discretionary, and residual savings. Contractual savings are commitments to payment obligations such as pension contributions, life insurance premiums, and debt repayment. Discretionary savings are the conscious saving decisions people make. Whereas the residual savings are the left-over part between the income and consumption.

In classical economic theories such as the life-cycle theory, people's saving behaviors are treated to be rational regardless of the category (Shin, et al., 2019). Such theories assume that people have transparent access to information and optimize their lifespan-related utility function (Benartzi & Thaler, 2007). Though these theories are correct in theory withholding the necessary assumptions, Shin et al. (2019) explain that the reality is quite different. People have bounded access to information and most have limited

cognitive abilities which leads them to use heuristics and rules of thumb in their saving behavior (Anderson, et al., 2017; Shin, et al., 2019; Elliehausen, 2019). Similarly, Elliehausen (2019) finds that most people rely on residual savings which means unplanned savings behaviors with no specific savings. Hence a financially literate individual should show a higher tendency and engagement to save as the latter is important to accomplish long-term goals (Bernheim, et al., 2001).

A special part of people's savings behavior is retirement planning. Lusardi and Mitchell (2007) have discussed it thoroughly and showed that a financially literate person understands the importance of starting to get prepared for retirement at a young age and acts accordingly. Other research works such as van Rooij et al. (2012) and Bucher-Koenen and Ziegelmeyer (2014) have come to the same conclusion. Lusardi's (2003) research about older households in the US showed that many arrive close to retirement with no or little wealth put aside. People have become liable to manage their retirement plans more than ever with the shift from defined benefits plans to defined contributions plans in most economies of the world (Lusardi & Mitchell, 2007; Lusardi & Mitchell, 2014; Shin, et al., 2019). Not only that but as people's needs have immensely differed over time, there is a high need for customization in the planning for retirement (Benartzi & Thaler, 2007; Anderson, et al., 2017).

Financial market participation is also much discussed as one of the most important financial behaviors in personal finance management. Even though it is an accepted and sought behavior (Disney & Gathergood, 2013; Almenberg & Dreber, 2015; Zou & Deng, 2019), very few people engage in it (Cole & Shastry, 2009; van Rooij, et al., 2011; Almenberg & Dreber, 2015). For instance, van Rooij et al. (2011) show that only 23.8% of their respondents held stocks in The Netherlands with this number decreasing when the situation turns to the emerging economies or developing countries such as China with only 11.5% of Zou and Deng's (2019) respondents being involved in the financial markets.

Researchers have explained this low participation rate through what they called the "Participation Puzzle" in which the young do not have the means to invest in the financial markets and the elderly do not have any intentions of making long-term investments (Cole & Shastry, 2009; van Rooij, et al., 2011). Regardless, research results show that participation in the financial markets by individuals is one of the best ways to shape a sustainable long-term financial plan (Almenberg & Dreber, 2015; Sivaramakrishnan, et al., 2017). Hence, a financially literate individual should be involved in the financial markets, especially through earning higher profits and making better decisions (Disney & Gathergood, 2013; Sivaramakrishnan, et al., 2017; Zou & Deng, 2019)

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Efficiently managing one's debts is likewise a financial behavior that is discussed within the scope of financial literacy. Researchers found that a financially literate individual avoids getting loans from high-cost borrowing entities (Klapper, et al., 2012; Lusardi & Tufano, 2015; Fedorova, et al., 2015) and does not incur a debt load (Lusardi & Tufano, 2015; Fedorova, et al., 2015)**.**

Purchasing insurance policies is another important financial behavior discussed in the academic body on financial literacy. Born and Sirmans (2019) find that to choose if an insurance policy should be purchased, people ought to run a cost-benefit analysis (sometimes mentally) by including financial and other non-financial data in their decision-making process such as historical incidences and the ease of access to medical care. A financially literate individual mostly finds that the benefits of having an insurance policy exceed the costs regardless of the type of insurance, whether for personal reasons or business (Gaurav, et al., 2011; Born & Sirmans, 2019; Senapati, 2020)**.**

2.1.3.3.Financial Attitude

The financial attitude is the state of mind a person has towards money and general finances. It is often regarded as the outcome of people's personal beliefs, norms, and values which are mostly formed through the events in a person's life and entourage

(Holzmann, 2010). It is important to discuss financial attitude as a component of financial literacy because it plays a calibrating role in people's financial undertakings (OECD, 2020b). Without a positive towards a certain financial concept, no matter how high the knowledge is, the behavior will most probably not exist. For example, Atkinson and Messy (2012) explain that if a person is not motivated to save money, there will most probably be no engagement in the savings behavior even if this person knows the importance of savings. Similarly, they add that if a person prioritizes short-term wants over long-term security, then most probably they will not make long-term plans such as retirement planning and long-term financial investments.

Sometimes, the formation of financial knowledge through economic incidents forms negative attitudes toward a certain behavior. For example, countries that have faced hyperinflation in the not-so-distant past have higher scores in understanding inflation than the world average, but at the same time, people have a negative attitude toward saving money for the long run (Klapper, et al., 2015; Klapper & Lusardi, 2019). Similarly, countries that go through a banking crisis see an extremely low financial inclusion rate for the next couple of years (DerMesrobian, 2023a).

Financial attitudes are also discussed considering culture as the latter represents the norms, values, and beliefs transmitted from one generation to another based on religious, ethnic, or social belongingness (Guiso, et al., 2006). The relationship between cultural traits and finance often targets financial behaviors, but it is a factor of attitude. Brown et al. (2018) showed that there is a difference in financial literacy levels between Swiss students of diverse cultures (French and German speaking) and De Beckker et al. (2020) found that those countries with high financial literacy exhibit high degrees of uncertainty avoidance and collectivism.

2.1.4. Cognitive Abilities

In their search to find other key factors influencing people's financial literacy, some researchers proposed checking people's cognitive abilities (Skagerlund, et al., 2018). Cognitive abilities are explained by a person's reasoning and problem-solving abilities

in different domains (Demetriou, et al., 2020). A strong literature exists explaining the role cognitive abilities play in people's decision-making process as they permit people to have the ability to think and evaluate their decisions (Demetriou, et al., 2020). According to Demetriou et al. (2020), those who display strong cognitive abilities are less likely to commit analytical mistakes (Demetriou, et al., 2020).

Out of the four types of cognitive abilities presented by Demetriou and Kyriakides (2006), quantitative reasoning is the one interesting to this research. That is because Skagerlund et al. (2018) tested the relationship between people's numeracy which is explained by the ability to use numerical and quantitative concepts in solving a question, and financial literacy. They found a strong relationship by which numeracy predicts the level of people's financial literacy. Another research by Hung et al. (2009) featured numeracy in their research on financial literacy. Apart from checking people's ability to work with numbers through basic calculations, they also checked the general cognitive abilities of people. Similarly, Cole et al.'s (2016) outcomes showed a tight link between people's mathematical abilities and financial literacy. They have witnessed that people with better mathematical skills were more financially literate than the ones with weaker mathematical skills. For instance, on average, the home equity of the students excelling in math is 3000$ higher than the remaining. Cole et al. (2016) recommended strengthening math education and joining it with financial education to increase people's financial literacy.

Additionally, people's skillful financial interactions were revealed to depend on both their financial knowledge and rationality (Carpentier & Suret, 2012). This relation was of no surprise to many researchers, as they are already interlinked in "The Big Three" questions. As previously mentioned, this construct is formed from three questions, one about interest, another about inflation, and a third about risk diversification (Lusardi & Mitchell, 2007), with the first two questions being very numerical in terms of one needing to use his/her mathematical skills to respond correctly to the questions (Huston, 2010; Lusardi & Mitchell, 2014; Cole, et al., 2016).

2.1.5. Psychological Traits

The cognitive abilities discussed in the previous part were not able to completely answer the major research questions posed by financial literacy researchers (Skagerlund, et al., 2018). Henceforth, they thought that there must be other variables**,** primarily non-cognitive and emotional ones influencing financial literacy (Skagerlund, et al., 2018; OECD, 2019)**.** Skagerlund et al. (2018) claim that people's lookout for a topic plays a key role in the knowledge attainment ability of the topic. That is why, while checking the role of numeracy on people's financial literacy attainment, they took into consideration two emotional variables related to numeracy: financial anxiety and math anxiety. Their results showed math anxiety being the strongest predictor of financial literacy with financial anxiety's influence being secondary.

As for what has been discussed in the earlier paragraphs, the OECD's Program of International Students Assessment (PISA) financial literacy index takes into consideration some non-cognitive factors as well (OECD, 2019). Confidence, in financial matters, plays a significant role in making correct decisions (OECD, 2019)**.** Nonetheless, it is important to note that psychological factors, such as confidence, could be double-edged. Overconfidence, for example, may lead to fatal decisions. That is why the PISA framework took into consideration the students' perception of financial knowledge and their confidence in dealing with financial matters (OECD, 2019)**.** Evidence suggests that confidence may have a predictive ability in its own (Hung, et al., 2009), but there's ample research arguing its relationship with financial literacy. Primarily, researchers found that people's confidence in managing their finances is based on their level of financial knowledge (Yong, et al., 2018)**.** Also, other research works found a positive association between financial behaviors and confidence levels**,** but also between the latter two and people's mathematical skills (Robb & Woodyard, 2011), summing up this discussion.

2.1.6. Socio-Demographic Factors

Like many other research fields, researchers working on financial literacy have been quite interested in checking the descriptive socio-demographic variables that influence

the latter (DerMesrobian, 2023b). Some works have even delved solely into understanding these influences in various parts of the world (Liaqat, et al., 2020; Castaneda, et al., 2022).

One of the most recurrently discussed topics is gender. Most of the research works find that just by being male, a person is more likely to have a higher financial knowledge than another female person (Atkinson & Messy, 2012; Lusardi & Mitchell, 2014; Castaneda, et al., 2022). These rates are even lower for unmarried females of low-income households (Fonseca, et al., 2012; Bucher-Koenen & Ziegelmeyer, 2014; Potrich, et al., 2018). It has been found that women participate less in the financial markets than men and have lower scores on financial literacy tests (van Rooij, et al., 2011; Almenberg & Dreber, 2012). Exploring their research findings, Almenberg and Dreber (2012), find that these gender gaps exist because women score lower in numeracy tests which itself is a key determinant of financial literacy (Almenberg & Dreber, 2012).

However, just like some other research works, Almenberg and Dreber (2012) fail to find this gender gap when they add control variables such as risk attitude. These results partially refute an older work by Chen and Volpe (2002) who find that specific control variables, such as work experience, reduce the gender gap, but do not eliminate it. Their explanation consists of a lower enthusiasm and confidence women show compared to men in understanding how the financial markets work (Chen & Volpe, 2002). This discussion is a frequently discussed one because women all around the world face unique difficulties. They usually live longer than men, have higher career interruptions, and spend more time in retirement (Fonseca, et al., 2012). This topic is also of much importance because the share of households headed by women is also increasing putting more financial duties on them (Potrich, et al., 2018).

The age factor is also quite discussed in academia. Most researchers argue that there is an inverted U-shaped curve (or also called a bell shaped curve) in relation to financial literacy in which middle-aged individuals report the highest financial literacy rate

(Lusardi & Mitchell, 2014). This is explained by the fact that the young still do not have any experience in the financial markets and much is vague to them. This phenomenon is discussed separately in the coming parts of this work, hence the reason for not discussing it here. Whereas the elderly have become either overconfident in their financial knowledge or have not kept up with the novelties in the financial markets. This discussion is treated by Gamble et al. (2013), who find the elderly losing their financial literacy because of the natural process of a decrease in cognition. This discussion is also treated by Finke et al. (2011) who find the same neurophysiological causes reducing people's financial literacy especially those aged 60 and above. Discussing the financial literacy of the elderly is of much importance because they no longer generate any income and have a large responsibility of managing their retirement finances (Finke, et al., 2011). Also, financial illiteracy makes the elderly susceptible to financial swindles and frauds, threatening their financial well-being (Gamble, et al., 2013).

Income has also been found to be an important characteristic determining people's financial literacy (Lusardi & Mitchell, 2014; Hsiao & Tsai, 2018; Li, et al., 2020). Researchers argue about the double side to this story. The poor do not have the necessary financial abilities to get involved in the financial markets, hence inhibiting their acquiring of experiential financial savviness. Whereas the rich can afford to get involved in the markets rendering it possible for them to earn financial knowledge (Li, et al., 2020). Also, the rich, willing to increase the return of their possessed money, have a higher propensity to learn more about ways to realize it.

Education in its different forms, as explained by Lusardi and Mitchell (2014), has a major influence on people's financial literacy. First, concerning a person's education, they find that the higher the level of education of a person, the higher one's financial literacy rate. They also find that the educational direction of a domain, in other terms the field of study, is of much influence on a person's financial literacy. This is supported by Liaqat et al. (2020) who found that studying finance, either as a major, a minor, or just one course, at university increases an individual's knowledge of financial principles. Second, concerning a person's parental education, similar effects have been found in

some cases, and are explained through the parent's stability to transfer correct financial information through socialization. Atkinson and Messy (2012) argue that this relation is of much significance with the mother's level and field of education. In addition, Liaqat et al. (2020) argue that those students who discuss financial matters at home and especially those who follow their family's advice have better knowledge of finance.

2.1.7. Outcomes

With the advancements in financial literacy research, it has been clear that financial literacy is not always the product, rather, other phenomena such as financial inclusion, financial resilience, and financial well-being. This turned the role of financial literacy in research as it became an independent variable rather than the previously held position of dependent variable. Though financial literacy remained the main outcome through which financial education programs are assessed, researchers mostly lost interest in understanding its antecedents further as they were more concerned with checking the overall macroeconomic changes it creates. In this part, I focus my discussion on the three previously mentioned commonly discussed and correlated phenomena showing the role financial literacy plays in them.

First, financial inclusion as one of the outcomes of financial literacy**,** is in simple terms, the ease of access to financial service providers to consume financial products. It is defined merely from the same perspective by the leading organizations treating this subject. I present three of them, AFI, The World Bank, and McKinsey & Company's definitions below.

"The access to and regular usage of quality financial services through payment infrastructures to manage cash flows and mitigate shocks. Such financial services are delivered by formal providers through a range of services with dignity and fairness" (AFI, 2022).

Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions,

payments, savings, credit, and insurance – delivered in a responsible and sustainable way (World Bank, 2022a)

Financial inclusion is when everyone can access financial services that can help them build wealth, including savings, credit, loans, equity, and insurance (McKinsey & Company, 2023).

According to the reports by The World Bank (2022a), financial inclusion is a key enabler to reducing poverty and boosting prosperity. In relation to the latter, researchers argue that people's participation in the financial sector has increased steadily in the past few decades (Campbell, et al., 2011; van Rooij, et al., 2011; Lusardi & Mitchell, 2014; Klapper & Lusardi, 2019)**.** Data shows that the more financially literate have a higher probability to be actively holding a bank account (Klapper, et al., 2012; Klapper, et al., 2015)**.** Similarly, that one standard deviation increase in financial literacy has increased the stock market participation by 9% in the study conducted by van Rooij et al. (2011) in The Netherlands.

Second, financial resilience i.e., the ability to withstand life events that impact a person's financials, is strongly associated with the idea of financial agility (Lusardi, et al., 2021)**.** These are terms coined right after the GFC (Lusardi, et al., 2011)**,** and have grown in importance in academic discussion after the COVID-19 pandemic (Lusardi, et al., 2021). Though there is an agreement on the definition of financial resilience, the duration of a person's ability to sustain himself/herself is the main discussion. Most of the key research works agree that if a person can do that for 3 months, then this person is financially resilient (Bialowolski, et al., 2022)**.** Data shows that financial literacy is a key factor in achieving financial resilience (Kass-Hanna, et al., 2022)

Third, financial well-being, based on the research conducted by the Consumer Financial Protection Bureau of the US, is the state where *"a person can fully meet current and ongoing financial obligation, can feel secure in their financial future, and is able to make choices that allow them to enjoy life"* (CFPB, 2015)**.** It is a broad and complex

concept that encompasses a wide range of factors (Mandell & Holden, 2013; Sluszka, 2018). According to Sluszka (2018), financial well-being is imperative because it has a significant impact on overall well-being. The stress caused by a lack of financial means can lead to several negative consequences, including physical and mental health problems, relationship problems, and decreased job satisfaction. Though the research body is still being enriched by further studies, the primary results show that a financially literate person often shows better financial well-being (de Bassa Scheresberg, 2013).

2.1.8. Financial Literacy & the Young

There exists a general agreement in academia that the financial literacy of young people, whether a child, an adolescent, a teenager, or young adult, is low all around the world (de Bassa Scheresberg, 2013; Lusardi & Mitchell, 2014; Garg & Singh, 2018). Even though this is similarly true for adults, the case of the young raises serious concerns about the financial healthiness of humanity's future. An underlying reason is a natural fact that the younger generations will live a longer life ahead and their decisions will have a long-lasting effect on their lives, rendering the understanding of how financial matters work impartially to secure a sustainable life (Garg & Singh, 2018). In other terms, the financial decisions a person makes while young have significant long-term economic and social consequences (Tang & Peter, 2015). Everyone is engaged in the economy nowadays, and it is very normal for newcomers to face downturns. The young being these newcomers in the financial markets, it will be quite hard for the economy to grasp the irrational and wrong decisions of 2 billion future consumers.

The world's 0 to 15-year-old population has recently formed 26% of the global 8 billion population (Statista, 2019). This means that the youth are the future of the economy (Ghayad & Shayya, 2022). Unfortunately, in relation to the latter, much research found that young adults lack the necessary financial knowledge to engage in financial markets (Loke, 2015). What makes things even more worrying is the rising life expectancy rates, with this portion of the population expected to outlive the current generations (OECD, 2019).

Discussing this topic is also vital because according to de Bassa Scheresberg (2013), even those who might receive good education will not be fully equipped with the necessary financial knowledge to avoid making bad financial decisions. Moreover, this discussion is vital because this demographic segment puts a strong emphasis on their personal financial knowledge and confidence in their math abilities while making financial decisions (de Bassa Scheresberg, 2013). If one of these two is lacking, then the possibility of making incorrect decisions will tremendously increase**.** Furthermore, the widespread transfer of risk to individuals in managing one's financials could also be regarded as a factor increasing the need to empower our youth (OECD, 2019). In many of their publications, Professors Lusardi, and Mitchell (2007, 2010, 2014) already discussed the large shift in retirement planning from defined benefits programs to defined contributions programs, the latter requiring personal input in choosing the best among the many choices.

Global actions to improve people's financial literacy, and more specifically the young's financial literacy, have raised the importance of this topic (Garg & Singh, 2018). Immense importance has been given to financial and management literature for the decision-making of students (Zait & Bertea, 2014; OECD, 2020a)**.** Amagir, et al. (2018) argue that a school-based financial education program has the potential to improve students' financial literacy. Some research has been conducted on checking the financial literacy of the youth and its relation to educational plans. One of the best examples would be Walstad et al (2010) who studied the financial knowledge and financial literacy rates of high school students. They have concluded that a well-designed financial educational system boosts not only the youth's financial literacy but also shapes sounder behaviors. By obtaining proper financial education, the financial knowledge of young adults has also increased and rendered both their financial attitudes and behaviors predictable (Yong, et al., 2018)**.**

However, the youth's financial literacy attainment is not solely bound to their formal education. They may receive ample insights from socializing with their parents and peers (OECD, 2019)**.** Financial socialization is the process by which young people

acquire financial competence by discussing financial matters with others (Atkinson & Messy, 2012). Among the different people they can socialize with, the most influential discussions are revealed to be within a certain household, primarily between parents and their kids. One of the best examples supporting this argument is Lusardi and Mitchell (2014) who found that children, adolescents, and teens observe their parent's behaviors over time and try imitating them in their financial behaviors and decisions. They also argue that a family's economic constraints, which usually advance financial anxiety, are transmitted from one generation to another. Experiential research on 173 college students showed that parental hands-on mentoring of financial dealings was strongly associated with lowering the levels of their offspring's credit card debts and with lessening their tendency to make impulsive purchases on credit (Norvilitis & MacLean, 2010). Further research explained the over-indebtedness of the young and the lack of financial literacy with the absence of any financial socialization with parents at home, primarily on the correct and wrong ways to use (Hancock, et al., 2013). Another research with a larger pool of students (crossing 2000) on financial socialization, similarly, argued that financial socialization at home or elsewhere is a financial learning process through which students learn about financial matters, improves children's financial attitudes, and subsequently empowers their financial behaviors (Shim, et al., 2010).

Lusardi and Mitchell (2014) also show that the most literate youngsters are the ones coming from well-off families who hold a range of financial products, primarily using financial products that were not available prior (OECD, 2019). A similar effect of the latter could be the higher financial literacy score achieved by high school students who receive a weekly/monthly allowance from their parents (Brown, et al., 2018). Likewise, the research OECD conducted showed that many young people between the ages of 15 and 18 in advanced countries have their own bank accounts which they manage through mobile banking (OECD, 2019). The OECD's researchers argued that if they do not know how to manage their accounts properly, they might find themselves in a big problem in the future. Even though much research work found statistically significant results, Jorgensen and Savla (2010) failed to find any statistical significance for the effect of parental socialization on their children's financial knowledge. However, they found an

indirect and moderate statistically significant influence on financial behavior mediated by financial attitude. (Jorgensen & Savla, 2010).

2.2. Financial Education

2.2.1. Description

In recent years, people have become more responsible for making their own financial decisions rather than following formerly mandated or promoted acts (Mandell & Klein, 2009). The GFC proved that this shift happened quite fast and in an untimely manner. Many, all around the world, lost their savings and possessions for not having been as ready as they should have been. Even those who were knowledgeable of financial principles and had the skills to mitigate their financial well-being during the GFC, could not do so firmly. That is because the financial industry's complications are second to none, and preparing people for future financial shocks requires mandating financial education (Mandell & Klein, 2009).

Discussing financial education in academia has been limited for years (Fox & Bartholomae, 2008), and it has heightened only recently with the alarming socioeconomic and financial occurrences in the world (Fox, et al., 2005). The oldest contemporary manuscript discussing the importance of financial education is commonly attributed to the Smith-Lever Act of 1914 which reformed the American educational system (Smith-Lever Act, 1914). Due to this act, schools, colleges, and universities introduced new courses to their curriculum from which financial education under several denominations such as household economics, family finances, and consumer economics. A decade later, academic initiatives started in this sphere with the University of Chicago's doctoral candidate, Hazel Kyrk, publishing her dissertation titled "A Theory of Consumption" which is often regarded as the basis of consumer behavior research (Kyrk, 1923; Cicarelli & Cicarelli, 2003).

Publications on this topic have also grown in importance in the field of librarianship during the last couple of decades (Bowen & Rizk, 2015). This is important because public institutions such as public libraries have the main intention to make knowledge

through books available to everyone (Mokyr, 2005; Faulkner, 2022)**.** Relatedly, the low financial rates the world's population showed in the S&P 2014 survey fastened the rate of its embracing by academics and policymakers (Fox, et al., 2005; Kalmi, 2018).

Unlike financial literacy, financial education's definition has been easily and consistently reached. The Alliance for Financial Inclusion, a leading international intergovernmental agency aiming to improve people's financial well-being around the world through the increase of their financial inclusion, defines financial education as "the process of providing well-structured sessions, workshops, modules, or training pertaining to financial topics. " (AFI, 2021). The OECD defines it as "the process through which people's understanding of financial principles is improved leading to sounder financial decisions and increased financial well-being" (Atkinson & Messy, 2012). These two quite common definitions of financial education are the most used around the world. The US President's Advisory Council on Financial Literacy defines it as "the process by which people improve their understanding of financial products, services, and concepts, so they are empowered to make informed choices, avoid pitfalls, know where to go for help and take other actions to improve their present and long-term financial well-being" (Hung, et al., 2009).

One of the most important questions here might be, why is financial education necessary? As a start, financial education improves people's knowledge of the available financial products in the market and boosts their attitudes toward them (Carpena, et al., 2011). It has also been shown to be a promising factor in shaping healthy financial behaviors (Kalmi, 2018). Moreover, researchers found that through financial education, there is the possibility of achieving a more sustainable future for humanity (Lusardi, et al., 2018; Gonzalez Castro, et al., 2021).

In the largest bibliometric analyses on financial literacy to date, DerMesrobian (2023b) showed that financial education is the oldest and most discussed topic in relation to financial literacy research. He defined two sorts of financial education programs, the ones

that take place in educational institutions such as schools and universities, and the ones that take place elsewhere such as workplaces and community centers.

Financial education in schools and universities covers the larger part of this discussion (Mandell & Klein, 2009; Wagner, 2019). These programs, argues Lusardi (2019) have latent long-term benefits. Its proponents endorse its initiation from an early age in the formal education journey (Alsemgeest, 2015). Lusardi (2019) reasons that financial education prepares students to make informed financial decisions and to become financially included when they grow up regardless of their backgrounds. According to the results of Walstad et al. (2010) those who have taken a personal finance course in school, have better saving habits in their adult lives than their counterparts.

Financial education in other settings often called the financial empowerment programs (DerMesrobian, 2023b), is often disregarded, regardless of the existence of a reasonable amount of such initiatives. An example of one of the research works is the retirement planning sessions provided to 50+ workers which boosted their retirement preparedness (Lusardi, 2003). A second example is financial rehabilitation courses for the incarcerated, being from the minority fragments of people who have been financially excluded for a long time (Mielitz, et al., 2018).

2.2.2. Criticisms

The reports on financial education's efficiency and ability to reach its goals are mixed (Fox & Bartholomae, 2008; Huston, 2010; Walstad, et al., 2010; Walstad, et al., 2017). The adversary researchers of financial education shed light on some major problems such as the costs outweighing the possible benefits (Willis, 2008; Willis, 2011). Willis (2011) explains that the mentioned costs are not only financial but related to the loss of time too. That is because regardless of the length of financial education programs, such as a semester-long high school course or 18 months of adult credit counseling, the results keep on being disappointing. Another problem is its multidimensionality. As financial literacy encompasses an overly broad set of topics, the adversaries claim that financial education programs may not transfer the necessary messages to their audience. Noting

that people's financial decisions and preferences are wildly heterogeneous, it is a tough task, and an impossible one, to have an enrichment program fitting everyone's needs. Moreover, the continuous innovations in the financial sector make the relative education process harder. Willis (2011) continues by arguing that until people understand a concept and know how to use it properly, new financial products emerge in the market which they know nothing of, therefore we are back to point 0. New research works have also raised red flags regarding financial education fearing that it may encourage the youth to prioritize income-generating activities over schooling (Frisancho, 2020).

The proponents of financial education accept that financial education will not make miracles in changing people's financial behaviors, yet they refute the idea of its meaninglessness. They argue that it is a tool to help people to shape better financial behaviors, especially eventually, regardless of how relatively "better" is (Walstad, et al., 2010; Lusardi & Mitchell, 2014). They also add that the success and failure of these programs really depend on a person's interest in improving his/her skills or not.

A recent meta-analysis by Kaiser and Menkhoff (2020) showed that the effect of financial education programs is equal to the effect of other education programs. They also showed that financial education has a significant effect on people's financial literacy through aggregation. To make financial education a success, three key features should be taken into consideration: design, delivery, and evaluation (Fox, et al., 2005; Walstad, et al., 2010). The design, i.e., the content of the programs, should tackle the needs of the enrolled and be customized taking into consideration several factors related to the social, cultural, religious, and political backgrounds of the targeted segment (Walstad, et al., 2010; van Rooij, et al., 2011; Willis, 2011; Lusardi & Mitchell, 2014; Lusardi, 2019). There is an extensive list of conventional topics in financial education, such as budgeting, saving, and retirement planning (Fox, et al., 2005), but also specific topics such as rain insurance (Gaurav, et al., 2011). The delivery of financial education depends on the well-establishment of the content (Walstad, et al., 2010), but also on the providers' teaching skills. Nonetheless, very few research works have delved into understanding the efficiency of financial educators and its relation to the success of

financial education programs (Remund, 2010; Walstad, et al., 2010). Evaluation is the last, yet the most challenging part of financial education programs (Fox, et al., 2005). It is important because it ensures resources are being used productively in these programs and realizes the desired goals.

The proponents of financial education have also provided several explanations for the failure of financial education to turn people into more financially literate individuals. First, the outcomes of financial education programs depend on the methodology being implemented to quantify the results (Fernandes, et al., 2014; Kaiser & Menkhoff, 2020). Second, the effects of financial education, especially the ones targeting the youth, may appear after many years (Lusardi, 2019; Wagner, 2019). Third, the duration of financial education does not influence the latter's effect (Choi, et al., 2011). Recent research showed that even a one-month financial education course through an online classroom mode has the potential to improve the students' financial knowledge (Agasisti, et al. 2022). Hence checking the outcomes per time unit invested is inappropriate. Fourth, the retention rate of youth financial education programs is a maximum of one year (Batty, et al., 2015). The best way to determine their comprehension of the material is to put it into force right after the sessions are done (Dare, et al., 2020). Fifth, rarely do research works take into consideration teaching proficiency and efficiency in financial education (Walstad, et al., 2017; Amagir, et al., 2018). Sixth, the selection of the target groups is usually skewed toward the vulnerable segments of the population, which already do not have the capacity to engage in considerable amounts of financial transactions (Walstad, et al., 2010; Lusardi & Mitchell, 2014). In conclusion, people compare the costs and benefits of an educational process very subjectively, hence it is not true to say that the costs of financial education outweigh its benefits (Lusardi & Mitchell, 2014).

2.3. Financial Literacy in Lebanon

2.3.1. Country Overview

Figure 4 Lebanon's National Flag

The Republic of Lebanon is one of the smallest sovereign countries in the world with a total land size of 10,452 sq. Km. Located on the Eastern trenches of the Mediterranean Sea, it is bordered by land by the Syrian Arab Republic in its north and east, and the State of Palestine in its south. Beirut, its capital city, also serves as its largest city. The contemporary country of Lebanon was established after the fall of the Ottoman Empire in the First World War and was put under the mandate of France for more than two decades before getting its independence officially recognized on November 22, 1943 (BBC, 2023; Encyclopaedia Britannica, 2023). Even though the first half of its statehood was marvelous, the second half was full of wars and civil unrest (BBC, 2023; CIA World Factbook, 2023). A civil war erupted in 1975, mostly due to the existence of foreign militant groups in the country, and lasted for 15 long years (BBC, 2023; CIA World Factbook, 2023; Encyclopaedia Britannica, 2023). The shortly stabilized post-civil war period was suspended by the consecutive terrorist attacks and assassinations of key Lebanese political figures (CIA World Factbook, 2023; Encyclopaedia Britannica, 2023), and the 34-day-long war in the summer of 2006. Later, in 2011, a large influx of Syrian refugees started arriving in Lebanon with the officially registered number reaching 1 million in 2014 (BBC, 2023). Since the fourth quarter of 2019, Lebanon has been facing a tremendous socioeconomic severity (Mawad, et al., 2022). According to World Bank's reports, this crisis could be ranked at the highest positions in the Top 10 most severe crises for the last couple of centuries (World Bank, 2021; World Bank, 2022b). This report states that the sharp decline in the Real GDP[5], the absence of banking liquidity, the devaluation of the national currency, and hyperinflation are some of this crisis's facets. These economic setbacks were even more deepened by the consequences of the COVID-19 pandemic and the Beirut Port Blast (Mawad, et al., 2022; World Bank, 2022b). Some of the important macroeconomic data

[5] The estimations for the drop of the real GDP per capita reaches to 37.1%

is reported in Table (3). The presented data show that personal remittances have increased more than twofold between 2018 and 2021, which is the result of most Lebanese young adults preferring to find employment elsewhere (Mawad, et al., 2022).

Indicator	*2018*	*2019*	*2020*	*2021*
GDP Growth	-1.7%	-7.2%	-21.4%	-7%
GDP per Capita (PPP)	18,400.3 $	17,896.9 $	14,535.7 $	14,256.7 $
Inflation (CPI)	6.1%	3%	84.9%	154.8%
Unemployment (ILO)	10.7%	11.3%	13%	12.5%
Personal Remittances (% of GDP)	12.7%	14.2%	20.8%	27.5%

Table 3 Lebanon's Macroeconomic Indicators
Source: (World Bank, 2023)

Regardless of the modern formation of Lebanon and its recent tragic developments, its covered area has a long and rich history. Throughout the ages, several civilizations such as the Phoenicians, the Romans, the Arabs, the Crusaders, and the Ottomans settled there (CIA World Factbook, 2023). In addition, key Phoenician ports such as Tyre, Sidon, and Byblos, were dominant centers of trade in the 3rd millennium BCE (Encyclopaedia Britannica, 2023). Moreover, its mountainous geography turned it into a haven for asylum seekers of different persecuted groups. Consequently, its location at the crossroads of three continents makes the country easily described as multicultural. Ethnically, its people define themselves as belonging to different ethnic backgrounds such as Phoenician, Greek, Armenian, and Arab (CIA World Factbook, 2023; Encyclopaedia Britannica, 2023). Religiously, Christianity and Islam, with their different sects and denominations, form the major religions in the country, with the latter having surpassed the first after the Civil War period (BBC, 2023; CIA World Factbook, 2023; Encyclopaedia Britannica, 2023). Linguistically, even though Arabic is the official language and the one used by all, other languages, whether that of ethnic minorities such as the Armenian or Kurdish languages, or that of foreign countries such as the French or English languages, are also widely spoken (CIA World Factbook, 2023; Encyclopaedia Britannica, 2023).

Concerning its demographics, most Lebanese prefer living on the coast with 10% of the total population living in the mountains and inner areas (CIA World Factbook, 2023; Encyclopaedia Britannica, 2023). Around ¼ of its population is under the age of 15, and more than ½ of its population is under 30 (Encyclopaedia Britannica, 2023).

Moreover, Lebanon's financial sector was regarded as one of the best in the world, with its banks being quite wealthy and well-known for their high liquidity (Salloum, et al., 2015). The Lebanese banking industry has also gained strong local and global trust due to the BDL's many strict policies such as the banking secrecy law (Salloum, et al., 2015). Unfortunately, this has completely changed with the emergence of the multiscale crises. The Lebanese banking sector is currently paralyzed and informal capital control is being undertaken (World Bank, 2022b).

Furthermore, Lebanon has a solid educational system, and its literacy rate is one of the highest in the Middle East (BBC, 2023; Encyclopaedia Britannica, 2023). However, most of the educational institutions (schools, colleges, and universities) have been traditionally run by religious communities (Encyclopaedia Britannica, 2023). Based on recent data published in Encyclopaedia Britannica (2023), only 1/3 of its students are enrolled in public schools. In its final phases (high school level), the country's K-12 school education system is divided into two: the academic secondary program and the technical/vocational training. Additionally, Lebanon is home to many prominent and deep-rooted universities such as the American University of Beirut (1866), Saint Joseph University (1875), and the Lebanese American University (1951).

The Central Administration of Statistics under the Presidency of the Council of Ministers of Lebanon has published education statistics for 2022 showing that more than half of Lebanese students attend private schools (CAS, 2022). This report also found that out of Lebanon's total student population, 5.4% and 36.7% are enrolled in schools in Beirut and Mount Lebanon, respectively. The details of this report's results are shown in Table (4). In addition, less than 1/3 of Lebanon's residents with completed tertiary degrees have majored in business (CAS, 2022)

	Total	Publicly Owned	Privately Owned
Number of Academic Schools	2731	45%	55%
Number of Vocational Schools[6]	414	-	-
Total Students	1.05 million	40%	60%
Secondary Students	136,893	51.65%	48.35%
Vocational Students	97,000 (est.)	63.5%	36.5%
	French	**English**	**Bilingual**
Main Foreign Language	43.55%	33.9%	22.55%
	Mount Lebanon	**Beirut**	
Number of Schools by Governorate	13.7%	6%	

Table 4 Lebanon's Educational System Overview

Source: (BlomInvest Bank, 2023)

2.3.2. Research Undertakings

Lebanon has secured the second highest rank among the many countries in the MENA region in Standard & Poor's International Financial Literacy Survey which was run in 2014 (Klapper, et al., 2015). The survey covered four topics: numeracy, interest compounding, inflation, and risk diversification, and a person was regarded to be financially literate if she/he had answered 3 out of the 4 questions correctly. With more than 150,000 people over 15 years old in 148 countries having been surveyed, the results showed that only a third of the world's population could be regarded as financially literate. However, the situation in Lebanon was better with 44% of its adult population being financially literate. Recent research by DerMesrobian (2023a) correspondingly showed that less than 10% of Lebanon's population is financially illiterate and that around a quarter have a low financial literacy rate leaving a good portion (more than 65%) of its people financially savvy. These numbers are even more appealing in another research by Kokkizi et al. (2017) who researched the financial literacy of five developing countries: Mexico, Lebanon, Uruguay, Turkey, and Colombia. Only 2.1% of the Lebanese respondents had answered all the financial literacy questions wrongfully and 75% had above-average scores.

[6] The details to the number of vocational schools by ownership is not available.

Researching the role financial literacy plays in people's lives, Mawad et al. (2022) found that most of the financial decisions people make are influenced by their competence in financial principles. Irrespective of someone's age (Mawad, et al., 2022) and the region she/he comes from (Kokkizi, et al., 2017), financial literacy shapes healthy financial behaviors for a Lebanese individual**.** Some examples of these behaviors are the increased rate of saving and the decreased rate of high-cost borrowing (Lyons & Kass-Hanna, 2019)**.** Its importance led many researchers to argue for the necessity of integrating financial education into school curricula in Lebanon to assist students in developing financial self-control from an early age (Mawad, et al., 2022). A recent study showed that most young Lebanese are enthusiastic about attending financial education programs (Ghayad & Shayya, 2022), which boosts the possible success of the integration calls. Another contemporary research found that financial literacy influences the decisions of Lebanese investors in the financial markets (Alaaraj & Bakri, 2020). Hence its similar significance to the development of the financial sector in Lebanon.

Likewise, research works on financial literacy conducted in Lebanon disclosed that financial literacy is obtained through individual experiences (Lyons & Kass-Hanna, 2019; DerMesrobian, 2023a)**.** Apart from unknowingly obtaining it, individual experiences also increase the willingness of people to become more financially literate (Rkein, et al., 2022)**.** Rkein et al. (2022) argue that Lebanese bank consumers have become more inclined to study their banks' financial statements because of the crises. However, financial literacy was also noticed to be prone to some factors inhibiting its effects in shaping better financial behaviors. A low literacy rate in the official language (Arabic) was found to reduce the financial literacy of Lebanese consumers by 20% (Kokkizi, et al., 2017). Likewise, an unemployed person in Lebanon was found to be usually less financially literate than another Lebanese who is holding a full-time job (Kokkizi, et al., 2017)**.**

Regardless of the superior financial savviness the Lebanese showed, recent research argued that their low level of financial literacy in absolute terms was a facilitator in turning the Ponzi Scheme orchestrated by financial market leaders into a successful one

(Al-Saeed & EL Khalil, 2022). Much research argue that Lebanon is unique, quite dissimilar to many other parts of the world. A comparative study of the financial development indicators of Lebanon and its surrounding countries revealed the latter being quite displaced in the region (El Kalat, et al., 2019). Irrespective of Lebanon's high living standards, El Kalat et al. (2019) found that poverty is a key problem for the country and that these high living standards are masked. The inability of the traditional indicators used all over the world to fully reveal the truth about Lebanon led researchers to claim that the Lebanese count on other resources to amplify their living standards such as remittances and debts (El Kalat, et al., 2019). These acts may sometimes even be from unhealthy sources. 30% of BDL's research respondents on financial inclusion reported having taken a loan from informal financial services because taking a loan from formal financial service providers incurs prohibitive costs such as strict collateral requirements or excessive documentation requirements, and because they already have too much debt, (Banque du Liban, 2018).

Further research boosts this unique characteristic claim when we look at the acceptance of newly introduced products in the Lebanese financial markets. All the available research works argue that the adoption of novelties in the financial industry has been low in Lebanon even before the crises (Merhi, et al., 2019). The research by Merhi et al. (2019) showed that, unlike many other parts of the world, behavioral intentions are the primary factors in people's choice of adopting new financial technologies in Lebanon. In addition, researchers discovered that socio-demographic factors play a significant role in people's adoption of novel financial products in Lebanon. Through exploratory research, people's income, educational level, and profession were revealed to be statistically significant influencers on their adoption of e-banking (Harb & Saleh, 2020). Socio-demographics were also revealed to influence the willingness of managers of commercial banks in Lebanon to introduce financial innovations to the market by moderating the latter's relationship with knowledge management processes (Al-Dmour, et al., 2021). Moreover, this research discussed the customer-centric approach Lebanese financial institutions put in force while adapting or incorporating financial innovations (Al-Dmour, et al., 2021).

In conclusion, there is much to be researched in the field of personal finance and more specifically in financial literacy research with a focus on Lebanon. Most of the available works show a positive association between people's financial behaviors and their level of financial literacy. However, the latter cannot be relied upon solely to empower people's financial decisions as some other socio-demographic factors have shown to be similarly strong influencers.

2.3.3. Initiatives

Regardless of the halt of many development projects in Lebanon since the spark of the financial crises in late 2019 and the COVID-19 pandemic in early 2020, a reasonable number of initiatives dealing with financial literacy and financial education existed in the country. Yet, Lebanese students do not receive financial education in their school curriculum (Aflatoun International, 2022), hindering the effects of these initiatives as financial education is a lifelong process. It is also important to note here that these initiatives were run by the public sector, private sector, and even sometimes through a partnership between these two sectors.

One of the oldest governmental initiatives on financial literacy in Lebanon is the OECD-Banque du Liban International Conference on Financial Education: Building Financially Empowered Individuals which was held in Beirut in October 2010 (OECD, 2010). This conference focused on discussing financial access, consumer protection and financial education, national strategies for financial education, financial literacy as a life skill, and financial education as a social responsibility of the financial sector and its institutions. It was a large-scale event that occurred in the Lebanese capital with Lebanese and foreign high-ranked officials attending it. Another important symposium is the Food and Agriculture Organization of the United Nations Workshop on Youth Financial Education and Inclusion in Lebanon which was held in March 2017 and lasted one week (FAO, 2017). Representatives of ministries, governmental institutions, international organizations, commercial banks, academic institutions, and other financial literacy-interested bodies attended this workshop with a focus on the

importance of public and private partnerships in ensuring a sustainable future for youth financial programs.

Another initiative in the public sector is the knowledge center at the Lebanese Ministry of Finance, The Institute of Finance Basil Fuleihan (AR: معهد باسل فليحان المالي والاقتصادي, FR: Institut des Finances Basil Fuleihan), which is a specialized autonomous public institution that provides the Lebanese citizens and more specifically the Lebanese youth, financial and economic capacity development opportunities through preparing successful research works, training sets, and online materials (Institut des Finances, 2023). Based on the most recent data published on its website, 86% of its training activities were focused on the capital and its suburban areas. The provided materials are diverse in several forms such as education board games, youth visits programs, a monthly newsletter, informative videos (broadcast through YouTube), and other published materials.

Moreover, the 2018 research conducted by the Statistics and Economic Research Department in BDL's Economic Research Division on Financial Inclusion in Lebanon, showed that the financial literacy rates were low, especially in rural areas (Banque du Liban, 2018). The researchers recommended that financial education initiatives start taking at large, with schools, workplaces, and community platforms providing the necessary opportunities for them to realize.

To secure the country a place in the international financial literacy endeavors, Lebanon has also participated in six series of "Global Money Week" which is an international financial awareness-raising campaign organized by the OECD International Network on Financial Education (OECD/INFE) (Global Money Week, 2023). For several years of its participation, this event was held through public-private partnerships of several entities such as the central bank, ministries, international organizations, commercial banks, non-governmental organizations, educational centers, and others. Thousands of schoolchildren and their relative peers were reached throughout these educational

sessions which were primarily focused on ensuring that young people, even from an early age, have a good understanding of money matters to achieve financial well-being.

Even though some initiatives exist in the public sector, a bigger number of initiatives exist in the private sector. In the following parts, I present ample of them even though I admit to not having created an exhaustive list as it is unreasonable to have the ability to record all the undertakings on financial literacy in the country. To make it clearer, I divide these undertakings into two categories: the ones provided by not-for-profit organizations, non-governmental organizations, and other civil society organizations, and the ones provided by members of the financial market,

A major stakeholder in promoting financial literacy in Lebanon is Aflatoun International, an organization that offers social and financial education to children and young people globally (Aflatoun International, 2022). It has started partnerships with several organizations dealing with social and economic welfare. One example is YMCA Lebanon, which has been a partner since 2009. Together, they have persuaded several schools in Lebanon to put in force a certain curriculum in which financial matters are included (Aflatoun International, 2022). Another example is Global Steps, a Lebanese non-governmental and not-for-profit organization with over 10 years of experience in implementing development activities to support local economies (Global Steps, 2018). Within the scope of "Global Money Week," Global Steps initiated an activity "My Small Business" targeting schoolchildren in South Lebanon, which aimed at raising their awareness of financial principles put in use in self-run business management. The latter activity was to expand the newly acquired knowledge to the schoolchildren's families and entire communities. Aflatoun International's most recent collaboration is with Ajialouna, another Lebanese not-for-profit organization, which is primarily committed to helping those coming from underprivileged societies (Ajialouna, 2023a). A pilot program for an Aflatoun Club has been started in 2022-23 for 140 students from lower socio-economic areas of Beirut (Ajialouna, 2023b). This program aims to support these students to avoid falling victim to the country's social, economic, and political struggles.

Another key stakeholder is INJAZ Lebanon. Since its foundation in 2001 and as an affiliate of Junior Achievement Worldwide[7], INJAZ Lebanon has trained over 100,000 Lebanese youth and young adults all over the country in matters related to become future business leaders (INJAZ Lebanon, 2023). It is a non-profit organization that aims to prepare the Lebanese youth for the growing global economy by providing them with the necessary knowledge, skills, and attitudes to becoming productive members of the Lebanese labor force. Financial literacy being one of its three core spheres of interest, INJAZ Lebanon has prepared educative programs and materials for students of different ages. "More than Money" targets those students from Grades 6 and 7, and discusses earning, spending, and saving. "Personal Economics" targets students from Grades 7 and 8, and discusses personal finance matters such as credits, debts, savings, investments, and budgeting. "Personal Finance" targets university students and discusses fundamental elements of smart personal finances through which one's life goals could be achieved.

A third example, which has only recently started its operations in Lebanon, is Fi-Wi (Financially Wise). Fi-Wi is a Lebanese non-governmental organization with the mission to advance the Lebanese youth's economic and financial capabilities by developing the necessary educational tools for this purpose (Financially Wise, 2022a). They run several initiatives that promote the financial literacy of youth with a sharp emphasis on public finances (Financially Wise, 2022b)**. "**Malouka **…** Wa Ma Alayka", for instance, is an educational program for university students on fiscal matters, primarily on the roles of the Ministry of Finance and public financial management. Other activities Financially Wise has been running are students' financial competitions on public finances, awareness sessions during Global Money Week, and published reports and documents on financial matters.

What concerns the target population of this research, the Armenian ethnic minority living in Lebanon, civil organizations have started an initiative in promoting financial

[7] Junior Achievement Worldwide is the world's largest and fastest growing organization on youth business education that deals with work readiness, entrepreneurship, and financial literacy.

literacy in its schools in recent years. Through a global partnership of several international organizations, "Empowering Armenians Across the Globe – AflaYouth" was initiated in 2020[8] (Aflatoun International, 2022). This project aims to provide AflaYouth in Western Armenian[9], primarily to the ethnic Armenian minority of Lebanon, and across the world. AflaYouth is a 21st-century soft-skill enrichment program that provides a curriculum concerning the much-needed emotional, social, and financial skills to succeed in our times. The use of Western Armenian, according to Aflatoun International (2023), allows students to practice their mother tongue in domains related to their personal daily lives rather than simply in literature or history.

As to what concerns the initiatives by the members of the financial market, in 2016, the Association of Banks in Lebanon, in collaboration with the Institute of Finance Basil Fuleihan drafted a policy paper "Towards a National Strategy for Financial Education and Literacy 2016-2019" (Association of Banks in Lebanon, 2023). This document aimed at improving the financial literacy capabilities of Lebanese citizens, even though it remained in its draft form without an actual policy being enacted. Another similar association, The Lebanese Micro-Finance Association (LMFA), a league of business professionals established in 2015 to represent the sound of the microfinance industry in Lebanon, provided a "Train the Trainer" workshop to the employees of its member institutions in collaboration with the Ecole Superieure des Affaires (ESA), a prestigious Lebanese French University at the heart of Beirut (LMFA, 2023). Over 115 trained microfinance professionals were coached for a period of six days during which a unified material was delivered to them on family budgeting and income-generating activities. Through this workshop, LMFA aimed to empower the financial literacy of those engaged in microfinance in Lebanon, for their personal use and for them to be more reliable financial service providers in the market.

[8] The main contributors are Aflatoun International, YMCA Lebanon, the Calouste Gulbenkian Foundation, and the Armenian General Benevolent Union (AGBU).
[9] Western Armenian is one of the preserved languages by UNESCO for being endangered.

Several commercial banks have also run their initiatives in financial literacy as part of their corporate social responsibility. Yet, I limit this discussion to the two banks that were the most active noting that they are at the same time two of the biggest banks in Lebanon. First, as one of its major programs, Byblos Bank started a series of short videos that aired on leading Lebanese TV stations for 2 years (Byblos Bank, 2023). These videos were called “Fakker Maliyan” (Think Financially) and discussed basic topics and concepts such as how banking and other financial transactions work. Another initiative in the mass media was through publishing a section in one of the most-read daily newspapers, Al Akhbar, a section called “Nes W Finance” (People and Finance) which offered insights on personal finance. Byblos Bank has also managed the “Moneysmart Boot Camps” for those participants from the age of 20 to 25, which revolved around making them well-prepared to manage their finances and plan their futures wisely. Bank Audi, another banking giant in Lebanon, has in turn invested heavily in realizing financial literacy initiatives either on its own or in collaboration with other organizations (Bank Audi, 2023). One of its most interesting initiatives targeting the Lebanese youth is the “Let’s Talk Money” interactive game/quiz which was launched in late November 2017 and resulted in 2,117 participants aged between 16 to 24 joining in the first 2 months.

There are of course other initiatives aiming to increase the financial literacy levels of the Lebanese population. These might be internal or organizational initiatives that aren't publicized. These could also be initiatives that haven't generally posted any information about their undertakings, hence not found on search engines. However, all these initiatives lack the academic character in them. They're hardly run for research purposes that aim to explore a certain issue. Similarly, those conducting these initiatives may not be data-oriented in terms of understanding the effects of their undertakings or formulating a certain path for it. These initiatives also target the Lebanese population at large, with only part of Aflatoun's undertakings with the partnership of AGBU Schools targeting the same segment . Hence the difference between this research work's aims, methods, and design from the rest of the existing works.

2.4. The Lebanese-Armenian Community

The history of ethnic Armenians in the area that forms today's Republic of Lebanon dates back thousands of years (Office of the High Commissioner for Diaspora Affairs, 2023). The most important event in history is the conquering of this area by the Armenian King of Kings, Tigranes the Great, during the 1st century B.C. (Embassy of Armenia to Lebanon, 2023). Other notable events are the designation of two ethnically Armenian officials as the governors of the Mount Lebanon Mutasarrifate, a subdivision of the Ottoman Empire (Farah, 2000), and the establishment of an Armenian Catholic monastery in the village of Bzommar in 1748 (Dakessian, 2021). However, regardless of their presence, the number of Armenians living in Lebanon remained exceedingly small. At the beginning of World War 1, a total of 1,500 Armenians lived in Beirut (Dakessian, 2021).

The existence of the current well-established Armenian community is the aftermath of the Armenian Genocide which took place in the Ottoman Empire during the first quarter of the 20th century (Office of the High Commissioner for Diaspora Affairs, 2023). Tens of thousands of Armenians took refuge in several parts of the world, including Lebanon, and rapidly started turning their refugee camps into well-organized towns and cities. The active engagement of Armenians in Lebanon turned them into an inalienable part of Lebanese society. Many members of society started holding high official positions, establishing successful businesses, and holding managerial positions at large organizations (Nalbantian, 2018; Dakessian, 2021). Lebanon is also a major center for the Armenian church. The community is divided into three major religious groups: Armenian Orthodox, Armenian Catholic, and Armenian Evangelical (Office of the High Commissioner for Diaspora Affairs, 2023). Among the many big establishments founded, Haigazian College (currently Haigazian University) was founded in 1955 as a Western-style higher education beacon of the Lebanese-Armenian community (Dakessian, 2021). Unfortunately, the lack of an official census does not provide us with the exact number of Lebanese Armenians. According to Dakessian (2021), the community is estimated to be around 40,000-60,000 individuals, whereas other

accounts report up to 100,000 ethnically Armenians to be living in Lebanon (Sahakian, 2020).

2.5. Hypothesis Setting

Financial literacy research has become a widely discussed topic in the global academic body (Lusardi & Mitchell, 2007; Huston, 2010; Remund, 2010; Lusardi & Mitchell, 2014; Skagerlund, et al., 2018; OECD, 2019). That is because many researchers found that it influences people's financial behaviors such as retirement planning (van Rooij, et al., 2012; Bucher-Koenen & Ziegelmeyer, 2014), financial markets participation (van Rooij, et al., 2011; Hsiao & Tsai, 2018; Li, et al., 2020), and savings (Lusardi, 2003; de Bassa Scheresberg, 2013). It has become an important 21st-century life skill that people need to start practicing from an early age (Skagerlund, et al., 2018), especially since people have become more responsible than ever in managing their finances (Lusardi, 2019). Nevertheless, the discussion on financial literacy has primarily focused on understanding its effects on other variables than the other way around. This discussion is likewise absent when the target group is the high school students of a developing nation.

I start posing a set of hypotheses on what concerns financial education in Lebanese-Armenian schools. As mentioned in the literature, the global reports on the efficiency of financial education targeting the youth are mixed (Fox & Bartholomae, 2008; Huston, 2010; Walstad, et al., 2010; Walstad, et al., 2017). Hence, the reason it is worth checking if the training provided was of any good to students. Even though this is not the main reason this research has been conducted, it is worth checking the efficiency. I check if the provided financial education has improved the students' financial knowledge and financial literacy.

I focus solely on one component, financial knowledge because the data of this research is gathered through a financial education intervention. Consequently, as financial education targets the improvement of an individual's knowledge and understanding of various financial concepts (Carpena, et al., 2011), trying to separately check the

influence on financial behaviors and financial attitudes becomes redundant. This method is supported by the definition given to financial education (e.g., AFI (2021) and Atkinson and Messy (2012)) because they clearly state that it improves financial knowledge through which people make better decisions.

I also check if the content of a certain financial education has any influence on the students acquiring financial knowledge and consequently on their financial literacy. Previous research, such as Choi et al. (2011) and Agasisti et al. (2022) found that neither the content nor the duration influences the effectiveness of a financial education program. This research will take into consideration the content in its hypothesis as it's not possible to check the duration being a one-time intervention.

H1a: Financial education increases the Lebanese-Armenian high schoolers' financial knowledge.
H1b: Financial education increases the Lebanese-Armenian high schoolers' financial literacy.
H1c: Different contents of different financial education programs do not have a changing influence on financial knowledge.
H1d: Different contents of different financial education programs do not have a changing influence on financial literacy.

I continue setting my hypothesis by continuing to review the available academic findings and discussions. I start with checking if the two conventional factors of financial literacy, financial knowledge, and cognitive abilities, influence the financial literacy of ethnically Armenian high school students in Lebanon. These two hypotheses are of a confirmatory nature, and they are the basis of continuing this research. Regardless of the mixed reports on the effects financial education has on people's financial literacy, these two variables have shown prominent and firm results.

Financial knowledge is a key component of financial literacy (Huston, 2010; Remund, 2010; Kimiyaghalam & Safari, 2015), and acquiring it, whether through formal

education or informal education, improves people's financial literacy and engages them in better financial decisions (Lusardi & Mitchell, 2007; Remund, 2010; van Rooij, et al., 2011; Willis, 2011; Knoll & Houts, 2012; Skagerlund, et al., 2018; Brown, et al., 2018; Lusardi, 2019). Most of the research works argued that this relationship is a direct one. Nonetheless, financial knowledge cannot be the only variable influencing people's financial literacy, especially since researchers found an extensive portion of the variation in financial literacy is not explained by the variation in financial knowledge. As mentioned in the literature, the first factor that researchers introduced was people's cognitive abilities. That is because cognitive abilities have been found to be a crucial factor in explaining people's decisions (Demetriou, et al., 2020). A respectable number of previous research works such as Hung et al. (2009), Cole et al. (2016), Skagerlund et al. (2018), and Lind et al. (2020), relatedly found that people's financial literacy is quite influenced by people's numeracy, mathematical skills, reasonings, and cognitive abilities in general. Hence,

H2a: The more financial knowledge a Lebanese-Armenian high school student has, the more financially literate he/she is.
H2b: The higher the cognitive abilities of a Lebanese-Armenian student, the higher his/her financial literacy rate is.

I reevaluate my read information and I realize that there should be a sort of indirect relationship in this tetrarchy. That is why, I propose cognition of mediating the relationship between financial knowledge and financial literacy, noting that some people with basic financial knowledge made much sounder financial decisions than those with good financial knowledge, as claimed by Willis (2011).

H3: The cognition of Lebanese-Armenian students mediates the relationship between their financial knowledge and financial literacy.

By reviewing the literature further, it becomes apparent that contemporary research works have introduced psychological traits, such as anxiety and confidence, in

explaining people's financial decisions. Math anxiety has been found to be a good predictor of the strength of the relationship between people's cognitive skills and financial literacy (Skagerlund, et al., 2018), giving itself a moderating aspect. In the same sense, confidence, and more specifically overconfidence, has been discussed by Hung et al. (2009), Robb and Woodyard (2011), Yong et al. (2018), and OECD (2018) to be influencing the relationships between financial knowledge and financial literacy, and between financial knowledge and cognition.

H4a: Math anxiety moderates the relationship between the cognition of Lebanese-Armenian high school students and their financial literacy.
H4b: Confidence moderates the relationship between the financial knowledge of Lebanese-Armenian high school students and their financial literacy.
H4c: Confidence moderates the relationship between the financial knowledge of Lebanese-Armenian high school students and their cognition.

In total, this research will answer 10 hypotheses that were posed based on previous discussions that exist in the literature.

2.6. Research Framework

Based on the research hypotheses mentioned in the previous section, this research is designed methodologically with the objective of finding the nature of the relationship between the financial literacy of Lebanese high school students of Armenian ethnicity and its antecedents. The dependent variable of this research is financial literacy, whereas the independent variables are financial knowledge and cognition. However, cognition is also used as a mediator between financial knowledge and financial literacy. This research also has two moderators: math anxiety, which moderates the relationship between cognition and financial literacy, and confidence, which moderates the relation between financial knowledge and cognition, and between financial knowledge and financial literacy. These variables put in dissimilar roles will help understand if the set hypotheses are statistically significant or void. Figure (5) shows this research's framework.

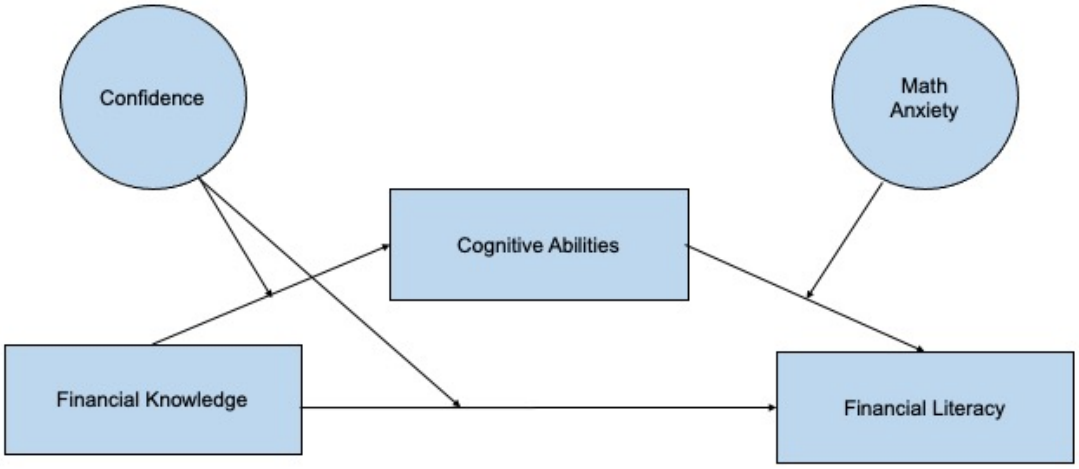

Figure 5 Research Framework

Source: Author's Preparation

According to researchers, moderation happens when a third variable calibers the relationship's magnitude and/or direction of two variables (Aguinis, 2004). Experientially, moderation could be explained by the spiciness of certain foods and the volume of certain music being played. It can also be explained by the length it takes a person to move from one place to another using three different modes of transport: walking, cycling, and driving. Whereas mediation is the intervention of a third variable which works as a mechanism through which a variable's effect is transmitted to another (Baron & Kenny, 1986). Experientially, mediation could be explained by flying from your hometown to your desired destination by laying over another airport on your way due to the lack of a direct flight. Using complex relationships, such as moderation and mediation in modern research has become common because of the rise of the idea of a variable's conditional effect on another (Edwards & Konold, 2020). Integrating moderation and mediation effects in one model provides the researcher with the unique ability to check a more nuanced relationship between the many variables (Edwards & Konold, 2020). This method is an excellent way to check the indirect effects of the research's independent variables and the dependent variable. Hayes and Preacher (2013) have called this integration a "moderated mediation" or "conditional process model".

This framework is more appropriate than that of the previous ones, primarily Hung et al. (2009) and Huston (2010), because it's the result of a richer body of academic results of the last decade and a half. It is more comprehensive because while both examine the relationship between financial knowledge and financial literacy, they do not consider the mediating and moderating roles of other factors, such as cognition and confidence. This model includes all of these factors, which provides a more complete picture of the relationship between financial knowledge and financial literacy. This also means that the presented model is more nuanced because I do not assume a simple direct linear relationship between financial knowledge and financial literacy which makes this relationship more realistic and informative. Due to this, it's also possible to develop more effective financial education programs by taking into consideration the development of cognitive and affective skills along with the provision of financial knowledge.

3. Research Methodology

3.1. Data Collection

3.1.1. Sample

The estimated student population of Armenian schools in Lebanon is 4000 students and based on the latest data published in the report of the Lebanese Ministry of Education and Higher Education, 13.5% of Lebanon's school students are high schoolers (CRDP, 2021). Therefore, simple calculations result in this research's focused population being 540 students which requires a sample size of 225 for a 5% margin of error (SurveyMonkey, 2023). Presently, the Lebanese Armenian community boasts 14 secondary (K-12) schools. The details are presented in Table (5**).**

School's Full Name	*Abbreviation*	*Affiliation*	*Main Foreign Language*	*City/Town*	*Governorate*
Armenian Catholic Mesrobian High School and Technical College	MHSTC	Religious – Catholic	French	Bourj Hammoud	Mount Lebanon
Armenian Catholic Holy Cross – Harboyan High School	HCH	Religious – Catholic	English	Zalka	Mount Lebanon
Armenian Evangelical College of Beirut	AEC	Religious – Evangelical	English	Beirut	Beirut
Armenian Evangelical Central High School of Ahsrafieh	AECHS	Religious – Evangelical	English	Beirut	Beirut
Armenian Evangelical Shamlian Tatigian Secondary School of Nor Marash	AESTS	Religious – Evangelical	English	Bourj Hammoud	Mount Lebanon
Armenian Evangelical Secondary School of Anjar	AEBS	Religious – Evangelical	English	Anjar	Beqaa
Armenian General Benevolent Union's AGBU Schools in Lebanon	AGBU	Non-Religious	English	Dbayeh	Mount Lebanon
Armenian Prelacy's Yeghishe Manoukian College	YMC	Religious – Orthodox	English	Dbayeh	Mount Lebanon
Armenian Prelacy's United Armenian College	UAC	Religious – Orthodox	English	Bourj Hammoud	Mount Lebanon
Armenian Prelacy's Haratch Gulbenkian College	HGC	Religious – Orthodox	English	Anjar	Beqaa
Hamazkayin Armenian Educational & Cultural Society's M. & H. Arslanian Djemaran	MHAD	Non-Religious	French	Mezher	Mount Lebanon
Mekhitarist Fathers School Rawda	MFS	Religious – Catholic	English	Rawda	Mount Lebanon
Sahaguian-Levon Meguerditchian College	SLMC	Non-Religious	English	Dekwaneh	Mount Lebanon
Saints Hripsimiantz College of the Armenian Sisters of Immaculate Conception	ICSHC	Religious – Catholic	French	Fanar	Mount Lebanon

Table 5 Lebanese Armenian High Schools

Source: (AMAA, 2023) (AEBU, 2023) (Armenian Prelacy, 2023) (Hamazkayin, 2023) (AGBU, 2023) (Armenian Catholic Patriarchate, 2004) *(Mekhitarian, 2023)*

Table (5) shows the list of high schools run by the Armenian community in Lebanon. The total number is 14, with only 3 having a technical college: Armenian Catholic Mesrobian High School and Technical College, Armenian Catholic Holy Cross – Harboyan High School, and the Armenian Prelacy's United Armenian College. The schools are in Beirut, Mount Lebanon, and Beqaa governorates. Yet, the far majority (12) are within the borders of the Greater Beirut area, an urban agglomeration that includes the City of Beirut (or the Beirut Governorate) and many adjacent municipalities of the Mount Lebanon Governorate from which Bourj Hammoud, Dekwaneh**,** Rawda**,** Mezher, Fanar, Zalka, and Dbayeh (Khyami, 2021). Half of Lebanon's total population lives in this built-up area which corresponds to 2% of the country's total land area (Khyami, 2021).

Figure 6 Locations of Lebanese Armenian Schools

Source: Google Maps & Author's Preparation

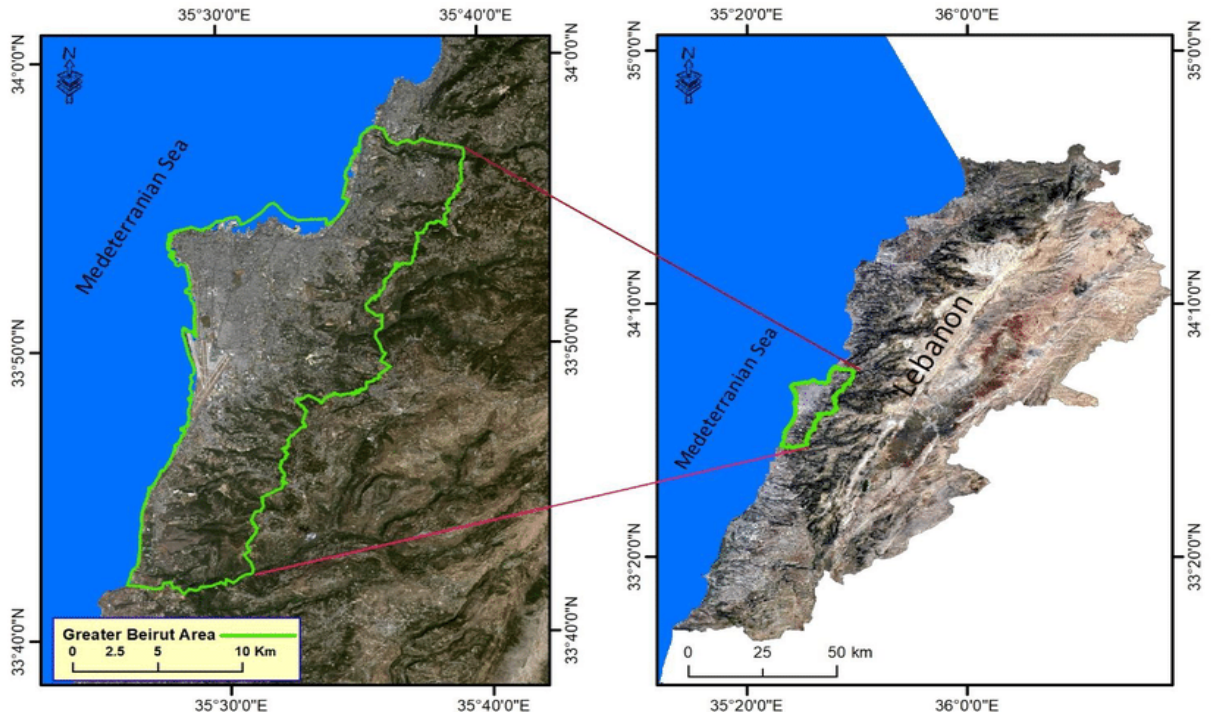

Figure 7 Greater Beirut Area

Source: (Khyami, 2021)

This research is focused on the 12 Lebanese Armenian schools located in the Greater Beirut area of Lebanon. Out of the 12, the principals of 9 schools agreed to collaborate with me to carry out this research resulting in a total student sample of 302.

3.1.2. Training Sessions

The reasoning behind this research is to check what factors influence the Lebanese—Armenian high schoolers' financial literacy and the mechanism of the latter. A special interest is given to their financial knowledge as it is by far the most traditional and ground basis for any research on financial literacy. To realize the latter, I have contacted the principals and the directors of the 12 schools in the Greater Beirut area via email to ask for their permission to conduct this research on their students. I did not require any familial consent because the school represented their legal guardianship while there. Of a total of 12, 9 principals and directors of schools agreed to join this research.

I started my training sessions on January 25, 2022, and finished on March 1, 2022, which was divided into 11 days. In a total of 18 training sessions**,** I have targeted 291 students, with 11 more students only filling out the survey due to time constraints on their side. Each session lasted for around 65 minutes divided into two parts: 40 minutes for lecturing and 25 minutes for filling the survey. These results are presented in Table (6**).**

These training sessions are of very distinctive features, having been conducted during the Covid-19 pandemic and a financial crisis. The realities the pandemic advanced had both positive and negative bonuses on my work. The school administrations and I collaborated to fill the classes of infected teachers with these pieces of training. This meant I was to be always on guard, with some pieces of training having been noticed just a day in advance. Nonetheless, the teachers were not the only ones who were infected. Some students were similarly not able to attend school for being infected, which reduced my total number of respondents. Whereas the financial crisis forced me to avoid discussing "how good" financial inclusion is knowing that the general attitude towards the Lebanese financial sector is not favorable. When there was the need to discuss bank accounts or other financial investments, I made sure to mention that what I was saying was true for stable economic times. I also made sure to make the students understand and realize that a big part of the responsibility in following the financial updates lies with the consumers, something I discussed in future research (DerMesrobian, 2023a)**.**

School	*Trainings*	*Number*	*Percent*	*Valid Number*	*Valid Percent*
HCH	4	79	26.2%	77	26.7%
MHSTC	2	38	12.6%	38	13.2%
SLMC	1	30	9.9%	29	10.1%
AGBU	3	41	13.6%	36	12.5%
AESTS	1	24	7.9%	24	8.3%
AECHS	2	30	9.9%	28	9.7%
UAC	3	37	12.3%	33	11.5%
AEC	1	16	5.3%	16	5.6%
MFS	1	7	2.3%	7	2.4%
Total	18	302	100	288	100%

Table 6 Details of Training Sessions: Schools and Students

Source: Author's Preparation

Some students were given the survey before the training sessions and were asked to fill it in, while most of them filled out the surveys after the training sessions. In this way, I was able to realize a pretest-posttest**.** In total, 42 students filled out the surveys beforehand, and 260 students filled out the tests after the intervention. The training sessions were also attended by the school principals, directors, heads of departments, teachers, or staff because they usually must accompany their students to guest lectures. But of course, they were not given the surveys to fill out. All the sessions were held in English, though in very few circumstances, I was intrigued to discuss a couple of minutes in Armenian to make things clearer.

I started my training sessions by either introducing myself or by letting the school administrator do it. Then, I focused on presenting my research and my aims. I also asked the students to interact with me and to stop me whenever they want in case, they have a question or need further clarification. As I started explaining the slides (Appendix D), I realized that the students of all 18 sessions were quite interested in the matter. I covered two different topics to be able to see if the content of a training session has an influence on the student's financial knowledge acquirement. The first topic was called “Sources of Funds” in which I discussed how to raise funds when a person has a certain project in mind. I presented the major available sources and discussed how a person can make better financial decisions. This topic includes a good amount of information on banking. The second topic was called “Investment” in which I discussed the ways a person can amass wealth through investments. I presented to them the major financial instruments, financial rules of thumb, and risks. This topic was more inductive and more interactive as it is filled with several questions which I purposefully included to increase the student's internalization of the discussed material. I concluded my presentations with a wrap-up of the discussed principles and opened the door for any further questions. I did not receive many questions at the end, noting that the students had the ability to ask me questions during my presentation. The last thing I did was to distribute the surveys and to ask them to fill them out.

While I was conducting the training sessions, I made sure to have equal coverage of the two topics. That is why I concentrated more on having an equal number of students for each topic than an equal number of training sessions. A total of 142 students attended the "Sources of Funds" topic and a total of 149 students attended the "Investments" session. Only 11 students of one class did not attend any training sessions but filled out the survey during their Economics class. Table (7) shows the details of these training sessions based on the topics.

Topic	*Number*	*Percent*
Sources of Funds	142	47%
Investments	149	49.3%
No Training	11	3.6%
Total	302	100%

Table 7 Details of Training Sessions: Topics

Source: Author's Preparation

3.1.3. Survey Design: Scales & Instruments

The key challenges in choosing statistical constructs to quantify a certain variable are their appropriateness to the sample and their reliability. In my search for the best instruments to measure my research variables, I encountered many different research works that proposed many different valid constructs. However, I needed to take into consideration that the respondents are high school students of a minority group in an Eastern cultured nation that is facing financial, social, political, and economic problems. I also wanted to keep the number of my questions small to avoid students losing interest in fully completing the surveys. That is why, even though I might have found good constructs to measure the research variables, I had to get rid of all its questions or some of its questions to make this possible. It was also crucial for me to have the survey filled out within less than half an hour because that was the time allocated by the directors and principals. The survey is included in this work as Appendix C. The following parts will explain the instruments I have used to quantify the research variables in more detail.

3.1.3.1.Financial Knowledge

To measure the respondents' financial knowledge, I ended up having a construct of 13 questions. These were either composed of already existing questions in other research works or ones that I have prepared for this research. Three questions correspond to Lusardi and Mitchell's "Big Three" questions, which even though were primarily used to measure financial literacy (Lusardi & Mitchell, 2007; van Rooij, et al., 2011; Lusardi & Mitchell, 2014; Skagerlund, et al., 2018), but with a clearer clarification of the terms, it is more inclined to measure people's financial knowledge on interest compounding, inflation**,** and risk diversification. This measurement was developed in 2004 to show people's basic knowledge of financial matters, in investing activities (Lusardi & Mitchell, 2007)**.** Hence, proof that its aim was to measure knowledge and not literacy (Wilmarth, et al., 2023). The first two questions are very numerical in terms of one needing to use his/her mathematical skills to respond correctly (Cole, et al., 2016; Lusardi & Mitchell, 2014; Huston, 2010). Therefore, a correlation with numeracy should not be absurd. The "Big Three" is regarded as the most used one in its field (Lusardi & Mitchell, 2014)**.** However, this research is focused on high school students who hardly have engaged or even care about investing in financial products. Therefore, I have added other questions proposed by other researchers. For example, recent research by Swiecka et al. (2020) proposed a construct made of 12 true/false questions on financial knowledge. Their initial Cronbach's alpha was 0.75. I have used 6 of their questions. I have also proposed four different questions which I wanted to try and see if they are worth being included in a financial knowledge scale. These questions were about a person's understanding of living standards, exchange rates, financial rules of thumb, and cryptocurrencies.

3.1.3.2.Financial Literacy

Even though many instruments exist in academia to measure the financial literacy of people, the most common way to realize the latter when the sample is composed of high school students is OECD's PISA/INFE's financial literacy construct which

was developed in 2012. This measurement assesses students' financial literacy through three interconnected perspectives: content, process, and context.

Content is the knowledge and understanding of the financial principles taking place in a scenario. Four groups exist, which are: money and transactions, planning and managing finances, risk and reward, and financial landscape. The money and transaction subgroup shows the understanding of money's mode of exchange function and the methods one can use his/her money such as cash, cards, and digital currency. The planning and managing finances subgroup is about the monitoring ability of income and expenditure in the light of taking out loans and credits. The risk and reward subgroup shows the uncertainty management ability. It is primarily based on one's acceptance of paying insurance premiums to minimize unexpected costs. It also focuses on one's willingness to plan through accumulating wealth, for example, through savings. The financial landscape subgroup shows the knowledge of consumers' rights and obligations in the market.

The process is the strategy and approach adopted to solve a given scenario. It comprises consecutive acts: identity, analyze, evaluate, and apply. Identifying is about being able to correctly search and find the needed financial information from graphs, texts, charts, and tables. Analyzing is rendering this collected data into information by synthesizing the analyzed information. Evaluating is the use of critical thinking to choose engagement or disengagement. Applying is about using one's financial knowledge to choose the best choice among the multiple conditions and options available.

Context is the situation during a given scenario. According to OECD's research works the frameworks of students engaging in financial decisions can be categorized into four circumstances: education and work, home and family, individual, and societal. The first category, education and work, is due to the tendency of high school students to get some part-time jobs to raise personal funds for short-term and long-term plans such as buying a concert ticket and investing in tertiary education. The

second category, home and family, is about taking care of a family and pertains to the family budget. The third category, individual, is about one's financial decisions made solely for one's gratification and benefit. The fourth category, societal, deals with one's financial actions made due to societal obligations, norms, and values.

Different versions of these questions were presented over time, yet my selection is based on the "PISA Financial Literacy Sample Items and Scoring Guides" accessible through the website of the National Center for Education Statistics. This choice is due to the need and preference for a credible source that has recently used this instrument. From the many questions used in the original survey, I have selected 7 which I recognized as being fit to the needs of this research and convenient to my research sample. The fitness of choice is primarily based on the topics covered in the questions. I have aimed to avoid questions related to daily banking transactions because the general attitude towards the financial markets was negative as explained in previous parts.

The total number of questions on financial literacy is 8 because one of the questions is divided into two parts which according to OECD (2019) should be counted separately. My selected themes are mentioned in Table (8).

Theme	*Used*
Spending Choices	Yes
Travel Money	Yes
New Offer	Yes
At the Market (Q1)	Yes
At the Market (Q2)	Yes
Pay Stub	Yes
Bank Error	No
New Debit Card	No
Shares	Yes
Motorcycle Insurance	Yes

Table 8 OECD/INFE Financial Literacy Question Themes Used

Source: Authors' Preparation

The two questions that I did not use, "Bank Error" and "New Debit Card" were omitted because of the "Ponzi Scheme"[10] the Lebanese banks passed on to their consumers which could have created a psychological factor influencing the respondents' attitude towards the survey. These two were of no use to the students in the current and near-future days either. I admit that I have covered the topic of "Banking" in my training sessions, yet I did not see any reason not to focus especially since I already had enough questions on financial literacy.

3.1.3.3.Confidence

The confidence variable is measured using the Hogan Personality Inventory test's lower-level subscale on overconfidence. It is composed of 6 Likert-type questions which are averaged to form one indicator. This test is part of the Hogan Development Survey which is a standard for assessing people's behavioral tendencies that emerge especially in times of stress and complacency (Hogan Assessment Systems, INC, 2014). A low score in overconfidence shows that a person is modest and realistic about his/her abilities. Whereas a high score shows that a person believes in having the ability to accomplish anything. I found the wording of the questions quite simple to understand by students and the content matching my requirements. Hence why I have used this instrument to check the confidence of the Lebanese-Armenian students.

3.1.3.4.Cognitive Abilities

To measure the cognition of students, I have used two well-established tests: the Berlin Numeracy Test (BNT) and the Cognitive Reflection Construct (CRT). The BNT includes statistical numeracy and risk literacy questions which are related to financial decision-making processes (Cokely, et al., 2012). This test is composed of four questions based on previous researchers trying to find a good scale for people's numeracy (Darriet, et al., 2021). Even though it is psychometrically sound, its

[10] The reports of international monetary and financial organizations, such as The World Bank, describe the Lebanese financial crisis as a Ponzi Scheme which is when the first party offers the second party investment possibilities with high returns and negligible risks. However, these returns claimed to originate from business dealings do not exist and the offering party eventually takes all the invested money without paying back anything to the second party.

reliability is typically low (Cokely, et al., 2012). This construct has been previously used to capture people's numeracy and other quantitative reasoning skills in research works dealing with financial literacy by many such as Skagerlund et al. (2018), Lind et al. (2020), and Darriet et al. (2021). The CRT was proposed by Frederick (2005) and includes questions on time preference and risk preferences. The CRT is a measure of cognitive reflection containing three questions that are phrased in a way to lead the reader to reach an intuitive wrong solution (Lind, et al., 2020). This was similarly used in different research works pertaining to the topic of financial literacy (Skagerlund, et al., 2018; Lind, et al., 2020). The combination of other constructs along with BNT is highly recommended by its makers, Cokely et al. (2012), especially if the other construct shows other facets of numeracy (Skagerlund, et al., 2018). The total number of correct questions a person responded to the 7 cognitive abilities questions was used as an indicator of their cognition.

Apart from my proposed 7-question construct, I have also asked the students about their recent average scores in mathematics, realizing that this might be simpler to capture their basic numeracy in terms of mathematical and quantitative skills. However, I also admit that people usually tend to think higher of themselves, hence my doubtfulness that the students were honest in their answers.

3.1.3.5.Math Anxiety

The students' math anxiety is calculated by the abbreviated form of the Math Anxiety Scale proposed by Carey et al. (2017). This construct is primarily focused to be used on school students from primary to high school but could even be used for adults (Carey, et al., 2017). To work with this measurement, the average of the 9 Likert-like questions' answers is computed. It has been tested and found to be reliable. Recent research works in the field of behavioral finance, having included psychological factors to explain the financial behaviors of people, have used this construct or similar ones to explain people's anxiousness in using their mathematical skills to make sound financial decisions. A recent example of such research works is Storozuk and Maloney (2023).

3.2. Statistical Methods

This experimental research tends to find a framework for the pertaining factors to the Lebanese-Armenian high school students' financial literacy. The realization of this study's statistical tests has been conducted using the statistical software IBM SPSS (v.23). I have also used the Process Macro which offers ready-made structures on SPSS related to mediations and moderations. The different statistical techniques to explore the data and answer my research hypothesis are t-tests, ANOVA, and regressions. To check the moderation and mediation, I have also used the PROCESS macro's different models which I cite each time I use them in the following parts of this work (Hayes, 2016).

The first thing I conducted was manually entering the data I received from the filled questionnaires. I realize that this is a primitive and time-consuming method. Yet, running an online survey was not seen as an excellent choice. First, I wanted to check the immediate effect of my intervention as it's normal for people to forget information with time. Second, it was not possible to fill out the surveys using technological devices because the schools did not have that many devices, and students could not use their mobile phones within the school premises. Third, I feared having a low response rate, especially since I am dealing with high-school students, who most probably won't fill out the survey once they leave school. Having distributed the surveys in paper forms right after the conduction of a training session made my response rate to be at maximum. This also made their captured knowledge of financial matters fresh, making the threat of knowledge retention void. This method was also followed because of the findings of previous research work which dealt with similar problems. In general, Audi (2002) and Hormes et al. (2013) argued that learning a certain principle through reading has a low retention rate. More specifically, Batty et al. (2015) argued that the youth's retention rate of a certain financial education program is a maximum of one year.

The second thing I did before running the necessary statistical tests was to clean my data. During my data entry, I noticed that 13 students did not complete the questionnaire for unknown reasons. I took note of these questionnaires knowing that I would be

removing them once the dataset is finalized. My explanation is that they either did not have any motivation to fill it out or they did not have enough time to do it. No matter what the reason is, these respondents were removed from my dataset. Appendix A shows the observations that were incomplete and removed. In addition, I checked if I had mistakenly added the wrong data by randomly matching the paper and electronic data of 20 respondents. Similarly, I checked the frequencies of the variables, and I noticed a couple of mistakes. I corrected these while I recorded and calculated the final indicators. For Likert-like questions, I recorded the missing variables by the average (e.g., 3 if it is between 1 to 5). I also checked for outliers using the Mahalanobis Distance. This is a method, which checks how many standard deviations away a point is from the mean of the multivariate distribution (Kotu & Deshpande, 2019). Until now, there has been no strict and final rule for deciding what point is an outlier. The widespread practice is to calculate the remainder of the subtraction of 1 from its probability, and then check what values are lower than 0.001. This method showed that all the remaining observations are within the normal distance, except observation 83, which I removed from my dataset.

The third thing I did was to check the multicollinearity. Checking the multicollinearity of a data set before running any regressions is of utmost importance because its existence may undermine the statistical significance of the independent variables. Researchers explain multicollinearity as the high correlation between one or more independent variables in multiple regression. One of the available tests is to check the VIF score which should be as low as possible. The widespread practice is to have a VIF score of less than 5 and a tolerance of more than 0.2. The results showed that all four variables: financial knowledge, cognition, math anxiety, and confidence, have a VIF score ranging between 1.066 and 1.160, and a tolerance much higher than 0.2 (above 0.862). Hence, the data does not face the problem of multicollinearity. Having done all this, it is safe to say that the data is ready to be analyzed. The final number of observations has become 288, which means a total completion rate of 95.36%.

3.2.1. Principal Component Analysis

A principal component analysis (PCA) is a statistical technique in the grouping of dimension reduction techniques. By analyzing a set of data and describing the inter-correlated dependent variables, a PCA displays a pattern of similarity between different variables and groups them into variables called principal components (Abdi & Williams, 2010)**.** I have run a PCA for the Financial Knowledge questions I had included in the survey of this research. That is because the number of questions is high (13), the questions are derived from several sources, and they cover different topics. Further details are presented in Table (9**).**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy			*0.733*
Bartlett's Test of Sphericity			Sig. 0.000
Principal Components			
1-Money Management	2-Banking	3-Risk	4-Cards
Compound Interest (FKc_1)	Rule of 72 (FKc_5)	Risk Diversification (FKc_7)	Debit Card (FKc_10)
Inflation (FKc_2)	Balance Sheet (FKc_9)	Risk & Return (FKc_8)	
Standard of Living (FKc_3)	Bank Account (FKc_11)	Budget (FKc_13)	
Exchange Rate (FKc_4)	Overdraft (FKc_12)		
Cryptocurrencies (FKc_6)			

Table 9 Principal Component Analysis: Financial Knowledge

Source: Author's Preparation

Firstly, the KMO measure being equal to 0.733, shows that the data is suitable to run a PCA. Bartlett's test is significant at 0.1%, showing that there is a reasonable correlation among some of the variables in the Financial Knowledge questions. Based on the Eigenvalues being equal to 1, the PCA resulted in 4 principal components, which I

named: money management, banking, risk, and cards. These newly established constructs will be checked for validity in the coming parts of this research.

3.2.2. Reliability Analysis & Construct Validity

Checking the construct validity of the instruments used to quantify a certain phenomenon is vital because a certain level of internal consistency should exist between the different questions. I have used Cronbach's Alpha as a tool to check the reliability of my instruments and scales. The test is a common measure of internal consistency and results in a number ranging from 0 to 1. The general agreement is to receive a high number. Any instrument which receives a score below 0.6 is automatically rejected, and usually**,** a score of 0.7 or higher is desired. A remarkably high number, such as 0.95 is also not desired as the different components might be measuring the same thing.

Indicator	*Number of Items*	*Cronbach's Alpha*
Financial Literacy	**8**	**0.731**
Financial Knowledge	13	0.615
FK-Money Management	**5**	**0.713**
FK-Banking	4	0.183
FK-Risk	3	0.310
FK-Card	1	n/a
Cognition	**7**	**0.668**
Confidence	**6**	**0.609**
Math Anxiety	**9**	**0.822**

Table 10 Reliability Tests

Source: Author's Preparation

The results of the 9 reliability tests showed that the scales for financial literacy, cognition, confidence, and math anxiety are acceptable. In the case of financial knowledge, even though the 13-item construct has an acceptable Cronbach alpha, the principal component derived through PCA has a much higher alpha equal to 0.713. Hence, this research will disregard the remaining sub-scales of financial knowledge having exceptionally low alphas and will rely solely on the first principal component, Money Management. This is composed of 2 questions from the "Big Three", and 4 questions from my proposal.

4. Research Findings

Throughout the research findings chapter of this dissertation, the total sample number is 288, as I have removed 1 student survey counted as an outlier and 13 student surveys that were not completed from the total 302 students. It is also important to note that after these modifications, it shows that 41 students filled before the intervention and 247 after the intervention.

4.1. Descriptive Outcomes

4.1.1. Students

Table (11) provides the demographic results of the 288 students who fully completed the survey and were not counted as an outlier. The distribution is near equal with 133 male students (46.2%) and 155 female students (53.8%) having responded to the questionnaire.

Male		*Female*	
Number	Percentage	Number	Percentage
133	46.2%	155	53.8%

Table 11 Students by Gender

Source: Author's Preparation

Table (12) provides descriptive data on the student's previous work experience, financial socialization with parents, parental education**,** and getting a fixed monthly allowance.

	Yes		*No*	
Descriptive Characteristic	Number	Percentage	Number	Percentage
Work Experience	93	32.3%	195	67.7%
Financial Socialization	178	61.8%	110	38.2%
Parental Education	96	33.3%	192	66.7%
Allowance	94	32.6%	194	67.4%

Table 12 Students Social Descriptive

Source: Author's Preparation

The results show that around a third of the students have some work experience, get a fixed allowance, and have at least one parent who attended university. A sizable number, two-thirds, claimed that they discuss financial matters with their parents.

Tables (13**), (**14), and (15) show the students' educational descriptive data. While Table (13) addresses their previous enrolment in an economics or business-related course, Table (14) addresses their mathematical skills and its graphical representation is apparent in Figure (8**)**, and Table (15) addresses the students' distribution by educational orientation (academic or technical) and class with its graphical representations apparent in Figures (9) and (10**).**

The data shows that 69.1% of the students have previously taken a course in economics or business-related subjects while 30.9% of students have never taken a course in these subjects**.**

	Yes		*No*	
Descriptive Characteristic	Number	Percentage	Number	Percentage
Previous Course	199	69.1%	89	30.9%

Table 13 Students by Previous Economics or Business Course Enrolment

Source: Author's Preparation

Ten students did not answer this question while only 25 admitted having failed mathematics during the last couple of years at school**.** The majority, 59.72%, claimed they scored average results ranging between 10 and 15, and 28.13% claimed to have scored more than 15. The passing grade for courses in the Lebanese educational system is 10/20 (50%), while by common practice, receiving scores higher than 15 is sought, and higher than 18 excellent. The histogram in Figure (8) shows that a suitable number of students argued that their score was right above the passing grade of 10. The histogram also shows graphically that the grades are more inclined towards higher grades, however, running a skewness test shows that the distribution is normally distributed with a skewness level between the acceptable range of -1/+1. The kurtosis also shows that the peakedness of the data is symmetrical to the normal distribution.

	Missing	*Failing (x<10)*	*10=<x=<15*	*15<x*
Number	10	25	172	81
Percentage	3.47%	8.68%	59.72%	28.13%
	Mean: 13.53	Std. Dev.: 3.516	Skewness: -0.547	Kurtosis: 0.577

Table 14 Students by Mathematical Skills

Source: Author's Preparation

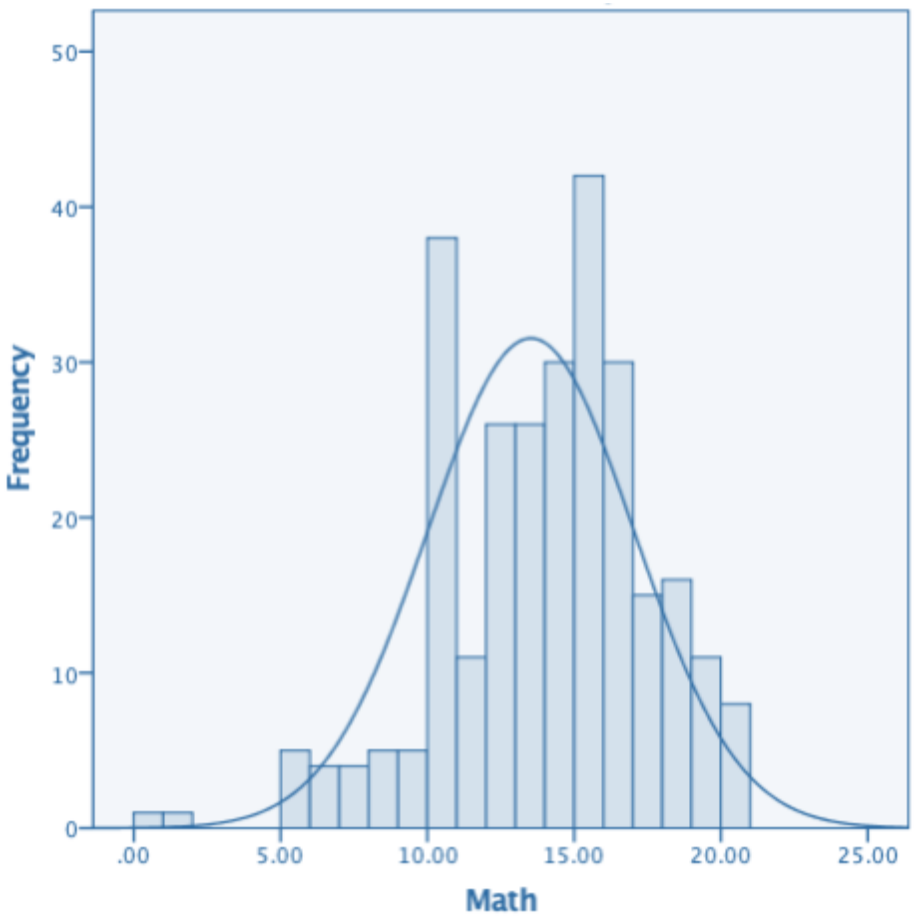

Figure 8 Students Mathematical Skills Histogram

Source: Author's Preparation

Table (15) shows that 14.9% of the students follow the technical studies curriculum whereas 85.1% follow the academic studies curriculum. This is a conservative representation of the Lebanese student's distribution with the latest data showing 10% of students following the technical curriculum (BlomInvest Bank, 2023).

	Technical			*Academic*						
Grade	BT1	BT2	BT3	10	11S	11H	12LH	12SE	12GS	12LS
Number	13	7	23	86	45	22	1	29	9	53
Percentage	4.5%	2.4%	8%	30%	15.6%	7.6%	0.3%	10.1%	3.1%	18.4%
Sub-Total					Number	Percentage	Number		Percentage	
					67	23.2%	92		31.9%	
Total	Number		Percentage	Number			Percentage			
	43		14.9%	245			85.1%			

Table 15 Students by Educational Orientation and Grade

Source: Author's Preparation

Note: BT1: Technical Baccalaureate 1, BT2: Technical Baccalaureate 2, BT3: Technical Baccalaureate 3, S: Scientific: H: Humanities, LH: Literature and Humanities, SE: Sociology & Economics, GS: General Sciences, LS: Life Sciences.

Note: As Lebanese K-12 education is divided into two directions: academic and technical, there is also a differentiation in the naming of the classes. BT1 students are at the same educational level as Grade 10 students, BT2 students are at the same educational level as Grade 11 students, and BT3 students are at the same educational level as Grade 12 students.

For simplicity reasons, Figure (9) shows the data from Table (15) in a pie chart. This table also shows that there is an acceptable distribution of students based on their educational level, with BT1 and Grade 10 students forming 34.5%, BT2 and Grade 11 students forming 25.6%, and BT3 and Grade 12 students forming 39.9%.

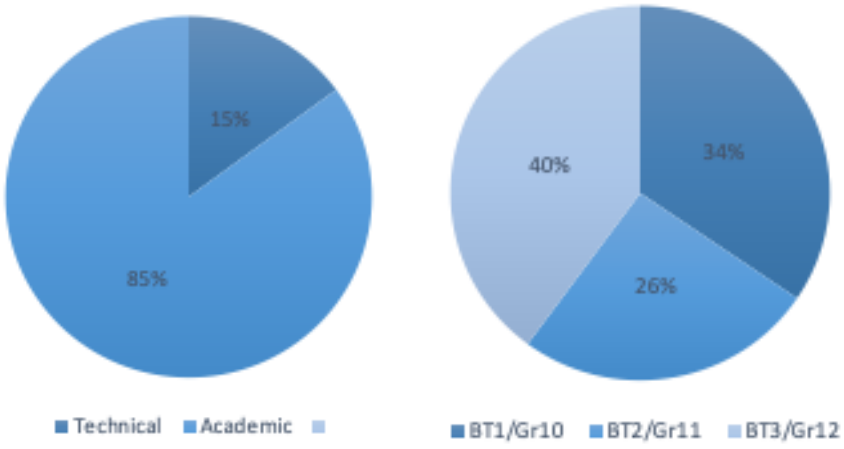

Figure 9 Pie Chart of Students by Academic Orientation and Grade

Source: Author's Preparation

Having presented the descriptive data of students, it is worth checking their relationship with this study's variables. I start by checking if there is any significant difference based on students' genders by running independent sample t-tests. The mean comparisons are

shown in Table (16). Out of the five variables, only financial literacy fails to be significantly different between the two genders, with males showing better results in all the variables. Male students are found to have significantly better financial knowledge, higher cognition, stronger confidence, and lower math anxiety than their female classmates.

Variable	*Female*	*Male*	*t-statistic*	*P-Value*	*Significant*
Financial Knowledge	2.8839	3.5940	-3.797	<0.001	Yes
Financial Literacy	2.8774	3.2556	-1.464	0.144	No
Cognition	1.4581	1.8947	-2.208	0.028	Yes
Confidence	3.2661	3.4842	-2.792	0.006	Yes
Math Anxiety	2.8559	2.3404	5.371	<0.001	Yes

Table 16 T-Test: Gender & Research Variables

Source: Author's Preparation

The independent t-tests of further social and educational explorations are shown in Table (17) in relation to their financial knowledge and financial literacy only as the remaining variables do not have to do with these experiences.

The results show that social characteristics either influence the student's financial knowledge or financial literacy but not both. The financial literacy of the students having worked either during summertime or throughout the academic year was higher than those who had not undertaken any jobs. The financial literacy of those receiving a fixed allowance on a regular basis was found to be statistically lower than those who do not usually get a fixed allowance. Whereas the financial knowledge of those who discuss financial matters at home and those who have at least one of the parents holding a university degree showed a better knowledge of financial principles. The results of the independent samples t-test concerning receiving economic or business-related courses in schools also showed that it boosts the students' financial knowledge at the 5% significance level, but not their financial literacy.

The last descriptive characteristic, mathematical skills, was also checked for its relationship with cognition and financial literacy. To realize this, a Person correlation test was used. The results showed that the student's mathematical skills were correlated

with their cognitive skills at the 5% significance level (p-value=0.047) and with financial literacy at the 10% significance level (p-value=0.061).

	Financial Knowledge					*Financial Literacy*				
Descriptive Characteristic	No	Yes	t-statistic	P-Value	Significant	No	Yes	t-statistic	P-Value	Significant
Work Experience	3.1385	3.3656	-1.114	0.266	No	2.8667	3.4409	-2.093	0.037	Yes
Financial Socialization	2.8364	3.4438	-3.142	0.002	Yes	2.8545	3.1742	-1.204	0.229	No
Parental Education	3.0156	3.6042	-2.947	0.003	Yes	3.0052	3.1458	-0.513	0.608	No
Allowance	3.1907	3.2553	-0.317	0.751	No	3.2887	2.5638	2.662	0.008	Yes
Previous Course	2.9326	3.3367	-1.967	0.050	Yes	3.2022	2.9849	0.778	0.437	No

Table 17 T-Test: Social and Educational Characteristics, Financial Literacy, & Financial Knowledge

Source: Author's Preparation

To be able to check the descriptive variables' influence on the research variables, I have grouped the students based on their academic orientation, whether technical or academic. I have run an independent samples t-test, and the results are shown in Table (18**).** The test shows that even though technical studies students have a higher financial knowledge than their academic counterparts, the difference is not significant. Similarly, there is no statistical difference between the confidence both groups show. However, the financial literacy of academic students is 1 point higher than that of technical studies, and the same applies to their cognition. Whereas for math anxiety, technical students are significantly less anxious than academic students. These results are valid to the 1% significance level.

Variable	*Technical*	*Academic*	*t-statistic*	*P-Value*	*Significant*
Financial Knowledge	3.3023	3.1959	-0.397	0.692	No
Financial Literacy	2.1163	3.2163	3.083	0.002	Yes
Cognition	0.7209	1.8245	4.067	<0.001	Yes
Confidence	3.3178	3.3754	0.521	0.603	No
Math Anxiety	2.2558	2.6814	3.071	0.002	Yes

Table 18 ANOVA: Educational Orientation and Research Variables

Source: Author's Preparation

I have also grouped the students based on their grade level which resulted in three different groups[11]. I have run several ANOVA, and the results are shown in Table **(**19**).** The ANOVA shows that the financial knowledge, financial literacy, and confidence scores of students increase significantly with the level of the grade at the 0.1% significance level. Whereas cognition increases at the 10% significance level. The test shows that math anxiety does not change from one grade level to another.

Variable	*Group 1*	*Group 2*	*Group 3*	*F-statistic*	*P-Value*	*Significant*
Financial Knowledge	2.6768	3.3649	3.5739	9.102	<0.001	Yes
Financial Literacy	2.3333	3.2297	3.5565	9.115	<0.001	Yes
Cognition	1.4646	1.5000	1.9304	2.507	0.083	No
Confidence	3.1370	3.4167	3.5326	10.203	<0.001	Yes
Math Anxiety	2.6998	2.5646	2.5816	0.707	0.494	No

Table 19 ANOVA: Grade Level and Research Variables

Source: Author's Preparation

4.1.2. Schools

Apart from checking the students' demographic, social, and educational descriptive characteristics, I have also tended to check if there are differences within the 9 schools. To realize the latter, I have grouped them into different sorts of groups because Yong et al. (2018) argued that there is a difference between the outcomes of financial education for people of diverse cultures. Even though these schools belong to a minority community in Lebanon, their own belongings differ, hence the necessity to check differences and similarities.

First, I have run an ANOVA on all the schools and their respective scores to the 5 research variables. The results are shown in Table (20). It shows that there is a significant difference between the schools on all the variables of this research.

[11] Group 1: BT1 and grade 10; Group 2: BT2 and Grade 11; Group 3: BT3 and Grade 12. These groups belong to the same educational level and the same age group.

	HCH	*MHSTC*	*SLMC*	*AGBU*	*AESTS*	*AECHS*	*UAC*	*AEC*	*MFS*	*F-Statistic*	*P-Value*	*Significant*
Financial Knowledge	3.1039	3.3158	1.3103	4.2500	3.4583	4.2143	2.4545	4.1250	3.0000	13.256	<0.001	Yes
Financial Literacy	2.8571	3.1842	1.6207	4.1944	2.9583	2.7143	2.7576	4.3750	4.5714	4.601	<0.001	Yes
Cognition	1.0000	2.0000	0.7931	2.6389	1.5000	1.1071	1.5152	4.7500	2.0000	16.134	<0.001	Yes
Confidence	3.4175	3.5789	3.4540	3.4583	3.2708	3.3631	3.1313	2.9375	3.2619	2.168	0.030	Yes
Math Anxiety	2.5245	2.3538	3.0383	2.5278	2.4259	2.5476	2.8182	2.8264	3.3175	2.757	0.006	Yes

Table 20 ANOVA: Schools & Research Variables

Source: Author's Preparation

To make things clearer, I have formed a top 3 list in Table (21). Note: for math anxiety, I have used an ascending order, as low math anxiety shows better behavior.

This list shows that there are 3 schools that secure the most positions:

- AGBU Schools Lebanon has secured 4 top-3 places with 1 of them ranking number 1 for financial knowledge.
- Armenian Catholic Mesrobian High School and Technical College, having secured 3 top-3 positions, with 2 of them ranking number 1
- Armenian Evangelical College, having secured 3 top-3 places with 1 of them ranking number 1 for cognition.

	Rank 1	*Rank 2*	*Rank 3*
Financial Knowledge	AGBU	AECHS	AEC
Financial Literacy	MFS	AEC	AGBU
Cognition	AEC	AGBU	MFS/MHSTC
Confidence	MHSTC	AGBU	SLMC
Math Anxiety	MHSTC	AESTS	HCH

Table 21 Schools Top-3 Lists

Source: Author's Preparation

It is safe to say that the two schools, AGBU and AEC, are the best schools in financial matters, and MHSTC is the best school in psychological factors. To explore this further, I have grouped the schools based on their religious affiliations.

The results show that financial literacy and math anxiety between the schools of different religious affiliations are not statistically different. However, the financial knowledge and cognition rates are significantly different with the students at Evangelical schools scoring the highest. Also, the students at Catholic schools have the highest score in confidence followed by areligious schools. Whether statistically significant or not, Evangelical schools have the highest scores in knowledge factors, whereas Catholic schools have the highest scores in psychological factors. The schools not affiliated with any religious entities are somewhere between the Catholic and Evangelical schools. Whereas the students at the schools following the Orthodox faith have been shown to be the weakest link in this matter.

	No-Religion	*Catholic*	*Evangelical*	*Orthodox*	*F-statistic*	*P-Value*	*Significant*
Financial Knowledge	2.9385	3.1639	**3.9265**	2.4545	8.028	<0.001	Yes
Financial Literacy	3.0642	3.0574	**3.1912**	2.7576	0.289	0.834	No
Cognition	1.8154	1.3689	**2.1029**	1.5152	3.114	0.027	Yes
Confidence	3.4564	**3.4589**	3.2304	3.1313	3.562	0.015	Yes
Math Anxiety	2.7556	**2.5168**	2.5703	2.8182	1.839	0.140	No

Table 22 ANOVA: Schools Religious Groupings & Research Variables

Source: Author's Preparation

I have also run a post-hoc analysis after the ANOVA to further check the differences between the four religious groups. As I have determined a difference to exist in three of the research variables (financial knowledge, cognition, and confidence), running a posthoc analysis allows me to test and compare pairwise the differences at a 5% significance level (IBM, 2023). In other terms, it shows the matrix to which the means are significantly different from one group to another.

Among the many tests, I have chosen to use the least significant difference (LSD) that uses t-tests to perform all pairwise comparisons between group means with no adjustment having been made to the error rate for multiple comparisons. I have also used Scheffe's test, a practice that runs simultaneous joint pairwise comparisons for all possible combinations using F sampling distribution and allows to examine of all possible linear combinations. The reason why I used two different post-hoc tests is because while LSD is the simplest, Scheffe is one of the most conservative (IBM, 2023). In this way, I will be able to ascertain the existence of significant differences between the groups.

Concerning financial knowledge, both tests show that the mean scores of Evangelical schools are significantly higher than non-religious schools by 0.988 points, Catholic schools by 0.763 points, and Orthodox schools by 1.472 points.

Concerning cognition, both tests show that there's a significant difference between the scores of Catholic schools and Evangelical schools in which those students attending Evangelical schools have 0.734 points more cognition than those students attending catholic schools. There is no significant difference between the remaining groups.

Concerning confidence, while Scheffe shows no significant difference among groups, the LSD test shows that the scores of Evangelical and Orthodox schools respectively. Similarly, the LSD test shows that the scores of non-religious schools are 0.226 points and 0.325 points significantly higher than the scores of Evangelical and Orthodox schools respectively.

Scheffe's test does not show a significant homogeneous subset for all three variables, although, for financial knowledge, it sets apart the Evangelical schools and part of the Catholic schools from non-religious, Orthodox, and the other part of Catholic schools (sig.=0.076).

4.1.3. Research Variables

Showing the descriptive results of the research variables is important because it shows how people responded to different questions. This work corresponds to five research variables, and the following parts will discuss the results of each separately.

4.1.3.1. Financial Knowledge

Having run PCA for financial knowledge, the number of questions included in its construct was lowered from 13 to 5. This part will discuss how the Lebanese-Armenian students responded to these 5 questions, noting they can be categorized into 2 types: multiple-choice (questions 1,2, and 3) and short answer (questions 4 and 6)**.** The results are presented in Table (23).

The results for FK_1 show that 75% of the students know about compound interest, 13.9% of the students have given a wrong answer, and 10.8% of the students do not know about it. The results for FK_2, the question that deals with inflation, show that 53.5% of the students answered correctly, 25.3% answered wrong, and 21.2% stated that they did not know the answer. The results of FK_3 show that 68.4% of the students have a good understanding of the standard of living, with 16% and 15.6% of the students not having a correct idea and not knowing about it, respectively. The results of FK_4, the question that deals with exchange rates, showed that 60.4% of the students answered correctly, 15.6% of the students answered wrong, and 24% of the students did not know the answer. The answers to FK_6, the question on cryptocurrencies, showed that 63.5% of the students answered correctly, 6.9% answered wrong, and 29.5% of students stated that they did not know the correct answer. These results are also shown in the bar charts in Figure (10**).**

Code	*Question*	*Source*	*Correct*	*Wrong*	*Do not Know*
FK_1	Suppose you had 100$ in a savings account and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account if you left this money to grow?	Big 3	75.3%	13.9%	10.8%
FK_2	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?	Big 3	53.5%	25.3%	21.2%

FK_3	Suppose that by the year 2025 your income has doubled, and prices of all goods have doubled too. In 2025, how much will you be able to buy with your 2025 income?	Author	68.4%	16%	15.6%
FK_4	If the EUR/USD exchange rate is 1.2, then 100 Euros will be equivalent to how many US Dollars?	Author	60.4%	15.6%	24%
FK_6	What are the likes of Bitcoin, Ethereum, Solana, Binance Coin, and Dogecoin called?	Author	63.5%	6.9%	29.5%

Table 23 Financial Knowledge Answers

Source: Author's Preparation

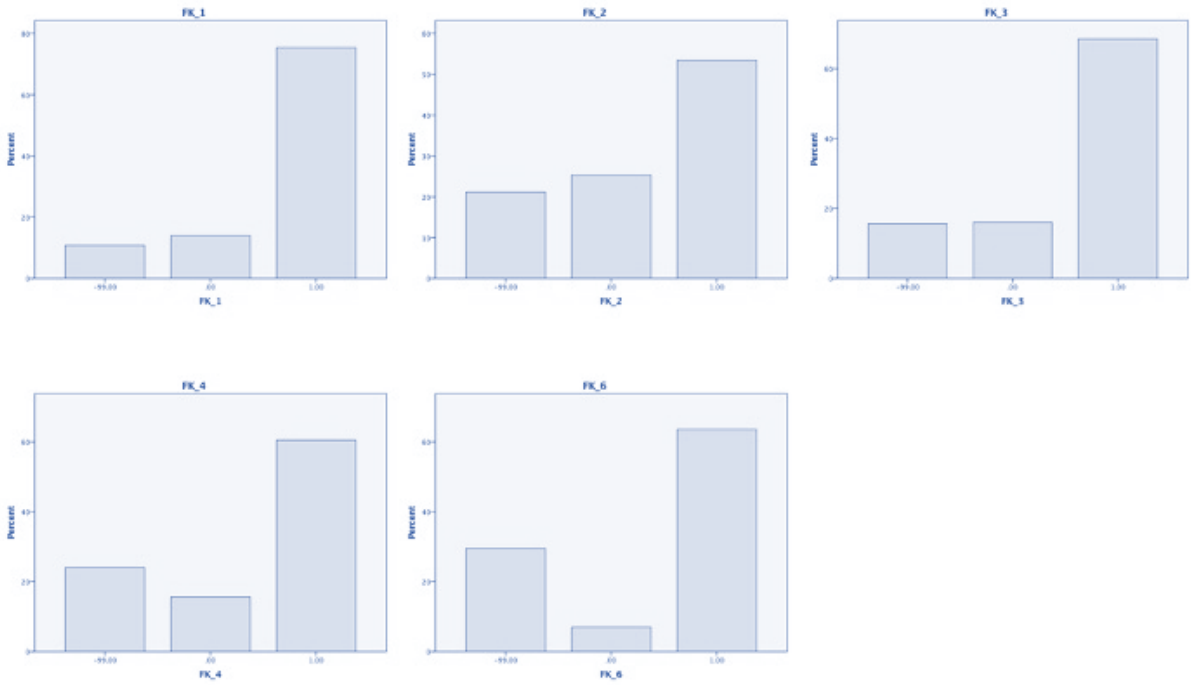

Figure 10 Financial Knowledge Answers Bar Charts

Source: Author's Preparations

Financial knowledge, however, is also a good outlook for students' overall understanding of financial principles. The mean score is 3.2118/5 (std.dev. =1.61879), the median is 4, and the mode is 5. More detailed descriptive data are presented in Table (24**).**

The received data shows that 8% of students have no financial knowledge whatsoever, whereas 10.8%, 14.6%, and 12.8% of students scored low financial knowledge with respectively answering correctly to 1, 2, and 3 questions correctly. 26.4% of students

answered correctly to 4 questions, and 27.4% of students answered correctly to all 5 questions.

Score	*0*	*1*	*2*	*3*	*4*	*5*
Percentage	8%	10.8%	14.6%	12.8%	26.4%	27.4%

Table 24 Financial Knowledge Scores

Source: Author's Preparation

4.1.3.2.Financial Literacy

This research has used 8 questions on financial literacy, based on OECD/INFE's example of students' financial literacy questionnaire. The results are presented in Table (25**).**

The scores show that 64.6% of students answered correctly to question 1, 36.1% to question 2, 17.4% to question 3, 50.3% to question 4.1, 42% to question 4.2, 33.7% to question 5, 40.6% to question 6, and 20.5% to question 7.

Code	*Correct*	*Wrong*	*Do not Know*
FL_1	64.6%	24.3%	11.1%
FL_2	36.1%	22.2%	41.7%
FL_3	17.4%	11.8%	70.8%
FL_4.1	50.3%	4.9%	44.8%
FL_4.2	42%	11.8%	46.2%
FL_5	33.7%	39.2%	27.1%
FL_6	40.6%	38.9%	20.5%
FL_7	20.5%	56.6%	22.9%

Table 25 Financial Literacy Answers

Source: Author's preparation

When checking the results of financial literacy, the mean is 3.0521/8 (std. dev.= 2.18979), the median is 3, and the mode is 1. The skewness is 0.398 and the kurtosis is -0.840. The details are presented in Table (26).

The results showed that 11.5% of the students failed to correctly answer any of the 8 questions, while 20.1%, 14.6%, 13.2% and 13.2% answered correctly to 1, 2, 3, or 4

questions, respectively. 11.1% of the students answered correctly to 5 questions, 8.7% to 6 questions, 5.2% to 7 questions, and 2.4% to 8 questions.

Score	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Percentage	11.5%	20.1%	14.6%	13.2%	13.2%	11.1%	8.7%	5.2%	2.4%

Table 26 Financial Literacy Scores

Source: Author's Preparation

4.1.3.3. Cognition

The construct for cognition contains 7 questions, out of which 4 are derived from the BNT and 3 are derived from CRT. The descriptive statistics show that the average cognition of the 288 Lebanese-Armenian students is 1.6597/7 (std.dev.= 1.68479). Further results are shown in Table (27).

The results show that 31.6% of the students failed to respond correctly to all the questions, 24.7% answered correctly to only 1 question, 17.7% answered correctly to 2 questions, 10.4% answered correctly to 3 questions, 8% answered correctly to 4 questions, 3.5% answered correctly to 5 questions, 3.8% answered correctly to 6 questions, and 0.3% answered correctly to all the questions.

Score	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Percentage	31.6%	24.7%	17.7%	10.4%	8%	3.5%	3.8%	0.3%

Table 27 Cognition Answers

Source: Author's Preparation

4.1.3.4. Math Anxiety and Confidence

Math anxiety's construct is composed of 9 Likert-like 5-point scaled questions, which have been averaged to find the math anxiety level of students. The descriptive data shows that the mean is 2.6179/5 (std.dev.=0.85042), a median of 2.5556, a mode of 2.44, a skewness

of 0.414, and a kurtosis of 0.144. The range goes from a minimum of 1 to a maximum of 5.

The confidence construct is composed of 6 Likert-like 5-point scaled questions, with the construct's result being the mean of their answers to these questions. the descriptive data shows that the mean is 3.3668/5 (std.dev.=0.66859), a skewness of -0.174, a kurtosis of 0.144, and a range of 3.67 with the minimum being 1.33 and maximum 5.

Figures (11) and (12) represent the discussed data on confidence and math anxiety in histograms respectively.

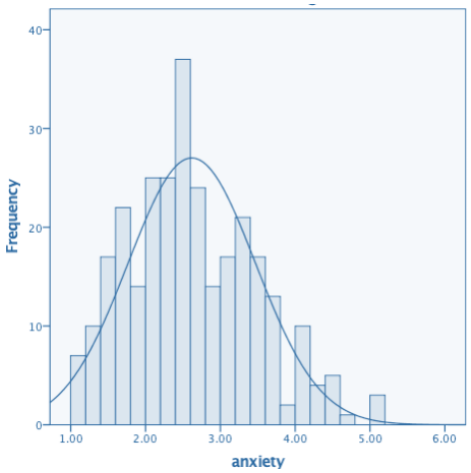

Figure 12 Math Anxiety Histogram

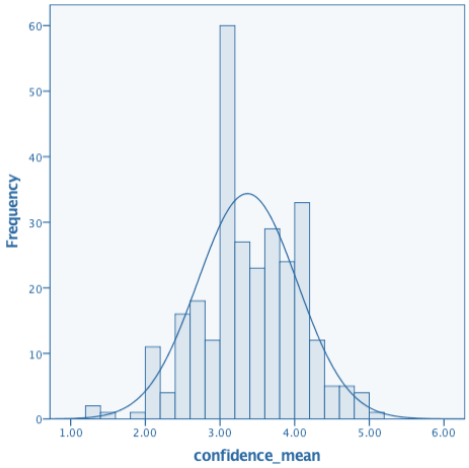

Figure 11 Confidence Histogram

4.2. Hypothesis Testing

4.2.1. Hypothesis 1

Hypothesis 1 corresponds to 5 sub-hypotheses that deal with financial education. I explain the tests I have run to answer each separately.

H1a: Financial education increases the Lebanese-Armenian high schoolers' financial knowledge.

H1b: Financial education increases the Lebanese-Armenian high schoolers' financial literacy.

To answer the first sub-hypothesis, H1a, I have run an independent samples t-test having one of the variables as binary: filled out the survey before the training and filled out the survey after the training, and financial knowledge as a score from 0 to 5. The results showed that the students who filled out the survey before the training had a score of 3.463/5 (std-dev.=1.551) and those who filled out the survey after the training had a score of 3.170/5 (std.dev.=1.629). Nonetheless, the t-test showed no statistical difference between the two means, with the t-statistic being equal to 1.075 and the p-value equal to 0.283. Hence, I reject H1a.

Likewise, I have run an independent samples t-test to check if the financial literacy of Lebanese-Armenian students has changed due to financial education sessions (H1b). I have used a similar approach to that of H1a. I have used a binary model for filling out the survey. Whereas the financial literacy score was on an overall of 8. The test showed that those who filled out the survey before the training had an average financial literacy score of 3.366/8 (std.dev.=2.189) compared to 3.000/8 (std.dev.=2.190) to those who filled out the survey after the intervention. The t-statistic is equal to 0.991 and the p-value is equal to 0.323. Hence, I fail to support my posed hypothesis and reject H1b.

Even though the results are statistically insignificant, I was intrigued to see that those who had filled out the surveys before the intervention exhibited higher financial knowledge and financial literacy skills. Hence, I wanted to check this issue more by relating it to cognition. By running aother independent samples t-test, I have obtained a statistically significant result (t-statistic= 2.936, p-value=0.004) showing that those who have filled out the survey before the training sessions have a higher cognition than those who filled out the survey after the training session, with 2.3659/7 (std.dev.= 2.154) and 1.5425/7 (std.dev.=1.569), respectively.

H1c: Different contents of different financial education programs do not have a changing influence on financial knowledge.

H1d: Different contents of different financial education programs do not have a changing influence on financial literacy.

To answer the two hypotheses on the intervention's content effects, H1c and H1d, I have run independent sample t-tests. It's important to note that I have filtered out those students who have filled out the surveys before the intervention because their inclusion might deter the results as the topic of intervention did not influence their financial knowledge or financial literacy. The data shows that a total of 128 students received training with the topic "Sources of Funds" and 119 students received training with the topic "Investments". Hence, a total of 247 students is included in this part.

Concerning H1c, the t-test shows that there is an insignificant difference between the student's financial knowledge levels based on the intervention topic. Those who received the intervention with the topic "Sources of Funds" scored 3.125/5 (std.dev.= 1.547), whereas those who received the intervention with the topic "Investments" scored 3.219/5 (std.dev.=1.718). The t-statistic is -0.450 and p-value=0.653. These results support H1c.

Concerning H1d, the t-test shows that there is a significant difference in financial literacy levels between the two student groups who received financial education training on two different topics. Those students who followed the "Sources of Funds" topic scored on average 2.727/5 (std.dev.=1.991), whereas those students who followed the "Investments" topic scored on average 3.294/5 (std.dev.=2.359). The t-statistic is equal to -2.048 and the p-value=0.042. This means I reject H1d.

4.2.2. Hypothesis 2

Hypothesis 2 is a set of two sub-propositions about the student's financial literacy. H2a proposes the positive role financial knowledge plays in increasing the students and H2b proposes their cognitive abilities play a similar role.

H2a: The more financial knowledge a Lebanese-Armenian high school student has, the more financially literate he/she is.

To test H2a, I have run a simple linear regression in which the dependent variable is financial literacy, and the independent variable is financial knowledge. The results show that without any financial knowledge, a person still has a financial literacy level of 1.298 (over a total of 8). This brings into consideration the other two components of financial literacy: behavior and attitude. Though, the results also show, that by holding everything else constant, increasing the financial knowledge of a Lebanese-Armenian student by one unit (i.e. by 1 point over 5), the financial literacy rate will increase by 0.546 units (over a total of 8). It's also important to note, that financial knowledge explains 16.3% of the variation in financial literacy. These results are significant at a 0.1% level and lead to the acceptance of H2a. Table (28) presents these details while Equation (1) depicts this relationship.

	Coefficient (β)	*t-statistic*	*p-value*
Constant	1.298	4.932	<0.001
Financial Knowledge	0.546	7.465	<0.001

ANOVA: F-statistic=55.723 , p-value= <0.001

Rsquare= 0.163

Method: Enter

Table 28 Hypothesis H2a Results

Source: Author's Preparation

$$Financial\ Literacy = 1.298 + 0.546\ Financial\ Knowledge$$

Equation 1 Simple Linear Regression: Financial Literacy and Financial Knowledge

Source: Author's Preparation

H2b: The higher the cognitive abilities of a Lebanese-Armenian student, the higher his/her financial literacy rate is.

Similarly, to test H2b, I have run a simple linear regression in which the dependent variable is financial literacy and the independent variable is Testing H2b cognition. The

results show, that without any cognition, the financial literacy of a Lebanese-Armenian student is 2.151 (over a total of 8) which increases by 0.543 for each unit of cognition increased. The results are statistically significant at the 0.1% significance level. The coefficient of determination also shows that cognition explains 17.4% of the variation in financial literacy. Table (29) shows the results more in detail, while Equation (2) depicts the relationships.

	Coefficient (β)	*t-statistic*	*p-value*
Constant	2.151	13.037	<0.001
Financial Knowledge	0.543	7.7.771	<0.001

ANOVA: F-statistic=60.388 , p-value= <0.001

Rsquare= 0.174

Method: Enter

Table 29 Hypothesis H2b Results

Source: Author's Preparation

$$Financial\ Literacy = 2.151 + 0.543\ Cognition$$

Equation 2 Simple Linear Regression: Financial Literacy and Cognition

4.2.3. Hypothesis 3

The third hypothesis of this research is about the mediating role a Lebanese-Armenian student's cognition plays in the relationship between his/her financial knowledge and financial literacy. To check this reaction, I have used the approach recommended by Edwards and Konold (2020) for a moderated mediation analysis. They argue that first, the total effect of X on Y should be revealed. Then the existence of a relationship between the M and Y should be assessed. These have already been answered in H2a and H2b. The third step is to run a mediation. To realize this,

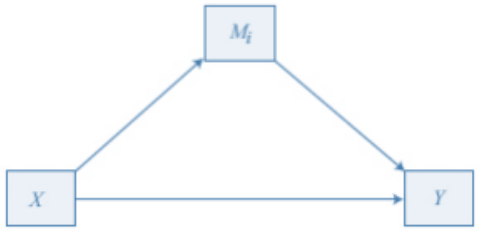

Figure 13 PROCESS Macro Model 4

Source: Hayes (2016)

Note: To test H3, financial knowledge is X, financial literacy is Y, and cognition is M.

Process Model 4 (Hayes, 2016) is used, with financial knowledge as the independent variable, cognition as the mediator, and financial literacy as the dependent variable. This is shown in Figure 13.

H3: The cognition of Lebanese-Armenian students mediates the relationship between their financial knowledge and financial literacy.

The results of this mediation analysis show prominent results. The results show that the variations in the independent variable, financial knowledge, and the mediator, cognition, of the model explain 25.76% of the variation in the dependent variable, financial literacy. The direct effect of financial knowledge on financial literacy is equal to 0.4106, the direct effect of cognition on financial literacy is 0.4203, whereas the mediation effect is 0.1357. The direct effect of financial knowledge on cognitive abilities is equal to 0.3228. Therefore, the total effect of financial knowledge on financial literacy is equal to 0.1357+0.4106=0.5463. All these results are significant at the 0.1% level. Figure (14) shows the representation of this model graphically.

Variable	*Coefficient*	*t*	*P-Value*	*LLCI*	*ULCI*
Constant	1.0358	4.1100	<0.001	0.5397	1.5318
FK	0.4106	5.6535	<0.001	0.2676	0.5535
Cognition	0.4203	6.0241	<0.001	0.2830	0.5588
Model Summary	Rsquare=25.76%; F=49.4439; p-value= <0.000				

Total effect of Financial Knowledge on Financial Literacy = 0.5462 (p-value= <0.001)

Total direct effect of Financial Knowledge on Financial Literacy = 0.4106 (p-value= <0.001)

Total indirect effect of Financial Knowledge on Financial Literacy = 0.1357 (LLCI:0.0790, ULCI:0.2052)

Table 30 Hypothesis H3 Results

Source: Author's Preparation

Note: LLCI is the abbreviation to lower limit confidence interval, and ULCI is the abbreviation to upper limit confidence interval. In PROCESS Macro, when LLCI and ULCI are of the same sign, then the relationship is significant.

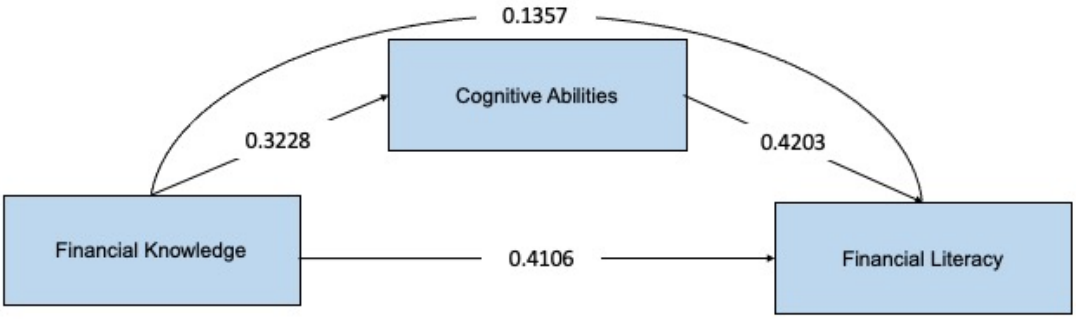

Figure 14 Hypothesis 3 Model

Source: Author's Preparation

4.2.4. Hypothesis 4

Hypothesis 4 is composed of 3 sub-hypotheses dealing with the moderation effects math anxiety and confidence might have on the research's 3 main variables. To answer these hypotheses, I have used Hayes's (2016) proposed different models on SPSS.

Prior to testing the hypotheses, it is worth recalling what moderation means. In statistics, moderation is the concept that describes a situation in which the relationship between two variables depends on a third variable (Preacher, et al., 2007; Hayes & Preacher, 2013). The third variable is referred to as the moderator variable (Preacher, et al., 2007; Hayes & Preacher, 2013). In the PROCESS Macro of SPSS, the simple moderation is represented in Model 1, which is presented in Figure (15) (Hayes, 2016). However, as

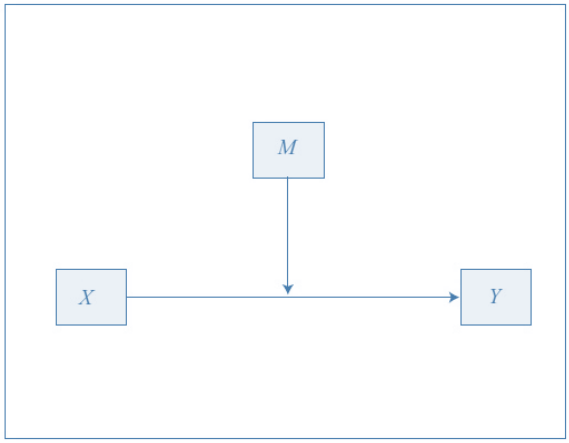

Figure 15 PROCESS Macro Model 1

Source: Hayes (2016)

Note: In Model 1, X depicts the independent variable, Y depicts the dependent variable, and M depicts the moderator.

I have already found statistical results for the mediation role cognition plays between financial knowledge and financial literacy, I will build my coming tests on it.

H4a: Math anxiety moderates the relationship between the cognition of Lebanese-Armenian high school students and their financial literacy.

The first sub-hypothesis argues about the possibility of math anxiety moderating the relationship between cognition and financial literacy. I have used Model 14, which is presented in Figure (16), where V is represented by the math anxiety factor. Having received significant results in Model 4 through Hypothesis 3, the difference here is that I have added moderation in the model. The results are presented in Table (31**).**

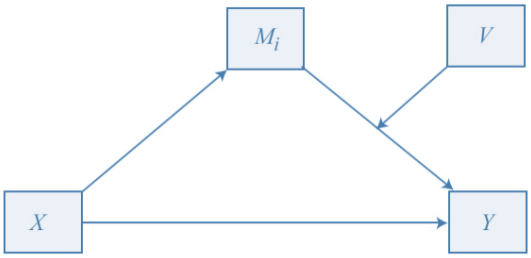

Figure 16 PROCESS Macro Model 14

Source: Hayes (2016)

Note: To test H4a, financial knowledge is X, financial literacy is Y, cognition is M, and math anxiety is V

The results show that math anxiety does not have a statistically significant relationship with the dependent variable, nor does its interaction with cognition. The test of the highest-order unconditional interactions also shows that there is no statistically significant relationship with the p-value being equal to 0.4802. Nonetheless, the indirect effect of financial knowledge on financial literacy through the mediation of cognition is moderated by math anxiety, in which an increased anxiety would decrease the latter indirect effect. When math anxiety is equal to 1.778, the effect is equal to 0.1495. Whereas when math anxiety increases to 3.5556, the effect decreases to 0.1155. This is significant because the lower-limit confidence interval and the upper-limit confidence interval are both positive. Taking into consideration all this, and especially with the index of the moderated mediation being insignificant, I reject H4a.

Variable	*Coefficient*	*t*	*P-Value*	*LLCI*	*ULCI*
Constant	0.5985	0.9754	0.3302	-0.6094	1.8064
FK	0.4237	5.5884	0.0000	0.2745	0.5729
Cognition	0.5686	2.5604	0.0110	0.1315	1.0058
Anxiety	0.1533	0.7957	0.4269	-0.2259	0.5325
Int_1	-0.0593	-0.7070	0.4802	-0.2243	0.1058
*Int_1 = cognition * anxiety*					
Model Summary	Rsquare=25.94%; F=24.7761; p-value=0.0000				
Test of highest order unconditional interactions (Int_1): Rsquare-change=0.0013, F=0.4998, p-value=0.4802					
Indirect Effect					
Math Anxiety	Effect	LLCI	ULCI		
1.778	0.1495	0.0757	0.2384		
2.5556	0.1346	0.0790	0.2025		
3.5556	0.1155	0.0473	0.1960		
Index of Moderated Mediation					
Index	LLCI	ULCI			
-0.0191	-0.735	0.0362			

Table 31 Hypothesis H4a Results

Source: Author's Preparation

Notes: LLCI is the abbreviation to lower limit confidence interval, and ULCI is the abbreviation to upper limit confidence interval. In PROCESS Macro, when LLCI and ULCI are of the same sign, then the relationship is significant. SPSS automatically searches and find key inflection points to check the indirect effects.

H4b: Confidence moderates the relationship between the financial knowledge of Lebanese-Armenian high school students and their financial literacy.

The second sub-hypothesis poses the possibility of confidence moderating the relationship between financial knowledge and financial literacy. I have used Model 5, which is presented in Figure (17), where W is represented by the confidence factor. Having received significant results in Model 4 through

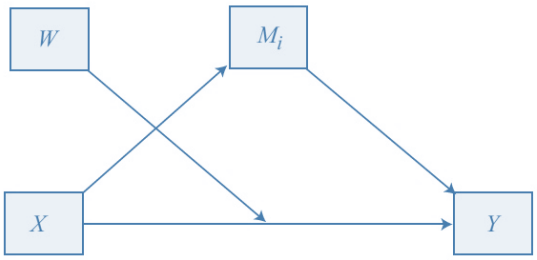

Figure 17 PROCESS Macro Model 5

Source: Hayes (2016)

Note: To test H4b, financial knowledge is X, financial literacy is Y, cognition is M, and confidence is W

Hypothesis 3, the only difference is that I have added moderation in the model, like H4a. The results are presented in Table (32**).**

The results show that confidence has a statistically significant relation with financial literacy, like its interaction with financial knowledge, at the 5% significance level. The test of the highest-order unconditional interactions also shows that there is a statistically significant relationship with the p-value being equal to 0.0476<0.05**.** The conditional direct effects analysis shows that an increase in confidence, the moderator, will decrease this effect significantly. When the confidence is equal to 2.6667, the conditional effect is equal to 0.5552. When the confidence increases to 4, the effect is nearly reduced by half at 0.2725. This relation is significant at the 1% significance level. Taking into consideration all this, I find enough statistical evidence to support H4b**.**

Variable	*Coefficient*	*t*	*P-Value*	*LLCI*	*ULCI*
Constant	-1.7782	-1.3263	0.1858	-4.4172	0.8609
FK	1.1205	3.0615	0.0024	0.4001	1.8410
Cognition	0.4198	6.0423	0.0000	0.2831	0.5566
Confidence	0.8441	2.1358	0.0336	0.0662	1.6220
Int_1	-0.2120	-1.9895	0.0476	-0.4218	-0.0023
*Int_1 = financial knowledge * confidence*					
Model Summary	Rsquare=26.94%; F=26.0899; p-value=0.0000				
Test of highest order unconditional interactions (Int_1): Rsquare-change=0.0102, F=3.9581, p-value=0.0476					
Conditional Direct Effect of Financial Knowledge on Financial Literacy					
Confidence	Effect	P-value	LLCI	ULCI	
2.6667	0.5552	0.0000	0.0757	0.2384	
3.3333	0.4138	0.0000	0.0790	0.2025	
4.0000	0.2725	0.0063	0.0473	0.1960	

Table 32 Hypothesis H4b Results

Source: Author's Preparation

Notes: LLCI is the abbreviation to lower limit confidence interval, and ULCI is the abbreviation to upper limit confidence interval. In PROCESS Macro, when LLCI and ULCI are of the same sign, then the relationship is significant. SPSS automatically searches and find key inflection points to check the conditional direct effects.

H4c: Confidence moderates the relationship between the financial knowledge of Lebanese-Armenian high school students and their cognition.

The third sub-hypothesis poses the possibility of confidence moderating the relationship between financial knowledge and cognition. I have used Model 7, which is presented in Figure (18), where W is represented by the confidence factor. Having received significant results in Model 4 through Hypothesis 3, the only difference is that I have added moderation in the model, like H4a and H4b. Nonetheless, due to the nature of this hypothesis where the mediator, cognition, is the outcome variable of the moderation, the results presented in Table (33) are according to this.

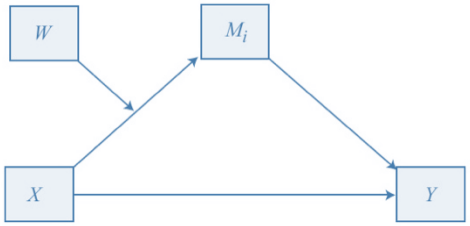

Figure 18 PROCESS Macro Model 7

Source: Hayes (2016)

Note: To test H4b, financial knowledge is X, financial literacy is Y, cognition is M, and confidence is W.

The results show that confidence does not have a statistically significant relationship with the mediator of this research**,** cognition, nor does its interaction with financial knowledge. The test of the highest-order unconditional interactions also shows that there is no statistically significant relationship with the p-value being equal to 0.8521. Nonetheless, the indirect effect of financial knowledge on financial literacy through the mediation of cognition is moderated by confidence, in which increased confidence would decrease the latter indirect effect. When confidence is equal to 2.6667, the effect is 0.1412. When the confidence increases to 4, the effect decreases to 0.1316. This is significant because the lower-limit confidence interval and the upper-limit confidence interval are both positive. Taking into consideration all this, and especially with the index of the moderated mediation being insignificant, I reject H4c**.**

Variable	*Coefficient*	*t*	*P-Value*	*LLCI*	*ULCI*
Constant	0.5773	0.5044	0.6144	-1.6756	2.8301
FK	0.3811	1.2223	0.2226	-0.2326	0.9948
Confidence	0.0129	0.0381	0.9696	-0.6515	0.6772
Int_1	-0.0170	-0.1866	0.8521	-0.1961	0.1621
*Int_1 = financial knowledge * confidence*					
Model Summary	Rsquare=9.66%; F=10.1230; p-value=0.0000				
Test of highest order unconditional interactions (Int_1): Rsquare-change=0.0001, F=0.0348, p-value=0.8521					
Indirect Effect					
Confidence	Effect	LLCI	ULCI		
2.6667	0.1412	0.0683	0.2278		
3.3333	0.1364	0.0787	0.2047		
4.0000	0.1316	0.0679	0.2089		
Index of Moderated Mediation					
Index	LLCI	ULCI			
-0.0071	-0.0686	0.0548			

Table 33 Hypothesis H4c Results

Source: Author's Preparation

Notes: LLCI is the abbreviation to lower limit confidence interval, and ULCI is the abbreviation to upper limit confidence interval. In PROCESS Macro, when LLCI and ULCI are of the same sign, then the relationship is significant. SPSS automatically searches and find key inflection points to check the indirect effects.

4.2.5. Summary of Results

This research possesses 10 hypotheses. I checked the 10 for significance through several statistical methods using SPSS and PROCESS Macro. I have succeeded in finding enough support for 5 hypotheses. The results are summarized in Table (34**).**

Through the meaningful results that I acquired; I am now able to finalize this research's significant model. I find that the relationship between financial knowledge and financial literacy is as follows:

- Mediated by cognition.
- Moderated by confidence.

Hypothesis	*Details*	*Test*	*Significant?*	*Result*
H1a	Financial education increases the Lebanese-Armenian high schoolers' financial knowledge.	Logistic Regression	No	
H1b	Financial education increases the Lebanese-Armenian high schoolers' financial literacy.	ANOVA	No	
H1c	Different contents of different financial education programs do not have a changing influence on financial knowledge.	ANOVA	Yes	The content of financial education programs does not matter
H1d	Different contents of different financial education programs do not have a changing influence on financial literacy.	ANOVA	No	
H2a	The more financial knowledge a Lebanese-Armenian high school student has, the more financially literate he/she is.	Simple Linear Regression	Yes	Financial knowledge increases students' financial literacy
H2b	The higher the cognitive abilities of a Lebanese-Armenian student, the higher his/her financial literacy rate is.	Simple Linear Regression	Yes	Cognition increases students' financial literacy
H3	The cognition of Lebanese-Armenian students mediates the relationship between their financial knowledge and financial literacy.	Mediation (Model 4)	Yes	Cognition mediates financial knowledge and financial literacy
H4a	Math anxiety moderates the relationship between the cognition of Lebanese-Armenian high school students and their financial literacy.	Moderated Mediation (Model 14)	No	
H4b	Confidence moderates the relationship between the financial knowledge of Lebanese-Armenian high school students and their financial literacy.	Moderated Mediation (Model 5)	Yes	Confidence moderates financial knowledge and financial literacy
H4c	Confidence moderates the relationship between the financial knowledge of Lebanese-Armenian high school students and their cognition.	Moderated Mediation (Model 7)	No	

Table 34 Hypothesis Testing Summary Results

Source: Author's Preparation

Figure (19) represents these findings, while Figure (20) shows the coefficients of the pertaining relationships. I have used Hayes's (2016) proposed PROCESS Macro Model 5's conceptual and statistical diagrams to be able to make things clearer.

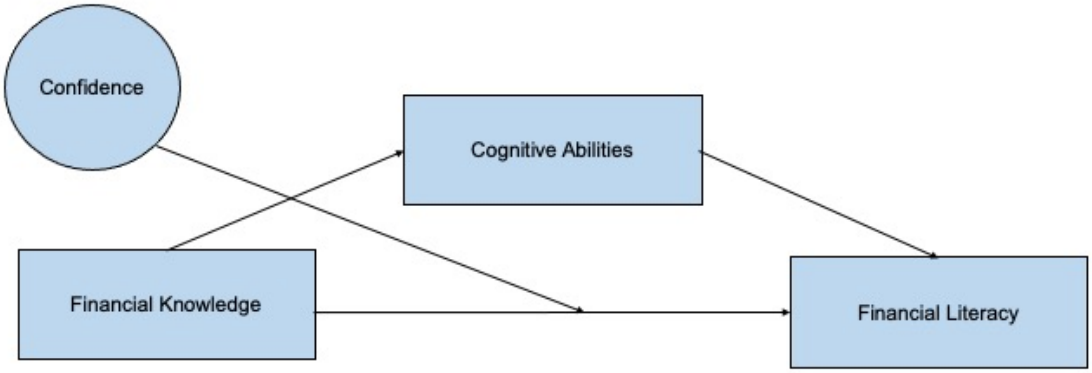

Figure 19 Final Conceptual Framework

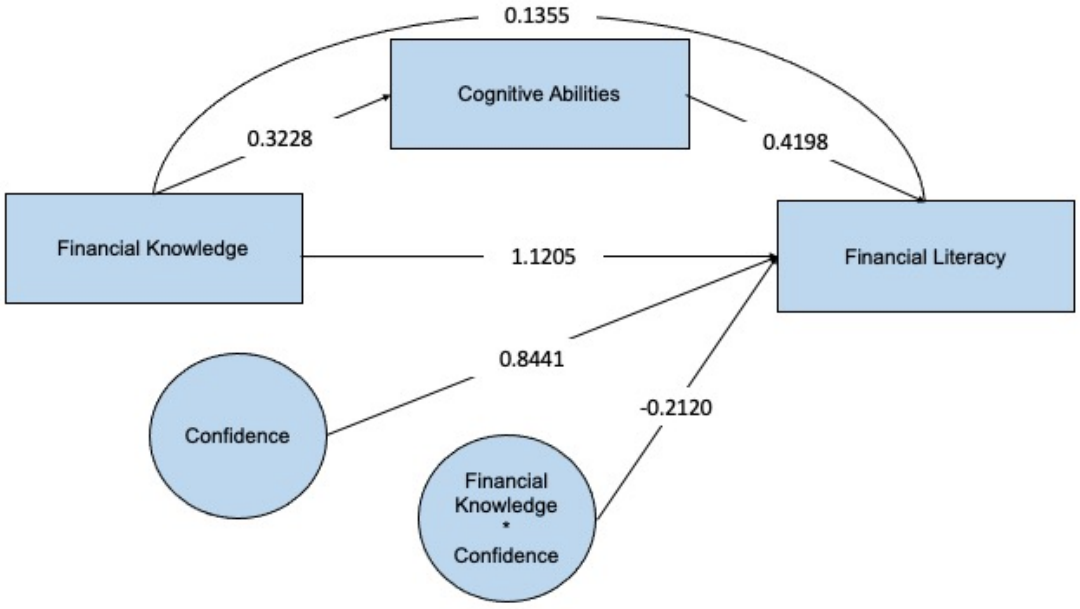

Figure 20 Final Statistical Framework

5. Discussion

5.1. Descriptive Findings

I start my discussion with a concentration on the descriptive results of this research resulted in. It is imperative to do the latter as it provides the researcher and the audience with a good outlook on the background of the research.

The demographics showed that 46.2% of the respondents are males, and 53.8% of the respondents are female. This near-equal distribution by gender is by the most recent numbers published by the Central Administration of Statistics, in which they found that 46.8% of Lebanese high school students are male and 53.2% are female (CAS, 2022). This is a good starting point for any research trying to capture a societal and a national trend. The statistical tests showed that males have better financial knowledge, financial literacy, cognition, confidence, and less math anxiety than women, even though there has been no statistical significance for the difference in financial literacy. This is in line with previous research works such as Atkinson and Messy (2012), Lusardi and Mitchell (2014), and Castaneda et al. (2022). Yet, compared to these works, I fail to find enough evidence to claim that female students are less financially literate than male students. This is good because it shows that there is no gender gap for the current young generation of Lebanese-Armenian society when it comes to financial literacy. Further research is required to check the reasons why female students have lower financial knowledge than male students, yet as mentioned in the literature, some researchers attribute this difference to the lower interest women show in understanding financial matters (Chen & Volpe, 2002). The lack of difference in financial literacy is another interesting topic that should be researched, even though I would like to suggest controlling their familial social status and checking their involvement in financial transactions.

The social descriptive results are many and quite interesting to discuss. First, 32.3% of students claimed to have handled a paying job, whereas the majority, forming 67.7%, have never worked. Analyzing this number can be done through several facets. Primarily, it is vital to remember that this research was conducted when the COVID-19 pandemic was still largely present in Lebanon and around the world. Many businesses were still

closed, many activities were legally forbidden, and most people avoided socializing with others. These have hindered the student's possibility of handling a job noting that it is in this age group that a typical Lebanese can handle a job legally. Another explanation could be the national reality in which 81.3% of those between the ages of 15 to 19 are out of the labor force in Lebanon (CAS, 2022). According to the official statistics, only 8.5% of individuals belonging to this age group are employed, whereas 10.2% are still searching for employment. These results show that teenage workers exist in Lebanon, yet it is not that common.

There are both positive and negative outcomes to this. The positive side lies in the importance education is given to this age group, which satisfies having a well-educated resident in the country. This also reduces the risk of working students getting increasingly motivated to raise funds instead of raising knowledge (Frisancho, 2020). Yet, the negativity could be the lack of any experiential knowledge gained in different domains while working. Second, a larger portion of students, 61.8%, have claimed that they discuss financial matters at home with their parents. This is an acceptable rate and one that raises the hopes of having people with better financial behaviors than now. That is because, previous research has found that financial socialization is of utmost importance in raising the youth's financial knowledge (Norvilitis & MacLean, 2010; Atkinson & Messy, 2012; Lusardi & Mitchell, 2014; Tang & Peter, 2015).

The existence of financial socialization in Lebanese-Armenian households might be due to the current financial hardships many are going through. The students are above the age of 15, which makes them individuals with a good understanding of their family's financial status. Liaqat et al. (2020) is a recent example of research that found a positive influence on financial socialization and financial behaviors of the youth. Third, only 33.3% of students claimed to have at least one of their parents holding a university degree, whereas two-thirds argued that neither of their parents has a university degree. This rate will surely increase tremendously soon with the increased number of people attending higher education institutions all around the world. A good explanation for this small number of university-graduate parents could be the 15-year-long civil war that

happened from 1975 to 1990 in Lebanon, followed by its years-long negative aftermaths which hindered most economic activity. Parental education, whether the level or domain, has been discussed in academia about financial literacy and found to be of considerable influence in having financially savvy children (Atkinson & Messy, 2012). Fourth, 32.6% of respondents claimed to receive a fixed allowance from their parents, whereas 67.4% claimed to have no fixed allowance. Like previous explanations, this low rate of allowance could be due to financial hardships lowering families' abilities to provide a fixed income to their teenage offspring. This could also be a cultural phenomenon where children do not get a fixed income from their parents. According to Brown, et al. (2018), students who received a periodical allowance have scored higher grades on financial literacy tests.

The independent samples t-test concerning the social characteristics of students also showed interesting results. Theoretical actions, such as financial socialization in the household and the parental level of education, were found to influence their financial knowledge and not financial literacy. Contrary to the experiential actions, such as holding a job and receiving an allowance were found to affect their financial literacy and not financial knowledge. Those who received a fixed allowance showed a lower financial literacy which led me to think about explanations. This might be worth researching, but from my perspective, it might be due to their lack of any correct financial management practices that their parents provide them with a fixed income knowing that they do not have control over their finances. Parents might have realized that if their more financially literate children ask for money, they will be doing it because they need it and know how to efficiently spend it. Whereas, providing a fixed allowance to those who do not know how to control their finances will limit their financial duties toward their children.

The descriptive results corresponding to the student’s previous enrolment in an economics or business-related course have shown that 30.9% of them have never taken such courses at school. Based on the results of independent t-tests, those who have taken such courses earlier have a better understanding of financial principles. This emphasizes the importance of providing any sort of financial education, no matter what the content.

This also raises important concerns about the preparedness of Lebanese-Armenian students for the future, during which they will have to deal with a lot of different economic incidences.

As to what concerns their last mathematics score, less than 10% have admitted to failing it, 59.72% have claimed to have received a grade between 10 to 15, and 28.13% have claimed to have received a grade above 15. These results are mostly overstated and inaccurate. OECD's Programme for International Student Assessment (PISA) showed that Lebanon's 15-year-olds have scored very poorly in all three subjects (reading, mathematics, and science) putting them at one of the lowest places on the list (OECD, 2023). The 2018 survey shows that the Lebanese students scored 353, 393, and 384 in reading, mathematics, and science respectively, compared to 487, 489, and 489 on average in OECD countries. Yet, it might also be worth mentioning that the same report found that the variation in student performance is the second highest in the researched countries. This could make average results inaccurate, and targeting defined segments of the population, such as the Armenian community, becomes worth checking more.

However, having found a strong correlation between their math scores and cognition, I challenge these findings, by arguing that the Lebanese-Armenian youth might be positively standing apart from the remaining Lebanese youth, as they have scored better than their counterparts. As I have mentioned about cognition here, I continue my further discussion about my findings on cognition. Unlike the mathematical skills, the students have a quite low score on cognition questions with the average being 1.6597/7 (std.dev.=1.68479). A third of the students, 31.6%, have scored a 0 on the cognition tests, showing their weak cognition and the need for ameliorating it further. Less than 5% of students got more than 6 answers correctly. These results are more in line with the international findings.

The research results also show that 14.9% of students are enrolled in technical schools, while 85.1% are enrolled in academic schools. This result is by the Lebanese reality with a maximum of 10% of high school students being registered to a technical school

(BlomInvest Bank, 2023). About the research variables, I failed to find any differences between students coming from diverse backgrounds in their financial knowledge and confidence. This is a good result because it shows how relatively equally the curriculums provide financial knowledge to high school students in Lebanon. Yet, academic students have higher scores in financial literacy and cognition. Even though the latter is alarming having worked in a Lebanese educational institution for years, I could say that this may be stemming from the reasons of the classification of students as technical and academic. The technical curriculum is prepared in a way to provide students with a simpler more practical approach towards education. Most students join technical studies when they finish their Grade 7 or Grade 9. It might be worth checking if there is a difference in the students' achievements in these grades to either reject or accept my proposed explanation. It is also noteworthy that the required passing grades of technical official exams are lower than the ones required by the academic cycle. Hence, allowing the more academically challenged students to pass their studies with success.

Nonetheless, academic students have shown that they exhibit higher math anxiety while dealing with numbers, which could be due to the higher importance given to theoretical subjects in its curriculum. This could also be due to the Dunning-Kruger effect which occurs when people lack the necessary knowledge and skills in a certain topic but overestimate their own competence (Dunning, 2011).

The results also show that within the technical cycle, most students are seniors (BT3). Whereas for the academic cycle, the distribution is more equal with 30% Grade 10 students, 23.2% Grade 11 students, and 31.9% Grade 12 students. Most students in Grade 12 are Life Sciences students, followed by Sociology and Economics students, General Sciences students, and only 1 Literature and Humanities student. When the total student population is checked based on age, one can see that Bt1/Grade 10 students form 34.5% of the total student body, BT2/Grade 11 students form 25.6% of the total student body, and BT3/Grade 12 students form 39.9% of the total student body. The ANOVA was run to check if there were differences among the 3 age groups of students who came positive concerning financial knowledge, financial literacy, and confidence at the 5% significance

level, and cognition at the 10% significance level. These differences are normal, as higher grades ought to provide students with more knowledge and a better understanding of key concepts, especially since the majority have taken a course on related matters.

In the sphere of descriptive outcomes, I would also like to discuss what this research unraveled concerning the 9 schools that took part in this study. Previous research works have argued that people's financial education processes are different from one cultural group to another (Yong, et al., 2018). Yet, even within the same culture, I have found differences based on different facets of culture, primarily religion, in all the 5 variables. This is quite interesting because it shows that even though these schools belong to a minority group in a country, there are significant differences among them. Unfortunately, I could not capture the school's social standard, whether it primarily serves the lower classes, middle classes, or upper classes, which I believe would have been a good addition to the exploration of these differences.

I have run a post-hoc analysis to check which school's religious orientation sets itself apart from the rest. The Evangelical schools were revealed to be preparing the students the most in managing their finances and empowering their cognition. Similarly, Catholic schools have been focused on empowering the student's psychology, even though they have scored the lowest in cognition. The two schools that do not follow any religious authority, AGBU Schools and Sahaguian-Levon Meguerditchian College, have also done an acceptable job in preparing their students overall. The weakest link remains the Orthodox school, United Armenian College, which has been found in recent years in place of several smaller community schools. The lower results do not necessarily have to be due to their religious belonging, especially since there is only 1 school that belongs to this group.

The results of financial knowledge questions show that more than half of the respondents have answered at least half of the questions correctly and that the probability of giving a wrong answer is not too high. Yet, the lack of knowledge, through the answers of "Don't Know" is quite high, ranging from 10.8% to 29.5%. This is in line with a universal trend

that exists in answering “Do Not Know” to financial literacy questions, primarily to the risk diversification question (Lusardi & Mitchell, 2014; DerMesrobian, 2023a). DerMesrobian (2023a) explains that this is a better result than having a higher number of wrong answers because this means that a respondent admits not knowing a certain principle, rather than assuming things that could lead to wrongful decisions. A recent study by Wilmarth et al. (2023) found that personality types and emotions are partially correlated with the propensity to answer “don’t know”. Not having asked for such questions, it wasn’t possible for me to check this correlation in this research.

Many students revealed their good understanding of compound interest with 75.3% answering it correctly. However, inflation is not that clear to the minds of students, noting that the country has been facing high inflation rates in the past couple of years. The three questions proposed by the author have revealed that a range between 60% to 68% of students know the answers, but also that a substantial portion of students do not know the answers. Compared to the Big 3 questions, these questions report higher rates of “don’t know” answers, which could be an advantage. That is because having several choices, a student might try his/her “luck” in getting a correct answer. In this way, they are inclined to say the true answer, whether they know it or not. These results show that there is a good understanding of a person’s standard of living with 68.4% of students understanding the concept of real income. This is most probably one of the few good outcomes of the financial crises, through which people were taught some economic concepts experientially (DerMesrobian, 2023a).

In addition, these results are quite intriguing because they show that not all students follow the novelties in the financial markets. A considerable number, 29.5% of students responded that not knowing what cryptocurrencies are shows this. Also, 24% of students did not know how to convert one currency to another, which is risky noting that Lebanese use the USD simultaneously with the national currency. It is also risky because the country imports most of its needs, hence dealing with foreign currencies is impartial. In total, the student's results in financial knowledge questions are hopeful, crossing 75%. The mechanisms that exist in Lebanon that provide students with this necessary

knowledge are working well, but there is always room for improvement, especially since there is 50% of students have low financial knowledge.

The results of financial literacy questions showed that there is an unequal distribution in the different subtopics of financial literacy. there is a high portion of respondents who answered, "Don't Know," within the range of a minimum of 11.1% and the maximum reaching 70.8%, which is quite a staggering rate. There are also only two questions to which at least half of the students answered correctly, Fl_1 and FL_4. 1.. This is an exceptionally low result which could be an early threat to their financial well-being in the future. The average rate of financial literacy, 3.0521/8 (std.dev.=2.18979) is also low. Based on the OECD's standard[12], only 16.3% of the students can be regarded as financially literate, a very low number, and one that needs to be amplified the soon as possible. Based on the research team's efforts at the OECD, roughly one in ten students aged 15 has the necessary financial literacy level across its member economies (OECD, 2019). Hence, the situation in Lebanon is even slightly better than OECD countries when we turn to the Armenian community. Even though these are also similar to the findings of previous research works in which the financial literacy rates of the younger generations are low (de Bassa Scheresberg, 2013; Lusardi & Mitchell, 2014; Garg & Singh, 2018), unlike many other countries that recognized this problem, the Lebanese government's actions are stalled due to the political situations. That is why the responsibility of increasing the youth's financial literacy should be held by the private sector.

As for the psychological traits, the students' confidence has been revealed to be moderately high, with the average being 3.3668/5 (Std.dev.=0.66859). A slight increase in their confidence might lead them to become overconfident, which according to previous research works, deteriorates any intention of making healthy financial behavior (OECD, 2019). The student's math anxiety has resulted in a weak position, with a mean average of 2.6179/5 (std.dev.=0.85042), which means that half of the time an ordinary

[12] OECD/INFE method of approaching financial literacy is based on either being financially literate or not, by having to respond at least 75% of the questions correctly.

Lebanese-Armenian student feels anxious while dealing with numbers. This number should be reduced to a minimum to avoid any interference by such factors in managing one's financials.

5.2. Hypothesis Testing

Hypothesis 1, in its 4 sub-hypotheses, discusses the role financial education plays in improving people's financial knowledge and financial literacy. I have failed to find enough support to claim that financial education increases the students' financial knowledge (H1a) and that financial education increases the students' financial literacy (H1b). Further exploration showed that this might be due to the differences in cognition of the respondents who filled out the survey before and after the training sessions. I also failed to find any relation to the content of the training on the students' accumulation of financial knowledge (H1c). Nonetheless, I found robust evidence of the significant difference in students' financial literacy based on the content of the training sessions (H1d). Investment discussions have a higher influence on the students' financial literacy than money management discussions.

The results of this research's Hypothesis 1 reaffirm the claims advanced by Willis (2008, 2011) on the latter's failure to be proven as an impactful intervention. However, based on the important rebuttals previous research works presented which I discussed in the literature review, I would not say that this research is proof that financial education should not be lobbied for in Lebanon. Such examples are the appearance of financial education's worthiness in the later life stages of students (Lusardi, 2019; Wagner, 2019) and the necessity of having many respondents (Kaiser & Menkhoff, 2020). This research also has special characteristics that did not allow financial education to be of much effect. One of the major reasons for this claim is the unique character the students showed in scoring higher than their peers on cognition. Another reason is the fact that I have conducted a one-time training during financially turbulent times, mostly following a theoretical approach as it is a lecture-based intervention. A third reason, which I find the most compelling, is the fact that students scored a high score in financial knowledge.

This means that the students already possess a good understanding of financial principles in general, hindering the effects of any additional intervention.

Hypothesis 2, with its 2 sub-hypotheses, discusses the relationship between financial knowledge and cognition with financial literacy. The findings showed that both have significant and positive relations with the latter. This puts this research in line with most of the prominent research works in this field of research such as Lusardi and Mitchell (2007; 2014), Huston (2010), Remund (2010), Knoll and Houts (2012), and Brown et al. (2018), who similarly found financial knowledge being a key and a core component of financial literacy. In addition, the significant result of cognition's direct and positive relation with financial literacy is similarly in line with previous discussions and findings such as Hung et al. (2009), Carpentier and Suret (2012), Cole et al. (2016), Skagerlund et al. (2018), and Lind et al. (2020) who found people's cognitive abilities in different forms such as numeracy, mathematical skills, and rationality, of influencing their financial literacy. These results show that two crucial factors primarily influence financial literacy. Such results may also reaffirm the adequacy of the two "Big Three" questions I used to check the students' financial knowledge as they require a certain proficiency with numeric (Huston, 2010; Lusardi & Mitchell, 2014; Cole, et al., 2016).

Hypothesis 3 checks the mediation of cognition on the relationship between financial knowledge and financial literacy. I deducted this role by finding the two variables, financial knowledge, and cognition, of having a strong influence on financial literacy in previous works. Also, Willis (2011) argued that some people with a basic knowledge of financial matters make better financial decisions than others who are assumingly more knowledgeable of financial matters. I found a highly significant relationship between these three variables, supporting the mediation analysis. This is represented in Figure (23) and shows that the indirect effect of financial knowledge on financial literacy through the mediation of cognition is 0.1357, a third of the direct effect. Previous research works have mostly used linear models to check such relations, and this work could be regarded as one of the very few, if not the first, that used mediation analysis to

understand the interrelation of these three variables. The significant results of H3 made its model the ground basis for finding a holistic model for financial literacy.

Hypothesis 4, with its 3 sub-hypotheses, discusses the role of psychological factors in moderating the relations of the three research variables: financial knowledge, cognition, and financial literacy this method of including psychological factors in understanding financial literacy's antecedents has been added to recent years to the remaining traditional factors which failed to explain holistically its changes (Skagerlund, et al., 2018; OECD, 2019). I failed to find enough support that math anxiety moderates the relationship between cognition and financial literacy and that confidence moderates the relationship between financial knowledge and cognition. Nevertheless, I find strong moderation that confidence causes in the relationship between financial knowledge and financial literacy. This finding argues that a certain level of confidence is important to use one's financial knowledge while making financial decisions, yet above-average confidence misleads a person to become overconfident which in turn hinders the effect of financial knowledge on their financial literacy. This relationship is of utmost importance because for years researchers have been trying to find a good explanation of psychological factors influencing people's financial literacy. This research is focused on a minority group and on the youth, which makes it even more valuable. The research works which discussed such matters are Skagerlund et al. (2018) and Yong et al. (2018), which show how little amount of knowledge there is in academia in relation to this matter.

6. Conclusion

6.1. Contributions & Implications

This research aims to answer the following question: What are the significant antecedents of the Lebanese-Armenian high-school students' financial literacy, and how are they connected? I succeeded in finding enough information and support to answer this question which is one that to the best of my knowledge has not yet been visited by other researchers.

This research work opens a new discussion in the field of personal finance, more specifically in the spheres of financial literacy and financial education. Regardless of its geographic size and economic misfortunes, Lebanon is an interesting place to research as it is unique and nothing like its Middle Eastern neighboring countries (El Kalat, et al., 2019; Merhi, et al., 2019). Lebanon's uniqueness is also because it includes tens of minority groups with each group keeping its own traditions and values.

This research work adds to the existing body of knowledge by providing new evidence on the antecedents, a new model, and the demographic factors influencing the Lebanese-Armenian community's students. First, the financial literacy rate of Lebanese-Armenian students is quantified and results show that there's still much to be done to increase it. This segmentation of a minority group in a developing country that is facing multiscale crises is a unique contribution to academic literature. Though as previously claimed financial literacy has not been discussed much in Lebanon and to the best of my knowledge never with a focus on the Lebanese-Armenian minority, I will present the findings of the US. Most research works found that the black and Hispanic minorities exhibit lower financial literacy rates which inhibits their financial inclusion in the financial markets (Olsen & Whitman, 2012; Angrisani, et al., 2020). However, Olsen and Whitman (2011) argue that academic discussion with a sole concentration on this segment is rare. Not only that, but some research works, such as Lusardi and Mitchell (2011) have in relation preferred keeping the minority groups out of their research scope as they might have a different character toward financial literacy.

Second, this research unraveled that the influences on financial knowledge and financial literacy are not the same. While theoretical interventions such as parental socialization might increase their financial knowledge, practical experiences increase their financial literacy. This research work also provides a methodological contribution to the topic of financial literacy by constructing a highly significant framework. This framework showed that financial knowledge, cognition, and confidence are the main antecedents to financial literacy. This framework also adds to the literature the idea of using complex relationships in explaining the role of each factor in financial literacy. Instead of having a simple direct effect, finding a mediating and a moderating role in factors could make more sense as many of the variables interact in more than one method.

Regardless of failing to find any influence of financial education on the student's financial knowledge, I would like to ask policymakers to not use this finding as a support for their unwillingness to provide financial education. It is important to note that this research is focused on 288 students of a minority in Lebanon. Further studies with larger samples are required to support such claims. I would also like to note that many compelling arguments are refuting the unnecessity of financial education. Schools provide students with different sorts of knowledge, and students may end up not comprehending one or more subjects effectively. Similarly, financial education might result in good changes in a few students' lives, an outcome that is more than acceptable. Moreover, as mentioned in the literature, as long as financial education does not cause negative effects, the found results are within the acceptable range in the short term (Kaiser & Menkhoff, 2021).

In addition, policymakers should focus on providing high school students with the necessary updates in the financial markets. The results showed that a respectable number of students had never heard about the different companies offering cryptocurrencies. This is of vital importance because advancements in the financial markets happen without stopping. If students are left behind, they will face big challenges in recovering their lack of knowledge.

Moreover, the low level of financial literacy the students showed is not sufficient for their participation in the financial markets. Policymakers should shift their attention towards empowering the youth because of these results and for the reasons I have already explained repeatedly in previous parts. Providing financial education might not be enough, and tackling other social, demographic, and psychological factors may come in handy. If Lebanon one day decides to formulate a National Strategy for Financial Education, this should be taken in much consideration. The Lebanese youth most probably do not have a weak financial knowledge, but a weak cognition.

Furthermore, on a macroeconomic scale, policymakers should work on increasing the youth's willingness and ability to work with financial institutions. Even though this research work did not target this much, financial inclusion being one of the primary outcomes of financial literacy, the latter is recommended. Financial inclusion is also one of the sustainable development goals, which means its necessity is global (Chibba, 2009).

6.2. Limitations

This research work, just like any other work, is not free of limitations. These may have affected the quality of the study findings, hence the importance of unraveling them. There are two particularly important constraints that I faced while conducting it. The first was the financial constraint. My discussion of financial constraints is about the ability to provide the participating schools and students with financial incentives, which I would have preferred to provide them with high hopes of making the interventions more likable**.** Financial support could have also helped me to prepare better training sessions on a larger scale. I admit that it would have been better to make this nationwide research through which cross-regional comparisons would have been possible. Yet, as this is a PhD dissertation research work, it would not have been feasible to apply for grants or ask for financial support from third parties. The second constraint was time. The schools were anxious to finish the school year with the highest number of topics covered in the Lebanese official curriculum which decreased their possibility of granting me more time to engage with students. In addition to the time constraint, the timing of my research was

also challenging taking into consideration the socio-economic issues. Further limitations are explained in the bullet points below.

- The aim of this research is to find a model explaining the relationships between the antecedents of financial literacy. Therefore, the study by design is limited to finding a model rather than exploring all the possible antecedents to financial literacy.
- This research did not take into consideration many of the socio-demographic factors of students, which might reveal interesting results. This was due to the necessity of keeping the number of questions adequate and small.
- Since this research focuses on the school students who attend the Lebanese-Armenian schools in the Greater Beirut area, it may not be representative of all the Lebanese-Armenian students living in Lebanon, whether attending non-Armenian schools or to the Lebanese-Armenian schools in the other parts of Lebanon.
- The willingness to have a high response rate by distributing the questionnaires right after the training sessions to most students may have affected the quality of data provided and the overall integrity of students. First, there might have been peer pressure, having students sitting next to each other. Second, the concepts were fresh in the minds of the students which disallowed me to check the retention rates. Third, the time constraint might have forced students to do their best in a limited time.
- The questionnaire was long, having taken an average of 25 minutes to complete it. This might have led students to get bored with answering questions. However, I have tried to keep the number of questions as small as possible which might have decreased the reliability of the scales.
- The design of the questionnaire might have influenced the students' ability to answer questions in a better way, as I observed them spending a lot of time figuring out the cognition questions.
- I have conducted just 1 intervention for each group of students. This prevented me from checking the role the extent of financial education programs has on the students' accumulation of financial knowledge.
- The research has been conducted during a financial crisis which might have reduced the students' willingness to learn more about financial investments.

- The instruments and scales used might not be adequate for the target group of this study. Based on previous works, the choice of statistical instruments might play a significant role in turning an insignificant variable into a significant one. This is important because the available scales are mostly focused on developed countries.

6.3. Recommendations for Future Research

Recommending future research topics to researchers becomes quite simple when a clear list of limitations to a study is admitted by the author. Similarly, having a clear understanding of practical recommendations is also worth mentioning.

The bullet points below present the recommendations for future research I deducted from this research.

- Extend this research to other minority groups in Lebanon, such as the Alawites, Syriac, and Protestants, and have a cross-segment approach to check if the situation is the same with all different minority groups.
- Run a nationwide assessment of financial literacy in Lebanon with a focus on school students, check its antecedents, and provide a framework to increase financial literacy.
- Conduct qualitative research or mixed quantitative-qualitative research to find a bigger pool of factors influencing financial literacy with a focus on Lebanon and its school students.
- Assess if a policy tending to the provision of financial education in Lebanese schools through integrating it into the Lebanese curriculum is viable. Similarly, check if the government's planning should be awaited or if private endeavors in educational settings are enough on their own to make a change.
- Check the role financial literacy plays in the school students' adulthood through running a longitudinal research.
- Target a group of students, provide them with the necessary financial tools over time, and check if there is a learning curve or influence on their future financial behaviors.

- Conduct similar research in other more stable times without the possible effect of an increased amount of peer discussions on financial matters.

The bullet points below present the practical recommendations I deducted from this research.

- Target Lebanese-Armenian students' financial knowledge and cognition together while aiming for financial literacy by taking into consideration the empowerment of their confidence.
- Prepare financial education materials based on the needs of the students by following a backward design instead of following a general trend in the world.
- Find instruments and scales that have been used and tested for adequacy in the Lebanese context by using different measurements of the same variable.
- Regardless of the main outcome of financial education being financial knowledge, include financial behaviors and attitudes in on topic research works.
- Keep in mind that Lebanese-Armenian students do not empower their financial literacy only through financial knowledge and especially not specifically through financial education.

6.4. Concluding Statements

The empirical research on Lebanese-Armenian high school students showed that financial knowledge, cognition, and confidence are the most important influencing factors on their financial literacy. There should be a collaboration between all those who believe in making our future generations better prepared for the future. Schools should not wait for a governmental mandate to be enacted, rather they should take this matter into their own hands. It is good to see that some local and international organizations, such as YMCA, Aflatoun, and INJAZ, have already begun doing this.

This research confirms that there is still a lot to be done in the field of financial education in Lebanon, especially focusing on the youth. The results of this research could lead to policy drafting, whether on governmental or institutional levels. Now that some of the

antecedents to financial literacy are clear, educational institutions should focus on empowering their students' cognitive abilities the most, having found that their financial knowledge level is acceptable. As mentioned in the discussion, regardless of the efficiency of financial education, it should be an integral part of curriculums. That is because students must learn different skills at school which prepare them for the future. It is always better to prepare someone for something and end up not using it, than not having any clue what to do when a certain phenomenon occurs.

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Appendix A: Incomplete Surveys and Outliers

Cause	*Observations*	*Total Number*
Incomplete Survey	11, 118, 120, 122, 124, 125, 161, 168, 208, 287, 290, 291, 296,	14
Outlier	83	1

Appendix B: Research Conducting Request Email

Dear Director,

My name is Robert DerMesrobian, a PhD candidate at the University of Pecs in Hungary. I'm writing to you to ask for your cooperation on completing the necessary field work for my doctoral research.

My aim is to assess, empower and understand the financial literacy of the Lebanese high school students. Being a Lebanese of Armenian descent myself and having been part of Lebanese-Armenian school's teaching faculty for six consecutive years, I'm focusing my research on my community's schools.

My plan is to provide financial literacy education sessions to high school students (Grades 10, 11, 12 and BT students), followed by a survey which includes questions on numeracy, anxiety, confidence, financial knowledge, and financial literacy. The necessary training for my research will last for around 40 minutes and the estimated time for completing the survey is 20 minutes. Though, financial literacy education is a lifelong learning process. I could provide more than just one session to the same group of students if you believe that would benefit them more.

My training material and survey are both ready and I can conduct them at any time you see fit within the months of January and February. I am intending to target as many students as possible by forming groups of 30 students per session.

I would like to thank you for your time and hope to cooperate with you on this matter.

Best regards,

Robert M.K. DerMesrobian, PhD Candidate

Note: these emails were sent to the emails of the 14 directors or principals of the Lebanese-Armenian community.

Appendix C: Survey

Lebanese High School Students Assessment of Financial Literacy

Dear student, this survey is prepared and run for the purpose of collecting the necessary data for my doctoral research on Lebanese high school students' financial literacy rate. You'll be asked questions testing your mathematical and statistical abilities, knowledge of financial principles and several behaviors concerning your anxiousness, confidence, and financials. By signing on this page, you agree on providing answers to the questions to the best of your knowledge and in full honesty. You also agree on the use of your provided data for this research or any other research with the approval of the researcher. In addition, you agree on being contacted after 10 years for a re-evaluation of your financial literacy.

Please note that your answers shall remain anonymous.

Thank you for your cooperation.

Robert Mesrob K. DerMesrobian, PhD Candidate

Please sign in the following box

Prior starting the survey, please complete the following table

Gender			Male		Female		Have taken a course in economics, commerce, or business before		Yes		No
Currently working or have worked before a paid job (either part-time or full-time)			Yes		No		Get a fixed monthly allowance from my parents		Yes		No
I discuss about financials with my parents			Yes		No		Mobile Phone Number				
At least one of my parents has attended university			Yes		No		Email				
How would you rate your own mathematical skills from 0 to 20 based on your school scores for the last couple of years									/20		
Grade/Class	10	11-S	11-H	12-LH	12-SE	12-GS	12-LS	BT1	BT2	BT3	Other (please mention)

University of Pecs
Faculty of Business & Economics
International PhD Programme of Business Administration

Please note that any liability which may rise due to this survey, the researcher is to be solely held responsible with none being convened to University of Pecs

Please answer the questions below. Do not use a calculator but feel free to use the space available for notes.

Questions	Answers
A bat and a ball cost 1.10$. The bat costs 1$ more than the ball. How much does the ball cost?	
If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?	
In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?	

Read and solve the following four questions with choosing the best answer. Please note that only one answer is correct

Imagine we are throwing a five-sided die 50 times. On average, out of these 50 throws how many times would this five-sided die show an odd number (1, 3 or 5)	
a. 5 out of 50 throws	b. 25 out of 50 throws
c. 30 out of 50 throws	d. None of the mentioned
Out of 1,000 people in a small town 500 are members of a choir. Out of these 500 members in the choir 100 are men. Out of the 500 inhabitants that are not in the choir 300 are men. What is the probability that a randomly drawn man is a member of the choir? Please indicate the probability in percent	
a. 10%	b. 25%
c. 40%	d. None of the mentioned
Imagine we are throwing a loaded die (6 sides). The probability that the die shows a 6 is twice as high as the probability of each of the other numbers. On average, out of these 70 throws, about how many times would the die show the number 6?	
a. 20 out of 70 throws	b. 23 out of 70 throws
c. 35 out of 70 throws	d. None of the mentioned
In a forest 20% of mushrooms are red, 50% brown and 30% white. A red mushroom is poisonous with a probability of 20%. A mushroom that is not red is poisonous with a probability of 5%. What is the probability that a poisonous mushroom in the forest is red?	
a. 4%	b. 20%
c. 50%	d. None of the mentioned

Please give each sentence a score in terms of how anxious you would feel during each situation. Note that there are no right or wrong answers. Use the scale at the right side and circle the number which you think best describes how you feel.

	Low Anxiety	Some Anxiety	Moderate Anxiety	Quite a bit of Anxiety	High Anxiety
Having to complete a worksheet by yourself	1	2	3	4	5
Thinking about a maths test the day before you take it.	1	2	3	4	5
Watching the teacher work out a maths problem on the board.	1	2	3	4	5
Taking a maths test.	1	2	3	4	5
Being given maths homework with lots of difficult questions that you have to hand in the next day.	1	2	3	4	5
Listening to the teacher talk for a long time in maths.	1	2	3	4	5
Listening to another child in your class explain a maths problem.	1	2	3	4	5
Finding out you are going to have a surprise maths quiz when you start your maths lesson.	1	2	3	4	5

Starting a new topic in maths	1	2	3	4	5

Please give each sentence a score in terms of how often you feel to be in one of the following stances. Note that there are no wrong or right answers. Use the scale at the right side and circle the number which you think best describes how you behave.

	Very Rarely	Rarely	Sometimes	Often	Very Often
Am sure of my ground	1	2	3	4	5
Feel threatened easily	1	2	3	4	5
Think highly of myself	1	2	3	4	5
Know immediately what to do	1	2	3	4	5
Am easily intimidated	1	2	3	4	5
Have a low opinion of myself	1	2	3	4	5

Answer to the below questions. If you don't know the answer, please select "Do Not Know".

Suppose you had 100$ in a savings account and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account if you left this money to grow?	More than 102$	Exactly 102$	Less than 102$	Do not know
Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?	More than today	Exactly the same	Less than today	Do not know
Suppose that by the year 2025 your income has doubled, and prices of all goods have doubled too. In 2025, how much will you be able to buy with your 2025 income?	More than today	Exactly the same	Less than today	Do not know
If the EUR/USD exchange rate is 1.2, then 100 Euros will be equivalent to how many US Dollars?				
How many years would it take a 1000$ investment to double if the interest rate is 10%				
What are the likes of Bitcoin, Ethereum, Solana, Binance Coin, and Dogecoin called?				

Answer to the following questions by circling "True", "False", or "Do Not Know" If you don't know the answer.

Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund"	True	False	Do not know
In general, investments that are riskier tend to provide higher returns over time than investments with less risk	True	False	Do not know
Balance sheet is a statement of costs and revenues for a given period	True	False	Do not know
The debit card works just like a credit card	True	False	Do not know
Bank accounts may only be owned by an adult	True	False	Do not know
Overdraft is the amount that an account holder can debit at a given bank	True	False	Do not know
Budget is a financial plan containing a statement of income and expenditure	True	False	Do not know

Read the following scenarios and answer to the questions to the best of your ability.

	To do • Get cable TV

Claire and her friends are renting a house.
They have all been working for two months.
They do not have any savings.
They are paid monthly and have just received their pay checks.
They have made this "To Do" list.

- Pay the rent
- Buy outdoor furniture

Which of the tasks on the list are likely to need immediate attention from Claire and her friends? Circle "Yes" or "No" for each task

Task	Is the task likely to need immediate attention
Get cable TV	Yes / No
Pay the rent	Yes / No
Buy outdoor furniture	Yes / No

Natasha works in a restaurant 3 evenings each week. She works for 4 hours each evening and she earns 10$ per hour. Natasha also earns 80$ each week in tips. Natasha saves exactly half of the total amount of money she earns each week. If she wants to save 600$ for a vacation, how many weeks will it take her to save the necessary amount? _____ weeks

Mrs. Jones has a loan of 8,000$ with First Finance. The annual interest rate on the loan is 15%. Her repayments each month are 150$. After one year, Mrs. Jones still owes 7,400$. Another finance company called Best Finance will give Mrs. Jones a loan of 10,000$ with an annual interest rate of 13%. Her repayments each month would also be 150$. What is one possible negative financial consequence for Mrs Jones if she agrees to the Best Finance loan?

You can buy tomatoes from the market for 2.75$ per Kg or for 22$ per box of 10kgs.

1. Tom believes that the box of tomatoes is better value for the money than the per kg tomatoes. Give a reason to support this argument.

2. Buying a box of tomatoes may be a bad financial decision for some people. Explain why.

Each month, Jane's salary is paid into her bank account. This is her pay stub for July 2021

Employee Pay Stub: Jane Green

Duration: July 1, 2021 to July 31, 2021
Position: manager
Gross salary: 3,000$
Tax (10%): 300$
Net Salary: 2,700$
Gross salary to date this year: 19,600$

How much money did Jane's employer pay into her bank account on July 21?

a. 300$	b. 2,700$	c. 3,000$	d. 19,600$

The graph on the right shows the prices of one Rich Rock share over a 12 month period in a fictional country called ZedLand

Which statements about the graph are true?

Statement	Is the statement true or false?
The best month to buy the shares was September	True / False
The share price increased by about 50% over the year	True / False

Last year, Steve's motorcycle was insured with the Pinsura Insurance Company. The insurance policy covered damage to the motorcycle from accidents and theft of the motorcycle. Steve plans to renew his insurance with the Pinsura this year, but a number of

factors in Steve's life have changed since last year. How is each of the factors in the table likely to affect the cost of Steve's motorcycles insurance this year? Circle "Increases cost", "Reduces cost", or "Has no effect on cost" for each factor

Factor	How is the factor likely to affect the cost of Steve's insurance?
Steve replaced his old motorcycle with a more powerful one	Increases cost / Reduces cost / Has no effect on cost
Steve has painted his motorcycle a different color	Increases cost / Reduces cost / Has no effect on cost
Steve was responsible for two road accidents last year	Increases cost / Reduces cost / Has no effect on cost

Thank you for your cooperation

Appendix D: Training Sessions PPT Slides

Sources of Funds
Personal Savings

Why should people save?

Emergencies

Retirement

Investments

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Sources of Funds
Personal Savings

What's The Main Concern Of People When Saving?

Safety & Security

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Sources of Funds
Personal Savings

What Do We Mean By Safety & Security?

Theft

Inflation

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Sources of Funds
Personal Savings

How Can People Secure & Benefit From Their Savings?

Banks

Interest

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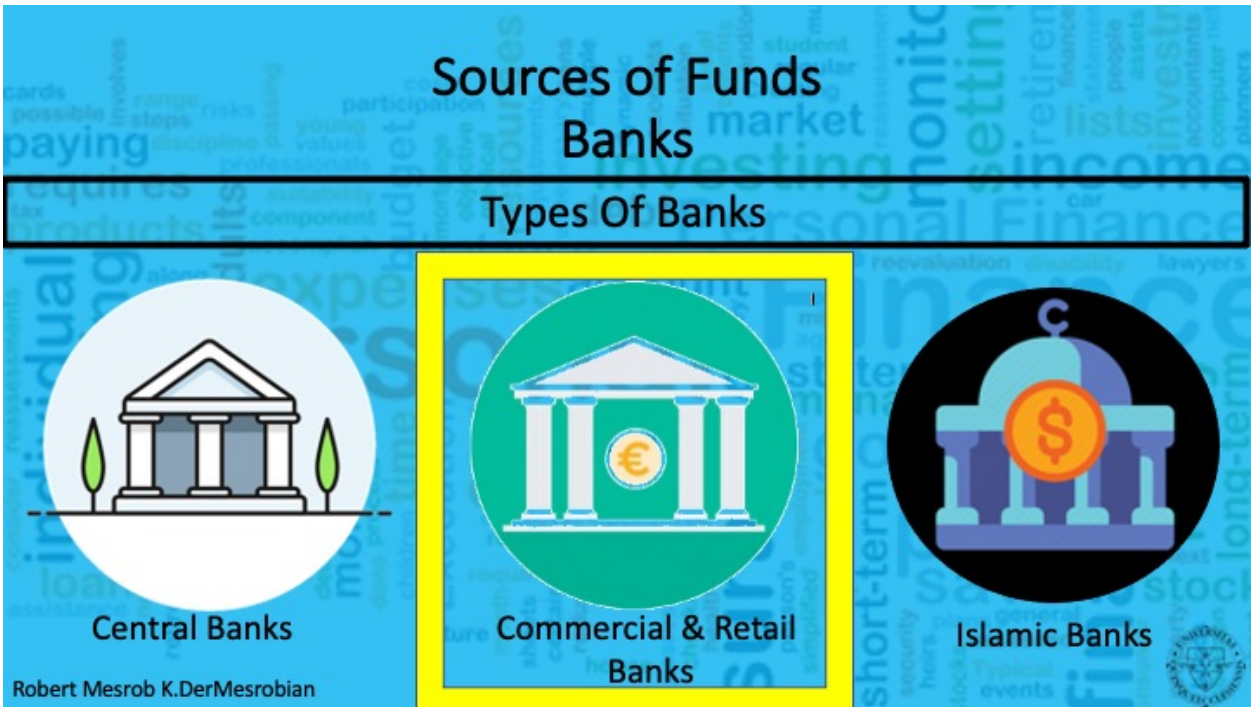
Sources of Funds
Banks
Types Of Banks
Central Banks
Commercial & Retail Banks
Islamic Banks
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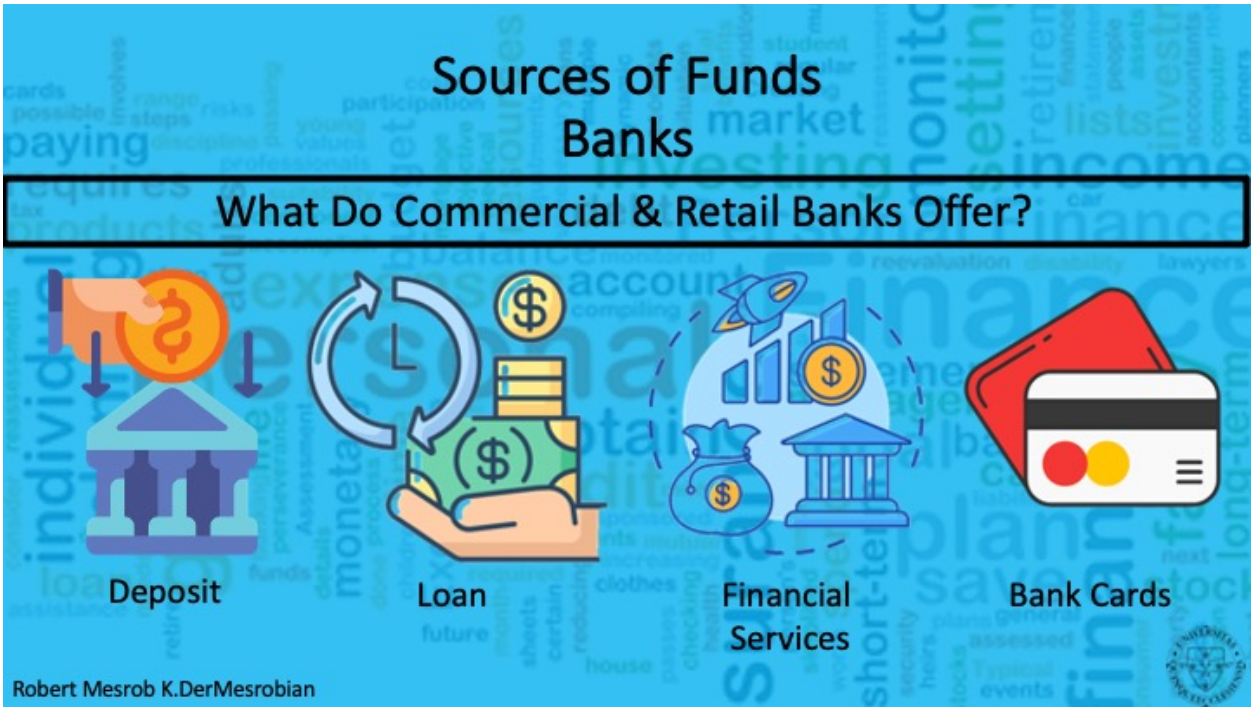
Sources of Funds
Banks
What Do Commercial & Retail Banks Offer?
Deposit
Loan
Financial Services
Bank Cards
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Sources of Funds
Banks

The Clients Of A Bank

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Sources of Funds
Banks

How To Choose A Bank?

Location | Dates/Hours | Fees | Overdraft Charges | Interest

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Sources of Funds
Banks

Talking About Interest

Simple Interest

If Mark deposits 100$ in his savings account with an interest rate of 10%, he'll have 110$ in his account after a year

Compound Interest

If Mark decides to keep the money in his bank account for the same interest rate of 10%, he'll get an interest on the total amount of 110$ instead of 100$

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Sources of Funds
Banks

What Are The Different Types Of Bank Cards?

Debit Card

Other Payment Methods

Credit Card

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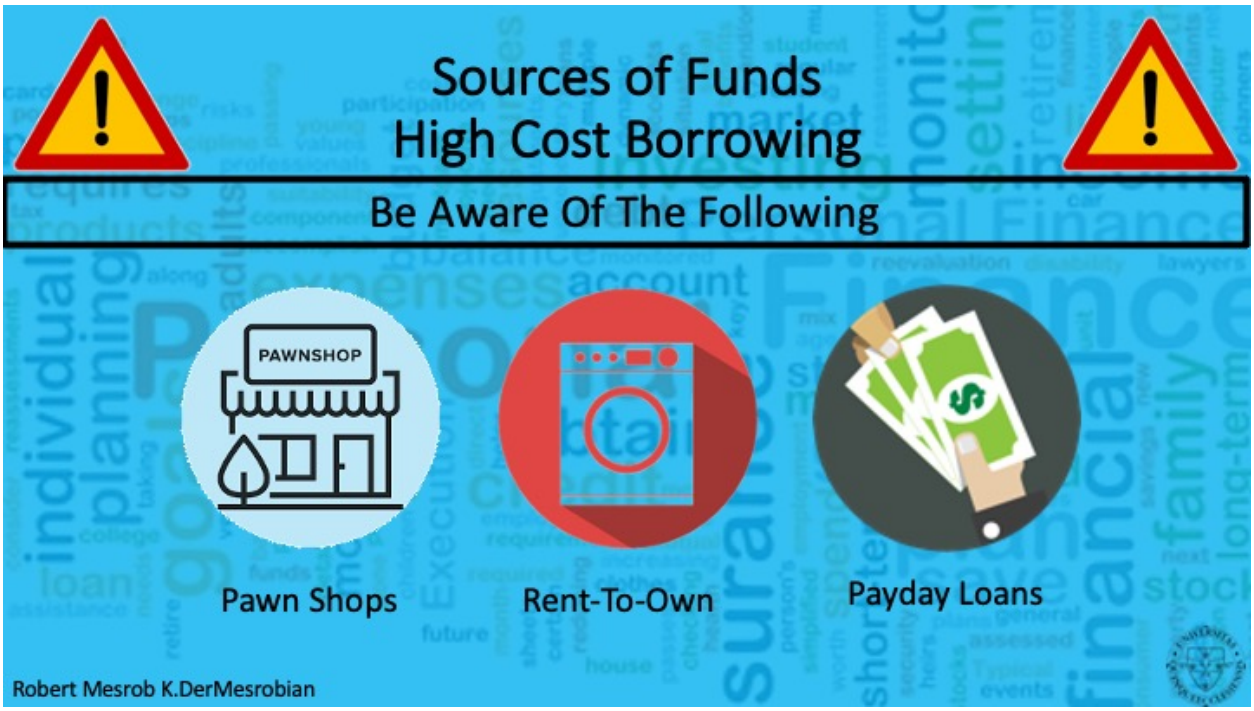

Investments

University of Pecs
Faculty of Business & Economics
International PhD Programme of Business Administration

Personal Finance & Investments

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Who Wants To Be A Millionaire?

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What Are You Currnetly Doing To Realize It?
??
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Towards Amassing Wealth
Step 1: Make Money
Rent
Income Sources
Business
Inheritance
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Towards Amassing Wealth
Step 2: Save

Did you know?

onth from the age of 25 to
te, you'll have 1,000,000$
in nk account

How at possible?

The key in nterest compounding
pose you de 00$ in your bank account
e end of year 1, you'll have
the interest 10$. So a total of
110$. If you keep it for a second year, you'll get
interest on the new initial sum of 110$, meaning
11% of interestin year 2 instead of 10$ in year 1

Savings

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Towards Amassing Wealth
Step 3: Invest

Shares

Currencies

Bonds

Commodities

Cryptocurrencies

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Things To Be Aware Of In Investments
Interest Rates
Inflation Rates
Risk Diversification
Market Trends
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Investments Rules of Thumbs
Rule of 72
Dividing 72 by the interest rate gives the period in years necessary for the investment to double
Risk & Return
The higher the risk, the higher the return should be
10% Rule
Invest a minimum of 10% of your income in financial markets
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Be Cautious In Investments About …

Greed

Risk Tolerance

Patience

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Thank you !

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