

**REPUBLIC OF TURKEY  
YILDIZ TECHNICAL UNIVERSITY  
GRADUATE SCHOOL OF SOCIAL SCIENCES  
DEPARTMENT OF ECONOMICS  
MASTER OF ARTS PROGRAMME IN ECONOMICS**

**MASTER'S THESIS**

**DETERMINING FINANCIAL LITERACY LEVEL OF  
UNIVERSITY STUDENTS: THE CASE OF YILDIZ TECHNICAL  
UNIVERSITY**

**TUĞBA DEMİR  
15729025**

**THESIS SUPERVISOR  
Dr. TOLGA AKSOY**

**İSTANBUL  
2019**

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## **ABSTRACT**

### **DETERMINING FINANCIAL LITERACY LEVEL OF UNIVERSITY STUDENTS: THE CASE OF YILDIZ TECHNICAL UNIVERSITY**

**Tuğba Demir**

**October, 2019**

Nowadays, rapid developing technology increases the variety of financial instruments. Therefore, individuals need to have more information before they make a decision. The increase in the financial knowledge level of individuals provides them more savings and gives them the ability to make more solid decisions. Thus, individuals affect not only themselves but the society as well by increasing the level of their own financial literacy. Behaviours of university students on this manner attracts more curiosity considering the fact that their effect on the near future is relatively higher than the other individuals of the society. To that end, we aim to evaluate financial literacy level of university students using 400 undergraduate students as samples from 10 different faculties. According to the results of the survey, the level of financial literacy of male is observed to be higher than that of females.

***Key Words:*** *Financial Literacy, Financial Behavior, Yildiz Technical University*

## ÖZ

### ÜNİVERSİTE ÖĞRENCİLERİNİN FİNANSAL OKURYAZARLIK SEVİYESİ: YILDIZ TEKNİK ÜNİVERSİTESİ ÖRNEĞİ

**Tuğba Demir**

**Ekim, 2019**

Özellikle günümüzde teknolojinin daha hızlı ilerlemesi finansal araç çeşitliliğini artırmaktadır. Bu sebeple bireyler karar vermeden önce daha fazla bilgiye sahip olma ihtiyacı duymaktadır. Bireylerin finansal sisteme ait bilgi seviyelerinin artması tasarruflarını artırmakta ve onlara finansal risklere karşı daha bilinçli kararlar alabilme yeteneği sağlamaktadır. Bu sayede finansal okuryazarlık seviyesinin yükselmesiyle bireyler sadece kendilerini değil, toplumu da etkilemektedirler. Toplumun diğer bireyelerine göre yakın geleceğe olan etkileri daha yüksek olduğundan, üniversite öğrencilerinin bu konudaki davranışları daha çok merak uyandırmaktadır. Bu çalışma 10 farklı fakülteden 400 lisans öğrencisinin örneklem olarak kullanılması ile hazırlanmış ve bu öğrencilerin finansal okuryazarlık seviyesi ölçülmeye çalışılmıştır. Yapılan anket sonuçlarına göre, erkeklerin finansal okuryazarlık seviyesinin kadınlara göre daha yüksek olduğu gözlenmiştir.

**Anahtar Kelimeler:** *Finansal Okuryazarlık, Finansal Davranış, Yıldız Teknik Üniversitesi.*

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## **LIST OF ABBREVIATIONS**

<b>CBRT</b>	: Central Bank of Turkey
<b>CMB</b>	: Capital Markets Board of Turkey
<b>EU</b>	: European Commission
<b>FODER</b>	: Financial Literacy and Inclusion Association
<b>NCSL</b>	: National Council of State Legislatures
<b>OECD</b>	: Organization for Economic Co-operation and Development
<b>PACFL</b>	: President’s Advisory Council on Financial Literacy
<b>RTPMO</b>	: Republic of Turkey Prime Ministry Office
<b>SPSS</b>	: Statistical Package for the Social Sciences
<b>US</b>	: United States
<b>WB</b>	: World Bank

## **1. INTRODUCTION**

Nowadays, technological innovations have rapid improvement and interest in financial products and services is increasing. In addition, different consumption habits increase diversity of financial products and services. In particular, due to the increasing diversity following the 2008 global economic crisis, a complex structure emerged in the financial system, which requires financial literacy.

Individual's ability of taking suitable financial decision in this environment is affected by the level of financial literacy. Financial literacy provides financial knowledge and the ability of using this financial information. In the use of this information, financial behavior occurs.

Hall (2008) suggests that financial literacy is thought to be the ability of people to manage their money. With this ability, savings and borrowings can be calculated and compared in a controlled way. Hall explains the basic financial concepts in financial terms such as risk and returns.

The study is specifically about financial literacy level of financial behaviors, which have attracted attention with the rapid development of financial markets. The aim of study is to determine level of financial literacy for all age groups among university students. For this purpose, a small survey was conducted at basic level.

The remainder of the thesis is organized as follows. In the second chapter we explain the definition and conceptual infrastructure of financial literacy. In this regard, we discuss the importance and purpose of financial literacy, financial education as well as financial behaviors. We also review the related literature. In the third chapter, we present the survey. After explaining the aim, method, and the model, we analyze the results of the hypotheses. In chapter four, we discuss the main results. Chapter five concludes.

## **2. FINANCIAL LITERACY**

### **2.1. Definition of Financial Literacy**

Financial literacy has many definitions since it has no worldwide definite limits. Some of these definitions are;

Identifying something shows what features it has. The fact that individuals have the financial knowledge and show this information in a way shows financial literacy levels. Financial literacy includes characteristics such as knowing, learning, analyzing, interpreting and making choice. Comparing individuals using information while making a choice leads them to more effective financial behaviors. Giving a preference and doing comparisons by using their information leads people to more effective financial behaviors.

Tomaskova et al (2011) argues that the need of financial literacy allows citizens to secure themselves financially. They explain that these assurances will be formed by the combination of knowledge, skills and attitudes. Financial literacy provides individuals success in money and price issues. With this success, individuals can effectively manage their responsibilities regarding their budgets, including financial assets and financial liabilities.

According to Gerek and Kurt (2011), financial literacy enables people to understand the world, which they live in, more easily. Thus, individuals become more conscious and understand the objectives of applied economic policies.

According to OECD (2011), financial literacy is “a combination of financial awareness, knowledge, skills, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing”.

PACFL (2008) defines financial literacy as, “the ability to use knowledge and skills to manage one’s financial resources effectively for lifetime financial security.”

According to Basu (2008), financial literacy is the choice of understanding and planning financial decisions. When an individual manages his or her financial situation, it is necessary to calculate unemployment and retirement periods. Individuals are expected to consider these conditions when creating their savings. Financial education is important for financial literacy. Effective use of financial information forms financial decisions. In addition, we can say that the level of financial literacy should be increased in order to use financial information effectively. The fact that individuals make effective financial decisions for their financial situation is the result of this process.

NCSL (2018), Financial literacy has many meanings which includes learning how to prepare and use the family budget, creating and making an expense plan for the retirement period, buying or renting a home. It also includes preparing plans for families with low income levels. Financial literacy is directly related to the welfare of the individual. However, individuals affect the well-being of the society they live in.

Lusardi (2008), examines financial literacy under two headings depending on certain criteria. Individuals' risk concept and being able to understand the variety of risk, having knowledge on the inflation and being able to perceive the effects of inflation, understanding the interest rates and interpreting the calculation of basic interest rates are examined as basic financial literacy. The subjects such as equity and futures markets, simple and compound interest calculations are examined as advanced literacy.

## **2.2. Importance of Financial Literacy**

Financial literacy is getting more and more attention. Increased interest in financial literacy has led individuals to become involved in the financial system. The desire of individuals to increase their level of welfare increased the severity of financial literacy. The need for financial decisions in daily life led individuals to increase their financial literacy levels. Especially the fact that financial decisions have more serious consequences nowadays has made it important to increase the level of financial literacy.

A low level of financial literacy brings unsuitable financial decisions. Moreover, the financial decisions of individuals affect not only themselves but the economy of the country they live in.

Not only developing countries but also developed countries suffer from the lack of financial knowledge. According to an article at The Economist (2008) titled "Getting it right on the money", the majority of the homeowners with mortgages in the US, had no information about whether their payments would have increased when the interest rates had increased, after the 2008 Global Economic Crisis.

Financial literacy levels of individuals can have effects on financial decisions in their daily life, such as expensing, savings, investment and borrowing. Low financial literacy can lead to excessive borrowing and this is one of the main reasons why they cannot manage their income-expense analysis effectively.

The high level of financial literacy of the individuals allows them to figure out financial system better. Thus, this will minimize the financial risks due to lack of knowledge of financial system's structure.

Individuals want to live comfortably by increasing their welfare levels. However, they also need to raise their level of financial literacy. Especially in Turkey today some financials decisions like personal pension system are left to them. Individuals can now manage their pension funds by themselves and change the instruments they want to utilize according to their perception of risk levels. This shows that as the level of knowledge about the economy increases, place and importance of individuals in the economic system increases. With the increase in the level of knowledge of individuals, the equipment they possess enables them to choose the investment type that suits them in which investment type they will use for their savings. In the long run, these decisions help both the management of their assets effectively and provide stability to the financial system.

### **2.3. Aims of Financial Literacy**

Financial literacy leads individuals to have more savings by giving them the ability of making an income-expense analysis properly. Thus, individuals make more savings and more solid investment decisions by using their knowledge. It is the degree of being able to choose the right financial instruments. The financial information is what provides the ability to make the right financial decisions in managing the financial situation and the ability to show positive attitudes and behaviors in the implementation of these decisions.



Financial literacy requires having financial knowledge and skills. The main objective of financial literacy is to give the ability to individuals to manage their savings in the most appropriate way by recognizing their financial risks. Individuals with financial literacy may choose financial products and services by comparing them. Moreover, the need for financial knowledge of individuals with financial literacy will make institutions more transparent. The more transparent the institutions are, the more efficient the market is.

Financial literacy can also help individuals to make plans for their retirement days. These pension plans can increase the savings and it leads to making a budget. Budgeting and management are among the objectives of financial literacy. If financial literacy level is not enough, individuals can make incorrect financial decisions and they cannot control their spending and borrowing levels appropriately. Thus, individuals' being able to manage their own funds in private pension system makes them increase their financial literacy level.

Level of financial literacy affects the financial decisions. The low level of financial literacy negatively affects retirement planning, stock exchange and borrowing behavior. Various studies are carried out to increase savings and financial security. According to some results, it was not clear that prepared financial literacy programs were effective in retirement planning and savings Lusardi (2008).

#### **2.4. Effects of Financial Literacy**

Facilitating access to financial markets in recent years directs individuals to financial products and services. They need to raise the level of financial literacy, in order to make a decision on financial markets. Individuals who increase their financial literacy will want to increase their welfare by using financial products and services.

While financial literacy levels of individuals increase their welfare levels in their lives, they also benefit from the efficient and productive working of financial markets. Thus, it affects the financial system of the society.

Especially, the financial decisions which young individuals make by using their financial literacy will affect near future. These reasons increase the importance of giving young individuals a proper financial education.

#### **2.4.1. The Effect of Financial Literacy on Individual Welfare**

Individuals benefit from financial products and services for various requests and needs. In order to use financial products and services effectively, financial literacy level should be increased. Financial literacy helps individuals to solve their financial problems and prevents the financial problems of individuals.

Increased savings due to increasing savings tendencies of individuals contribute to both investors and national economy in financial markets. Individuals can use the appropriate financial instruments and will be able to make right decisions and provide stability with their knowledge level. This stability affects the economy of country positively.

Nowadays, increasing life expectancy promotes high life standards compared to past generations. It also promotes rapid development of the financial system. With this effect, people lead themselves to financial system to fulfill their demands and needs.

The fact that financial literacy directs individuals to make budgets, increase the propensity to save and make investment provides an increase in the welfare levels of individuals.

Thus, individuals can manage their money by understanding their financial instruments' possible risks and benefits. It also allows them to pay attention to borrowings and expenditures. Comparing individuals' knowledge about financial products and services enables them to focus on more suitable financial products and services.

Financial decisions are made to make the financial management of individuals effective by using financial knowledge. The results of financial decisions affect the living standards of individuals. The decisions of individuals with financial literacy have more features than those who do not have financial literacy. These include, for instance, effective budgeting, and managing investment decisions and borrowing levels correctly.

### **2.4.2. The Impact of Financial Literacy on Social Welfare**

Financial products and services preferred by individuals with high level of financial literacy are generally more suitable for them. The high level of financial literacy means that individuals can understand the financial system and protect themselves against financial risks. Therefore, the effectiveness of the preferences of individuals in the long term will ensure the effective functioning of the financial market.

Increasing financial literacy levels of individuals will increase their desire to have more information about the financial system. Increasing information of the financial system will provide transparency to financial system. Thus, financial decisions of individuals will be realized in a more reliable environment. This will increase the confidence in financial system in the long term and expand the volume of financial system.

Development of financial market prepares a suitable investment environment for future investors. Increase in the amount of investment plays a significant role in growth and development of the country. Financial literacy has a large share in increasing welfare of economies due to increasing propensity of saving and level of borrowing.

According to an article at The Economist (2008) titled "Getting it right on the money", after the 2008 Global Economic Crisis, it was concluded that individuals were not aware of the financial risks and did not manage financial risks due to their low financial literacy. According to the surveys, it was seen that individuals cannot figure out that interest rate and the total debt they will pay will increase unless they pay their debts.

Increased levels of financial literacy will cause more information to be requested by financial institutions. Increase in financial information will prepare an open, competitive and supervised market environment. The openness of financial system will also be effective in reducing legal problems and complaints. In this way, efficiency of financial system will increase. Moreover, individuals with high levels of financial literacy choose the right and effective financial products and services that will reduce the problems that will be reflected in the economic system such as bankruptcy.

## **2.5. Financial Education**

OECD (2005:4) defines financial education as “the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being.”

### **2.5.1. Importance of Financial Education**

Financial literacy means the ability to use financial knowledge and skills. Financial information is provided by financial education.

Increasing level of financial literacy is an effective way for individuals to make appropriate financial decisions. These financial decisions are possible through financial education.

The level of financial education needs to be increased for financial literacy level of individuals and society. Developing technology and diversification of financial products and services have led to innovations in the financial system. Financial education is needed to use the innovations in the financial system.

Eskici (2014) suggests that, there is a direct relationship between financial literacy and financial education. Only financial education can lead to financial literacy. In the literature, financial education is considered as a process that results in financial literacy.

In Turkey and worldwide, the finance sector is known less and is used less compared to other sectors. However, the increase in interest in the financial sector in recent years has increased the development of the financial system. The lack of knowledge of financial products and services increases the need for financial education.

The acceleration of developments in the financial system increases the responsibilities of individuals. Correct and effective decisions can be made by evaluating the risks posed by these responsibilities. For instance, formerly pension and insurance issues were decided

by the state. Today, the private pension system has been made compulsory. Individuals manage their pension funds according to their own decisions.

Financial education enables individuals to control their expenditures by making a budget. Controlled expenditure will increase savings, which builds the other part of the income.

OECD (2005) suggests that with the development of financial markets and the increase in the responsibilities and risks of individuals, the importance of financial decisions has increased. In particular, the need to increase the level of financial education in pension savings has arisen. The increase in financial education levels of individuals enables the protection of investors and consumers. It also means that financial markets operate smoothly for individuals. In addition to the smooth functioning of the financial markets, the economy works without any problems.

### **2.5.2. Aims of Financial Education**

Definition of financial education is “to increase awareness and competence of financial products, concepts and risks by informing financial consumers and investors” (RTPMO, 2004:1).

With the increasing diversity of financial products and services, access to financial information has become important. Accordingly, financial education is needed. Financial education aims to allow individuals to analyze the various options in financial products and services and to take steps to achieve their goals.

Financial education and financial literacy have a strong correlation. Financial literacy levels increase as individuals' financial education levels increase. Individuals with high levels of financial literacy perform more controlled financial behaviors such as consumption, savings, investment and borrowing.

Financial education reduces the individuals' doubts to financial system, and they get more involved in the financial system. Thanks to financial training, having information about financial products and services will allow them to make the right decisions. These decisions will increase propensity to save over time. In the long term, these savings will use investment instruments included in financial system.

Depending on the development level of the financial system, the responsibilities of the decisions made by the individuals will increase. Financial education is needed to analyze the risks posed by responsibilities. Financial education enables individuals to understand and analyze the risks.

Xu and Zia (2012), argues that financial education aims to introduce financial products to consumers and to increase the level of knowledge. An increase in the level of knowledge is expected to increase the propensity to save. Increasing the level of financial knowledge also improves planning skills in individuals. In developed countries, various activities such as preparation for retirement, the importance of savings and financial literacy for young people are organized. Where access to the financial system is low, it is aimed to encourage issues such as savings accounts and insurance.

One of the biggest obstacles for the economic development of the developing country is the low level of savings. Increasing the amount of capital required for economic development is possible by increasing the level of savings and converting these savings into investments. With developing countries as well as it needs investment to increase the levels of welfare in developed countries.

Individuals with low level of financial education worry about their involvement in the financial system. Individuals with financial education can also protect themselves against financial fraud. At the same time, individuals with high financial education level will use the right financial instrument and use their savings more effectively.

According to Sekita (2011), financial literacy is closely related to education in Japan. Individuals whose education levels are higher perform better at financial literacy surveys.

CMB does various activities to raise the level of financial literacy in Turkey. The primary purpose of the capital market is to ensure that individuals' savings are not kept idle and that they are more actively involved in bringing them into the economy. Thus, various studies have been made to inform individuals. CMB's statistical studies, reports and publications published on their website inform the public. Moreover, financial market knowledge of individuals is improved through seminars and conferences. Their website has been prepared for this purpose. This site contains basic information about capital and financial markets, investment instruments, issues to be considered while investing, and

information required by investors. The site also supports video and virtual investment training.

According to Ergün (2018), the EU has prepared several publications since 2007. In 2007, financial literacy survey was conducted. In 2015, the Consumer Classroom for Teachers site was established. In 2009, it established a database for financial literacy, an electronic library with financial education strategies. The Dolceta Project which was launched as an online module was prepared for 27 countries. The aim of the project is to increase financial education. She conducted studies for young people aged 14-19 years for financial education initiative. Through the program that provides service over the Internet, students manage their virtual portfolio for ten weeks. Every year 250.000 students benefit from this program.

Financial literacy for the development of civil society organizations was established in 2012 in Turkey. FODER started operations immediately after its establishment. The organization approved by OECD. FODER addresses many people in society such as young people, students and female.

Financial literacy can be defined as the ability of developing financial products and services while properly managing the risks. This ability is realized with financial information. Financial education is required to be financially literate.

When we look at the Figure 1, we need a basic level of financial literacy in order to choose the most appropriate one in financial decisions. Financial training is required for financial literacy at this point. Financial trainings will provide individuals information to choose the financial products and services that are appropriate for them.



**Figure 1: Financial Education Diagramed**

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Source: Willis, Lauren E. 2008. Evidence and Ideology in Assessing the Effectiveness of Financial Literacy Education. Page:3

## **2.6. Financial Behavior**

The level of financial literacy acquired through financial education process brings new characteristics to individuals. Financial behaviors of individuals occur as a result of financial literacy process. To summarize, financial education is necessary for the basis of financial literacy, while financial literacy is measured by financial behaviors.

### **2.6.1. Importance of Financial Behavior**

Individuals need financial education to increase diversity of the financial system. Individuals can make financial choices with their knowledge after financial education. In order to choose financial products and services, individuals need to know, learn, analyze and interpret financial information.

Hilgert et al (2003), argues that when a comparison is made between individuals with a low and high level of financial knowledge, financial behaviors such as paying their bills on time and paying attention to expenditures are positively affected by the high level of financial knowledge.

### **2.6.2. Aim of Financial Behavior**

Financial behaviors of individuals with financial literacy level were evaluated about financial system and these individuals managed their savings appropriately.



### **2.6.2.1. Expense and Saving Behavior**

Disposable income consists of expenditures and savings. Therefore, it can be considered as revenue management. Controlled expenditures will increase the amount of savings.

Expenditures are needed to maintain life cycle. Although it is a part of income used by the individuals for their needs, products and services that are outside their needs can sometimes be purchased. Therefore, income management is required. Revenue management first requires income-expense analysis. An income-expense analysis is possible by budgeting. As previously mentioned, budgeting is one of the steps necessary for financial literacy.

Henager and Mauldin (2015) point out that the increase in financial information is related to saving behavior and regular savings decision. Also, Lusardi and Mitchell (2011) finds that individuals with basic literacy make better savings.

Individuals may want to increase their savings over time. For this reason, they need to analyze the budget correctly and use their preferences efficiently. In addition to the increase in saving dispositions, investment management affects many decisions, such as being conscious of financial fraud attempts and decisions made in the use of loans and funds.

In the study of CBRT (2015), domestic savings are said to be the source of high and sustainable growth. Inadequate domestic savings lead to external resources in funding the investments required for growth. Such an environment means an increase in the country's dependence on foreign countries.

In the report of the Ministry of Development of Turkey and WB (2011) for Turkey, the reason for low savings rate is said to be the lack of effective implementation of a national financial literacy plan. Improvement of financial literacy across the country has been stated to have a significant impact on individuals' savings decisions.

### **2.6.2.2. Investment Behavior**

Individuals want to utilize savings that are not wasted as part of disposable income over time. For this, they include their savings in financial system. The economy of a country in which savings are utilized in financial system is affected positively in the long term.

It is important that investment is preferred after having knowledge of financial products and services. Knowing and analyzing variables when converting savings into investment is necessary to prevent any subsequent losses.

The choice of investment options after comparison in terms of risk and return is possible only when individuals have enough knowledge of risk and return. Individuals need to know the basic arguments to make their selection by comparing the risks and returns. Analyzing the economic structure and making preferences will increase the rate of return of individuals investment.

### **2.6.2.3. Borrowing Behavior**

The Economist's article titled "Getting it right on the money" of 2008, addresses a survey conducted after the mortgage crisis, in which the financial literacy level of the majority of individuals was found to be low. It was observed that individuals did not know the interest rates and did not know that their debts would increase if they could not pay their debts.

Another important issue which individuals will be analyzed as financial behavior is borrowing. Individuals will need to borrow if they do not do income-expense analysis. Financial literacy gives individuals the ability to analyze.

According to Lusardi (2013), it was observed that financial literacy had an impact on borrowing behavior. From another perspective, for example, borrowing is important in terms of how revenue is managed. It is possible for the individual to spend more than his / her income through borrowing. In this case, the result is that the individual does not know or manage the level of his / her income. If the borrowing is high, it will lead to a decrease in future revenue. At the same time means that no income-expense analysis means that individuals do uncontrollably consumption. It is understood that the budget preparation step, which is one of the necessary conditions for financial literacy, has not been made.

In a study by Huston (2012), the effect of financial literacy on credit card and mortgage lending rates in the USA was examined. Results demonstrate that financial literate individuals had lower borrowing costs.

## **2.7. Review of Literature**

### **2.7.1. Review of Financial Literacy Level Other Countries**

Chen and Volpe (1998) applied financial literacy surveys to university students. The study examined how financial information levels affect financial decisions. The study showed that students' personal financial information was not enough. It is also observed that students, who do not have a sufficient level of knowledge, tend to take wrong decisions while making financial decisions. The study also showed that female's financial literacy was low compared to male.

Beal and Delpachitra (2003) analyzed Australian university students. The study showed that level of financial literacy was not high. They are suggesting that financial education in these schools was insufficient. They also concluded that the financial literacy level of the students with a high level of income and work experience is higher than the other students.

Sabri and Macdonald (2010) examined the relationship between university students' saving behaviors and financial literacy in Malaysia. It shows that savings are positively associated with financial knowledge.

Japelli and Padula (2011) examined the relationship between financial literacy and national savings and wealth accumulation in 39 countries by comparative analysis. The study found positive and significant relationship among the variables. Thus, it is possible to say that there is a relationship between the level of national savings and financial literacy.

Ansong and Gyensare (2012) analyzed in Ghana. The study examined the relationship between specific demographic variables and financial literacy. According to the study, it is revealed that the students who have more experience at work and the students who are relatively older have higher financial literacy levels. On the other hand, it has been pointed out that the education level of the mothers of the students has an effect on the financial literacy level of the students and that parents should give importance to financial education.

Krizek and Hradil (2012) studied financial literacy of university students in Czech Republic. In the study, the rate of correct answers was 56%. The study showed that credit card usage was correlated to correct answering.

Beckman (2013) applied a study on the relationship between financial literacy and the savings of participants in Romania. It was observed that individuals who have low level education performed worst on financial literacy related questions. As seen in the literature, the financial literacy level of the female participants was lower than the male participants. In addition, individuals who could be considered financial literate were more likely to invest in pension funds. Similar studies have been conducted with the results of the importance of financial education. Cameron et al. (2014) studied high school students in New Zealand. The financial literacy level of the students who are in good financial conditions is low. Also, the level of mathematics and grammar was found to be correlated with financial literacy. The study stated that financial education should be provided for the young population in order to lead them to the right financial decisions in society. Another study on financial literacy and financial education belongs to Dorjana and Shkelqim (2016). They worked in eight universities in Albania. In the studies it was seen that students, who have taken a finance course at the university, had higher financial information than those who did not take courses on these subjects. Similarly, Rasoaisi and Kalebe (2015) studied students at the National University of Lesotho. The study observed that the students who are studying economics and business administration have a high level of financial literacy compared to those who are not studying in this field. Golemac and Zrinka (2015) studied economics with only economics students. This study did on first year economics students of the University of Dubrovnik in Croatia. In the study, it

was observed that the students who had previously taken economics courses had higher financial information levels. The study concluded that financial education would contribute to the development of financial information.

### **2.7.2. Review of Financial Literacy Level of Turkey**

Ergün et al (2014) carried out a study at the Department of Business Studies of Osmaniye Korkut Ata University. In the study, it was examined whether demographic characteristics affect financial literacy levels. In the literature, it was observed that the level of financial literacy changed according to gender. Male students had higher financial literacy levels than female students. In the study, half of the questions about interest, inflation and stock exchange were answered correctly. It was seen that there was no relationship between the levels of financial literacy of individuals and the education level of their parents. In addition, the study, which was conducted with the students of the department of business, did not show any relationship between the level of class and the level of financial literacy. For instance, Kılıç et al. (2015) worked on the studies conducted with students from different faculties at Gaziantep University. According to the study, financial literacy levels of university students were found to be low. In general, it was seen that university students have a low level of financial literacy. In the study, students were more successful in the field of retail banking and the most unsuccessful area was in the field of investment. Another result supported by the literature is that male students have higher financial literacy levels than female students. Another result that supports the literature was the financial literacy level among faculties. According to this result, the Faculty of Economics and Administrative Sciences was the most successful faculty. Thus, the importance of financial education for financial literacy was understood. The most failed faculty was found to be architecture. The fact that financial literacy is part of daily life increases the level of financial literacy. For example, in the study, it was seen that the students who use credit card and internet banking have higher financial literacy levels.

Bayram (2015) carried out a study on students from the Faculty of Economics and Administrative Sciences from Anadolu University and on students from Porsuk Vocational High School. According to the results of the study, it was seen that the financial literacy level of the students of the Faculty of Economics and Administrative Sciences,

who received financial education, is higher than the students of Porsuk Vocational High School. It is concluded that there is a relationship between financial education and financial literacy. According to Mevsim (2015), when financial literacy levels were analyzed based on gender, male's financial literacy levels were higher. Moreover, financial literacy levels of the students taking a finance course were found to be related according to the study. It was concluded that financial education should be given importance. Another issue is that students who use credit cards have higher levels of financial literacy. The financial literacy of students who use internet banking was found to be high, as well. There is a positive relationship between financial education and financial decisions. Alkaya and Yağlı (2015) conducted a study at the Faculty of Economics and Administrative Sciences of Nevşehir Hacı Bektaş Veli University. The survey consisted of questions about financial information, financial attitude and financial behavior of the students. According to the results of the survey, there is a positive and significant relationship between financial attitudes and financial behavior, but on the other hand the students' financial literacy levels were found to be low.

Cihangir and Ergin (2015) examined the demographic characteristics and financial literacy levels of the population living in Osmaniye. The study was conducted with the survey used by OECD. Results of Turkey were compared with the results of OECD. OECD survey has also been implemented in different countries to measure financial literacy at a basic level. According to the study, most of the participants are informed about interest rate. In the study, it was seen that the participants had more accurate answers about simple division. Participants also correctly answered more than half of the questions on simple interest calculation, inflation information and compound interest calculations. The rate of correct answers on risk and return was half-half. According to the results of the research, individuals have low level knowledge about financial products and financial markets. The level of knowledge of other financial products is low, except for highly recognized financial products such as gold, foreign exchange and time deposits. Individuals also considered the risk issue as financial loss and did not recognize the issue of financial gain. From this perspective, we can say that there is a lack of financial decision making and managing investments. On the other hand, it is concluded that financial

literacy levels are affected differently according to the education level of individuals and occupational groups.

Öztürk and Demir (2015) studied financial literacy levels of academic workers at Süleyman Demirel University. According to the study, the vast majority of academicians were taught management of money by their families. On the other hand, one half of the participants did not make budget and financial plans. Another result is that there is no relation between financial literacy and income level.

Sezici and Çelikkol (2016) conducted a study examining the relationship between financial literacy and entrepreneurial intention. The study was carried out in Dumlupınar University, with the students of Faculty of Economics and Administrative Sciences, School of Applied Sciences, and the Faculty of Arts and Engineering Faculty. According to the study, there is a positive relationship between entrepreneurship attitude of social support and entrepreneurial tendency of financial literacy.

### **3. FINANCIAL LITERACY: YILDIZ TECHNICAL UNIVERSITY**

#### **3.1. Methodology**

##### **3.1.1. Subject and Purpose of the Study**

The subject of the study is to examine the financial literacy levels of university students and how they are affected by demographic characteristics. For this purpose, a survey is applied to the students. In the first part, a survey with basic questions about the economy is applied. In the next section of the survey, there are questions about the demographic characteristics of individuals.

##### **3.1.2. Aim of the Study**

Nowadays, because of the rapid development of technology and the increase in the variety of financial products and services, the financial system attracts attention. The intensified sophistication of the financial system due to these reasons increased the importance of having financial knowledge and skills.

In this study, we aim to determine the financial literacy level of undergraduate students of Yildiz Technical University and to determine whether there is a significant relationship between financial literacy level and demographic characteristics.

##### **3.1.3. Importance of the Study**

The rapid developments in financial markets have increased the variety of financial products and services. Lack of knowledge in financial products and services may cause not to use these products and services. Financial literacy is important for every age group. This age group with university students who use or begin to use financial markets is more important. The financial products and services use in this period will not only affect the individual benefits but also the country's economy. It is crucial for university students to



use financial products and services consciously in the period that they start to make their own decisions.

#### **3.1.4. Model and Hypothesis of the Study**

An analysis of the relationship between demographic characteristics and financial literacy levels of undergraduate students at Yildiz Technical University is conducted. The following hypotheses are alternative hypotheses. In the study, significance level is accepted as 0.05 for p-value.

H<sub>1</sub>: There is a significant difference between students' gender and financial literacy levels.

H<sub>2</sub>: There is a significant difference between the faculty groups of the students studying.

H<sub>3</sub>: There is a significant difference between the grade groups of the students studying.

H<sub>4</sub>: There is a significant difference between the age groups of the students studying.

H<sub>5</sub>: There is a significant difference between the success score groups of the students studying.

H<sub>6</sub>: There is a significant difference between the students' credit card usage and their financial literacy levels.

H<sub>7</sub>: There is a significant difference between the students' use of internet banking and their financial literacy levels.

H<sub>8</sub>: There is a significant difference between the students' level of participation in the private pension system and their financial literacy levels.

H<sub>9</sub>: There is a significant difference between the educational level groups of the mothers of the students studying.

H<sub>10</sub>: There is a significant difference between the education level groups of the fathers of the students studying.

### **3.1.5. Universe and Sample of the Study**

The research population consists of students who continue their education at Yildiz Technical University Beşiktaş and Davutpaşa campus. The survey is conducted between 04.01.2019-04.08.2019. The necessary permissions are obtained for the survey. A total of 400 students from 10 faculties are included in the sample using random sampling method.

### **3.1.6. Constructing the Data Set**

Financial literacy survey in the literature was used to measure the financial literacy levels of university students. The survey is previously used by Kılıç et al (2015) in Gaziantep University. The use the survey is approved by Yunus Kılıç.

The survey is collected with "Right", "Wrong" and "No Idea" options in the first five sections. In the sixth part, there are elective questions. Demographic questions are in the last section. The first six chapters of the seven-part survey include questions aiming to measure the level of financial literacy. In the last part of the survey, there is a section on the demographic characteristics of the students and their participation in the financial system. The expressions in the sections of the survey; the first part aims to measure the levels of financial literacy in subjects such as basic economics, the second part banking, the third part insurance, the fourth part investment, the fifth part legislation and tax and the sixth chapter on mathematics and interest. Moreover, some of the questions in the survey were analyzed separately to measure current finance knowledge.

### **3.1.7. Limitations of the Study**

The results of the study are limited to the sample. In addition, it is accepted that the answers are correct since the survey is based on a voluntary basis. The study may change over time. The study is prepared for the determination of the situation.

### **3.1.8. Analysis Method Used in the Study**

SPSS Statistics 25 program is used for the survey analysis. Since the data is not normally distributed and non-parametric, non-parametric equivalent of the one-way ANOVA test is performed using the Kruskal Wallis H test. According to Gegez (2010), Kruskal-Wallis H test makes comparisons of data obtained from three or more groups (independent

sample groups). On the other hand, the Mann Whitney U test was used for non-parametric t-test because the data were not normally distributed and non-parametric. Also, according to Kalaycı (2008) Mann Whitney U test is a method which is evaluated as a non-parametric alternative of t-tests in the test of differences between two independent groups which are measured continuously. In Kruskal Wallis H test and Mann Whitney U test applications, the significance level of 0.05 was taken as the basis for analyzing and interpreting the data. If we look at basically;

According to www.ibm.com, "A logical expression returns 1 if the expression is true, 0 if it is false" is the preferred method for SPSS. The study is conducted in this way and the results of the analysis are obtained.

➤ Mann-Whitney U test

The distribution of the Mann-Whitney statistic, U, approaches the normal distribution quite rapidly as the number of sample observations increases. The approximation is adequate if each sample contains at least 10 observations. Thus, we consider here only samples with  $n_1 \geq 10$  and  $n_2 \geq 10$ . To test the null hypothesis that the central locations of the two population distributions are the same, we assume that, apart from any possible differences in central location, the two population distributions are identical.

$$U_1 = n_1 * n_2 + \frac{n_1(n_1 + 1)}{2} - R_1$$

$$U_2 = n_1 * n_2 + \frac{n_2(n_2 + 1)}{2} - R_2$$

R= Sum of the ranks of the observations from the population

and the z test statistic is calculated as follows:

$$\mu_u = \frac{n_1 * n_2}{2}, \sigma_u^2 = \frac{n_1 * n_2 (n_1 + n_2 + 1)}{12} \quad z = \frac{U - \mu_u}{\sigma_u}$$

A test of significance level  $\alpha$  is given by the decision rule reject  $H_0$  if  $\frac{U - \mu_u}{\sigma_u} < -z_\alpha$

➤ Kruskal Wallis H test

Suppose that we have independent random samples of  $n_1, n_2, \dots, n_K$  observations from  $K$  populations. Let

$$n = n_1 + n_2 + \dots + n_K$$

denote the total number of sample observations. Denote by  $R_1, R_2, \dots, R_K$  the sums of ranks for the  $K$  samples when the sample observations are pooled together and ranked in ascending order. The test of the null hypothesis,  $H_0$ , of equality of the population means is based on the statistic

$$W = \frac{12}{n(n+1)} \sum \frac{R_i^2}{n_i} - 3(n+1)$$

A test of significance level  $\alpha$  is given by the decision rule reject  $H_0$  if  $W > \chi_{k-1, \alpha}^2$

where  $\chi_{k-1, \alpha}^2$  is the number that is exceeded with probability  $\alpha$  by a  $\chi^2$  random variable with  $(K-1)$  degrees of freedom. This test procedure is approximately valid, provided that the sample contains at least five observations from each population.

### 3.1.9. Reliability Analysis

For the survey analysis, reliability can be defined as consistency between test responses of individuals. Reliability analysis was performed at the beginning of the study. According to Kılıç (2016) argues which is Cronbach said that Cronbach's alpha coefficient is used to measure the reliability of the test. The reliability of the scale is considered to be good if the coefficient is 0.7 or higher. The Cronbach's alpha coefficient is a weighted standard change average found by the ratio of the variances of the items in the scale to the overall variance.

❖ $0.9 \leq \alpha$	Excellent
❖ $0.8 \leq \alpha < 0.9$	Good
❖ $0.7 \leq \alpha < 0.8$	Acceptable
❖ $0.6 \leq \alpha < 0.7$	Questionable
❖ $0.5 \leq \alpha < 0.6$	Poor
❖ $\alpha < 0.5$	Unacceptable

We found result which means Cronbach's Alpha is 0.745 for 34 of items.

### 3.2. Descriptive Statistics

Findings of the research are presented under 2 headings. These are Descriptive Statistics and Financial Literacy Analysis Finding.

#### 3.2.1. Demographic Characteristics of Individuals

This section describes the demographic characteristics of 400 students.

Table 1 presents distribution of participants based on gender.

**Table 1: Frequency and Percentage Distribution of Participants in Gender**

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	211	52.8	52.8	52.8
Female	189	47.3	47.3	100
Total	400	100	100	

47.3% (189) of the participants are female and 52.8% (211) of the participants were male.

Table 2 presents distribution of participants based on birth years.

**Table 2: Frequency and Percentage Distribution of Participants in Birth Years**

Birth Years	Frequency	Percent	Valid Percent	Cumulative Percent
1980-1993	95	23.8	23.8	23.8
1994-1998	286	71.5	71.5	95.3
1999-2000	19	4.8	4.8	100
Total	400	100	100	

23.8% (95) of the participants were born between 1980-1993, 71.5% (286) of the participants were born between the years of 1994-1998 and the ratio of the participants who were born between the years 1999-2000 is 4.8%

Table 3 presents the distribution of participants based on faculty.

**Table 3: Frequency and Percentage Distribution of Participants' Faculty**

<b>Faculty</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Education</b>	40	10	10	10
<b>Electrical &amp; Electronics</b>	40	10	10	20
<b>Arts &amp; Science</b>	40	10	10	30
<b>Naval Architecture and Maritime</b>	40	10	10	40
<b>Economic and Administrative Sciences</b>	40	10	10	50
<b>Civil Engineering</b>	40	10	10	60
<b>Chemical and Metallurgical Engineering</b>	40	10	10	70
<b>Mechanical Engineering</b>	40	10	10	80
<b>Architecture</b>	40	10	10	90
<b>Art &amp; Design</b>	40	10	10	100
<b>Total</b>	400	100	100	

The survey was conducted with 40 students from each faculty in table 3.

Table 4 presents distribution of participants based on department.

The survey was conducted with 40 participants from each faculty. The distributions by faculty sections are presented in table 4. According to table 4, it is seen that the largest group is the architecture department and the smallest group is statistical department.

**Table 4: Frequency and Percentage Distribution of Participants' Departments**

<b>Department</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Computer Education and Instructional Technologies</b>	7	1.8	1.8	1.8
<b>Educational Sciences</b>	9	2.3	2.3	4
<b>Foreign Language Education</b>	3	0.8	0.8	4.8
<b>Mathematics and Science Education</b>	3	0.8	0.8	5.5
<b>Pre-School Education</b>	5	1.3	1.3	6.8
<b>Psychological Counseling and Guidance</b>	3	0.8	0.8	7.5
<b>Primary Education</b>	2	0.5	0.5	8
<b>Social Science and Turkish Language Education</b>	8	2	2	10
<b>Computer Engineering</b>	8	2	2	12
<b>Electrical Engineering</b>	18	4.5	4.5	16.5
<b>Electronics &amp; Communications Engineering</b>	10	2.5	2.5	19
<b>Control and Automation Engineering</b>	4	1	1	20
<b>Western Languages &amp; Literatures</b>	11	2.8	2.8	22.8
<b>Physics</b>	2	0.5	0.5	23.3
<b>Statistics</b>	1	0.3	0.3	23.5
<b>Chemistry</b>	7	1.8	1.8	25.3
<b>Mathematics</b>	11	2.8	2.8	28
<b>Molecular Biology and Genetics</b>	8	2	2	30
<b>Naval Architecture and Marine Engineering</b>	30	7.5	7.5	37.5
<b>Marine Engineering Operations</b>	10	2.5	2.5	40
<b>Economics</b>	19	4.8	4.8	44.8
<b>Business Administration</b>	14	3.5	3.5	48.3
<b>Political Science &amp; International Relations</b>	7	1.8	1.8	50
<b>Environmental Engineering</b>	6	1.5	1.5	51.5
<b>Geomatic Engineering</b>	17	4.3	4.3	55.8
<b>Civil Engineering</b>	17	4.3	4.3	60
<b>Bioengineering</b>	6	1.5	1.5	61.5
<b>Food Engineering</b>	2	0.5	0.5	62
<b>Chemical Engineering</b>	12	3	3	65
<b>Mathematical Engineering</b>	12	3	3	68
<b>Metallurgical and Materials Engineering</b>	8	2	2	70
<b>Industrial Engineering</b>	11	2.8	2.8	72.8
<b>Mechanical Engineering</b>	15	3.8	3.8	76.5
<b>Mechatronics Engineering</b>	14	3.5	3.5	80
<b>Architecture</b>	34	8.5	8.5	88.5
<b>City &amp; Regional Planning</b>	6	1.5	1.5	90
<b>Communication Design</b>	15	3.8	3.8	93.8
<b>Music &amp; Performing Arts</b>	5	1.3	1.3	95
<b>Arts</b>	20	5	5	100
<b>Total</b>	400	100	100	

Table 5 presents distribution of participants' success score levels.

**Table 5: Frequency and Percentage Distribution of Participants' Success Score**

Success Score	Frequency	Percent	Valid Percent	Cumulative Percent
<b>0-1.00</b>	9	2.3	2.3	2.3
<b>1.01-2.00</b>	43	10.8	10.8	13
<b>2.01-3.00</b>	230	57.5	57.5	70.5
<b>3.01-4.00</b>	118	29.5	29.5	100
<b>Total</b>	400	100	100	

When success score distributions of students are examined, it is observed that level of 0-1.00 is 2.3% (9), 1.01-2.00 is 10.8% (43), 2.01-3.00 is 57.5% (230) and 3.01-4.00 is 29.5% (118).

Table 6 presents distribution of participants' grade.

**Table 6: Frequency and Percentage Distribution of Participants' Grade Levels**

Grade	Frequency	Percent	Valid Percent	Cumulative Percent
<b>1</b>	115	28.7	28.7	28.7
<b>2</b>	97	24.3	24.3	53
<b>3</b>	83	20.8	20.8	73.8
<b>4</b>	105	26.3	26.3	100
<b>Total</b>	400	100	100	

When grade distributions of students are examined, it is observed that level of first grade is 28.7% (115), second grade is 24.3% (97), third grade is 20.8% (83) and fourth grade is 26.3% (105).

Table 7 presents distribution of participants' monthly expenditure.



**Table 7: Frequency and Percentage Distribution of Participants' Monthly Expenditure (TL)**

<b>Expenditure Range</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>0-500</b>	64	16.0	16.0	16.0
<b>501-1000</b>	166	41.5	41.5	57.5
<b>1001-1500</b>	94	23.5	23.5	81.0
<b>1501-2000</b>	51	12.8	12.8	93.8
<b>2001+</b>	25	6.3	6.3	100.0
<b>Total</b>	400	100.0	100.0	

When expenditure level distributions of students are examined, it is observed that level of 0-500 is 16.0% (64), 501-1000 is 41.5% (166), 1001-1500 is 23.5% (94) 1501-2000 is 12.8% (51) and 2001+ is 6.3% (25).

Table 8 presents information on educational level of mothers of the participants.

**Table 8: Frequency and Percentage Distribution of Participants' Educational Level of Mothers**

<b>Mother's Education Status</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Not Literate</b>	10	2.5	2.5	2.5
<b>Literate</b>	16	4.0	4.0	6.5
<b>Primary Education</b>	153	38.3	38.3	44.8
<b>High School</b>	139	34.8	34.8	79.5
<b>University</b>	73	18.3	18.3	97.8
<b>Graduate</b>	9	2.3	2.3	100.0
<b>Total</b>	400	100.0	100.0	

When educational status of the mothers of the students who participated in the study is analyzed, it is seen that the group with primary education is the highest (153 - 38.3%) and the lowest group is the postgraduate group (9 - 2.3%).

Table 9 presents information on educational level of fathers of participants.

**Table 9: Frequency and Percentage Distribution of Participants' Educational Level of Fathers**

<b>Father's Education Status</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Not Literate</b>	1	0.3	0.3	0.3
<b>Literate</b>	12	3.0	3.0	3.3
<b>Primary Education</b>	90	22.5	22.5	25.8
<b>High School</b>	144	36.0	36.0	61.8
<b>University</b>	136	34.0	34.0	95.8
<b>Graduate</b>	17	4.3	4.3	100.0
<b>Total</b>	400	100.0	100.0	

When educational status of the fathers of the students who participated in the study is analyzed, it is seen that the group with high school education is the highest (144 - 36%) and the lowest group is not literate group (1 - 0.3%).

Table 10 presents use of credit card for the participants.

**Table 10: Frequency and Percentage Distribution of Participants Credit Card Usage**

<b>Answer</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Yes</b>	270	67.5	67.5	67.5
<b>No</b>	130	32.5	32.5	100.0
<b>Total</b>	400	100.0	100.0	

67.50% (270) students use credit cards, 32.50% (130) students do not use credit cards.

Table 11 presents use of internet banking for the participants.

**Table 11: Frequency and Percentage Distribution of Participants Usage Internet Banking**

<b>Answer</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
<b>Yes</b>	370	92.5	92.5	92.5
<b>No</b>	30	7.5	7.5	100.0
<b>Total</b>	400	100.0	100.0	

92.50% (370) of students use internet banking, 7.50% (30) of students do not use internet banking as seen above.

Table 12 presents use of individual pension system for the participants.

**Table 12: Frequency and Percentage Distribution of Participants Usage Private Pensions**

Answer	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	73	18.3	18.3	18.3
No	327	81.8	81.8	100.0
<b>Total</b>	400	100.0	100.0	

18.25% (73) of students participate in the private pension system and 81.75% (327) of students do not participate in the private pension system.

### 3.2.2. Measurement of Financial Literacy Questions

The findings of the questions that measure level of financial literacy were analyzed according to the order of survey.

Table 13 presents participants' answers to economic and financial at a basic level.

**Table 13: Frequency and Percentage Distribution of Responses to Basic Economics and Finance Questions**

Questions	True		False		No Idea	
	F	%	F	%	F	%
1. Inflation reduces the purchasing power of money.	359	90	14	4	27	7
2. Inflation rate is lower than 10% in Turkey.	23	6	312	78	65	16
3. It is advantageous to use credit if the inflation rate is higher than the interest rate on the market.	98	25	148	37	154	39
4. Renting a house financially allows you to use your budget more easily compared to buying a house.	175	44	183	46	42	11
5. Only stocks are traded in exchange markets.	40	10	263	66	97	24
6. The name of the securities market in Turkey is Istanbul Stock Exchange.	205	51	56	14	139	35
7. Demand deposit account provides interest income.	73	18	239	60	88	22
8. Ounce is a unit of measure for precious metals such as gold.	220	55	24	6	156	39

Within the eight questions in the Basic Economics and Finance section of the survey, 90% (359) of the students who answered the first question correctly, 78% (312) of the students who responded correctly to the second question, 25% (98) of the students who answered the third question correctly, 44% (175) of the students who answered the fourth question correctly, 66% (263) of the students who answered the fifth question correctly, 51% (205) of the students who answered the sixth question correctly, 60% (239) of the students who answered the seventh question correctly, 55% (220) of the students who answered the eighth question correctly.

Table 14 presents participants' answers to of individual banking department.

**Table 14: Frequency and Percentage Distribution of Responses to Individual Banking Questions**

Questions	True		False		No Idea	
	F	%	F	%	F	%
1. All banks work with the same transaction fees.	20	5	353	88	27	7
2. Using a long-term loan is more costly than using a short-term loan.	240	60	100	25	60	15
3. IBAN is the international bank account number.	338	85	32	8	30	8
4. EFT is used to transfer money between accounts in the same bank.	130	33	241	60	29	7
5. Loan applications can be made with the help of internet banking.	329	82	24	6	47	12
6. Stock trading transactions can be made with the help of internet banking.	237	59	48	12	115	29

Within the six questions in the Individual Banking section of the survey, 88% (353) of the students who answered the first question correctly, 60% (240) of the students who responded correctly to the second question, 85% (338) of the students who answered the third question correctly, 60% (241) of the students who answered the fourth question correctly, 82% (329) of the students who answered the fifth question correctly, 59% (237) of the students who answered the sixth question correctly.

Table 15 presents participants' answers to retirement and insurance.

**Table 15: Frequency and Percentage Distribution of Responses to Pension and Insurance Questions**

Questions	True		False		No Idea	
	F	%	F	%	F	%
1. The age of the individual is an important factor in the determination of the car insurance cost.	162	41	99	25	139	35
2. In Turkey, the name of the institution that employees are affiliated to is SSI (Social Security Administration).	362	91	21	5	17	4
3. The retirement age in Turkey is 65 for everyone.	75	19	301	75	24	6
4. Private pension system is a special pension system with monthly premium payments.	331	83	17	4	52	13
5. In order to be eligible for retirement in the private pension system, a contribution for 10 years is mandatory.	168	42	35	9	197	49

Within the five questions in the Pension and Insurance section of the survey, 41% (162) of the students who answered the first question correctly, 91% (362) of the students who responded correctly to the second question, 75% (301) of the students who answered the third question correctly, 83% (331) of the students who answered the fourth question correctly, 42% (168) of the students who answered the fifth question correctly.

Table 16 presents participants' answers to investment.

**Table 16: Frequency and Percentage Distribution of Responses to Investment Questions**

Questions	True		False		No Idea	
	F	%	F	%	F	%
1. If you buy a company bond, you become a partner.	93	23	90	23	217	54
2. When you invest in stocks, you gain interest earnings.	145	36	107	27	148	37
3. Equity investment is a riskier investment than bond investment.	93	23	52	13	255	64
4. Foreign currency is a savings tool.	130	33	179	45	91	23
5. From two projects which have the same risk levels, Project A yields more returns than project B. Therefore, project B should be chosen from two projects.	64	16	267	67	69	17

Within the five questions in the Investment section of the survey, 23% (93) of the students who answered the first question correctly, 27% (107) of the students who responded correctly to the second question, 23% (93) of the students who answered the third question correctly, 45% (179) of the students who answered the fourth question correctly, 67% (267) of the students who answered the fifth question correctly.

Table 17 presents participants' answers to tax and legislative.

**Table 17: Frequency and Percentage Distribution of Responses to Tax and Legislation Questions**

Questions	True		False		No Idea	
	F	%	F	%	F	%
1. VAT rate is applied as 18% for all products in Turkey.	91	23	248	62	61	15
2. It is necessary to register to the Chamber of Commerce and Industry before establishing a new business.	231	58	31	8	138	35
3. Each business owner must register with the tax office.	344	86	20	5	36	9
4. "Tax Year" starts on 1 January and ends on 31 December.	203	51	55	14	142	36
	Dollar		Euro		Sterling	
	F	%	F	%	F	%
5. What currency is the most valuable currency between US Dollar, Euro and the Sterling?	16	4	40	10	344	86

Within the five questions in the Tax and Legislation section of the survey, 62% (248) of the students who answered the first question correctly, 58% (231) of the students who responded correctly to the second question, 86% (344) of the students who answered the third question correctly, 51% (203) of the students who answered the fourth question correctly, 86% (344) of the students who answered the fifth question correctly.

Table 18 presents participants' answers to mathematics and interest calculations.

Within the eight questions in the Mathematics and Interest Calculations section of the survey, 83% (330) of the students who answered the first question correctly, 22% (94) of the students who responded correctly to the second question, 13% (52) of the students who answered the third question correctly, 55% (221) of the students who answered the fourth question correctly, 22% (88) of the students who answered the fifth question correctly.

**Table 18: Frequency and Percentage Distribution of Responses to Mathematics and Interest Calculations**

Questions	A		B		C		D		E	
	F	%	F	%	F	%	F	%	F	%
1. Tuna has started a new job that will pay 2000 TL per month. Each month, he has to pay 900 TL for rent, 350 TL for transportation, 500 TL for kitchen expenses and 100 TL for dressing costs. How many months will it take for Tuna to save 600 TL?	3	1	3	1	11	3	330	83	53	13
2.If the monthly interest rate on the housing loan is 1%, what should be the annual interest rate?	82	21	91	23	94	24	133	33		
3. Assume that you have 100 TL in your bank account and interest rate is 5% per year. After 1 year, how much money you will have in your account?	36	9	242	61	52	13	70	18		
4. Assume that you have 100 TL in your bank account. If the annual interest rate is 5% and the inflation rate is 6%, then how much will your purchasing power be in 1 year?	5	1	221	55	17	4	157	39		
5. Zeynep and Bilge are at the same age. Zeynep deposits 1000 TL every year since the age of 30 and Bilge deposits 2000 TL every year since the age of 40. When they turn 50, which one do you think will have more money in her account?	126	32	23	6	61	15	88	22	102	26

Table 19 presents participants' answers to current finance.

**Table 19: Frequency and Percentage Distribution of Responses to Current Finance**

Questions	True		False		No Idea	
	F	%	F	%	F	%
1. Inflation rate is lower than 10% in Turkey.	23	6	312	78	65	16
2.The name of the securities market in Turkey is Istanbul Stock Exchange.	205	51	56	14	139	35
3. In Turkey, the name of the institution that employees are affiliated to is SSI (Social Security Administration).	362	91	21	5	17	4
4. The retirement age in Turkey is 65 for everyone.	75	19	301	75	24	6
5. VAT rate is applied as 18% for all products in Turkey.	91	23	248	62	61	15
	Dollar		Euro		Sterling	
	F	%	F	%	F	%
6. What currency is the most valuable currency between US Dollar, Euro and the Sterling?	16	4	40	10	344	86

The Current Finance section is a separate section consisting of survey questions. This section aims to measure the up-to-date information of the students.

Within the six questions in the Current Finance section of the survey, 78% (312) of the students who answered the first question correctly, 51% (205) of the students who responded correctly to the second question, 91% (362) of the students who answered the third question correctly, 75% (301) of the students who answered the fourth question correctly, correct answer to the fifth question 62% (248) of the students who gave the correct answer to the sixth question, 86% (344) of the students who answered the seventh question correctly.

### 3.2.3. Financial Literacy by Demographic Characteristics

The financial literacy status of the students who participated in the research was determined by the basic level in the survey, basic economics, retail banking, pension and insurance, investment, tax and legislation, mathematics and interest calculations and current finance sections. The analysis of relations with demographic characteristics according to the presented correct answers will be made in this section.

Table 20 presents achievement scores of the participants according to sections.



**Table 20: Success Scores of Male and Female Students**

General Evaluation		BE	IB	PI	I	TL	MIC	FA	OA
		58	72	66	37	69	39	74	56
Gender	Male	65	78	68	43	73	43	79	61
	Female	52	66	64	30	64	35	69	51

BE: Basic Economy Success Score

TL: Tax and Legislation Success Score

IB: Individual Banking Success Score

MIC: Mathematics and Interest Calculations Success Score

PI: Pension and Insurance Success Score

FA: Finance Agenda Success Score

I: Investment Success Score

OA: Overall Achievement Score

According to Table 20, the overall achievement level of students in financial literacy is 56 points. The area with the most correct answers was in the financial statements with 74 points, while the most failed area was the investment section with 37 points.

According to gender, we can say that male students are more successful than female students. The success rate of male students was 61 while this ratio was 51 for female students.

### 3.3. Financial Literacy Analysis Findings

#### 3.3.1. Financial Literacy Analysis with Demographic Characteristics of Individuals

In Table 21, the relationship between gender and financial literacy is tested. Mann Whitney U test is applied for the test.

**Table 21: Financial Literacy Level by Gender**

	Gender	N	Mean Rank	p-value
Financial Literacy Level by Gender	Male	211	239.78	.000
	Female	189	156.65	
	Total	400		

"H<sub>1</sub>: There is a significant difference between students' gender and financial literacy levels." hypothesis cannot be rejected. H<sub>0</sub> is rejected.

When Table 21 is analyzed, it is seen that there is a difference between financial literacy by gender. When the averages are analyzed, it is seen that male students have higher financial literacy tendencies than female students.

In Table 22, the relationship between credit card use and financial literacy is tested. Mann Whitney U test is applied for the test.

**Table 22: Financial Literacy Level with Credit Card Usage**

	<b>Answers</b>	<b>N</b>	<b>Mean Rank</b>	<b>p-value</b>
<b>Financial Literacy Level with Credit Card Usage</b>	<b>Yes</b>	270	208.11	.057
	<b>No</b>	130	184.70	
	<b>Total</b>	<b>400</b>		

"H<sub>6</sub>: There is a significant difference between the students' credit card usage and their financial literacy levels." hypothesis is rejected. H<sub>0</sub> is not rejected.

This analysis showed that there is no difference between credit card usage and financial literacy.

In Table 23, the relationship between internet banking usage and financial literacy is tested. Mann Whitney U test is applied for the test.

**Table 23: Financial Literacy Level with Internet Banking Usage**

	<b>Answers</b>	<b>N</b>	<b>Mean Rank</b>	<b>p-value</b>
<b>Financial Literacy Level with Internet Banking Usage</b>	<b>Yes</b>	370	203.57	.062
	<b>No</b>	30	162.68	
	<b>Total</b>	<b>400</b>		

"H<sub>7</sub>: There is a significant difference between the students' use of internet banking and their financial literacy levels." hypothesis is rejected. H<sub>0</sub> is not rejected. This analysis showed that there is no difference between internet banking and financial literacy.

In Table 24, the relationship between individual pension system and financial literacy is tested. Mann Whitney U test is applied for the test.

**Table 24: Financial Literacy Level with Individual Pension System**

	<b>Answers</b>	<b>N</b>	<b>Mean Rank</b>	<b>p-value</b>
<b>Financial Literacy Level with Individual Pension System</b>	<b>Yes</b>	73	216.19	.199
	<b>No</b>	327	197.00	
	<b>Total</b>	<b>400</b>		

"H<sub>8</sub>: There is a significant difference between the students' level of participation in the private pension system and their financial literacy levels." hypothesis is rejected. H<sub>0</sub> is not rejected.

This analysis showed that there is no difference between individual pension system and financial literacy.

### **3.3.2. Financial Literacy Analysis with Knowledge Levels of Individuals**

Kruskal - Wallis H test is applied to determine whether there is any difference between different faculties and the financial literacy levels. The results are presented in Table 25.

**Table 25: The Relationship Between Faculties and Financial Literacy**

	Faculty	N	Mean Rank	p-value
<b>The Relationship Between Faculties and Financial Literacy</b>	Education	40	168.55	.000
	Electrical & Electronics	40	258.65	
	Arts & Science	40	118.04	
	Naval Architecture and Maritime	40	226.59	
	Economic and Administrative Sciences	40	257.71	
	Civil Engineering	40	244.64	
	Chemical and Metallurgical Eng.	40	200.54	
	Mechanical Engineering	40	222.18	
	Architecture	40	171.16	
	Art & Design	40	139.95	
	<b>Total</b>	<b>400</b>		

"H<sub>2</sub>: There is a significant difference between the faculty groups of the students studying." hypothesis cannot be rejected. H<sub>0</sub> is rejected.

Kruskal - Wallis H test is applied to determine whether there is any difference between different grades and the financial literacy levels. The results are presented in Table 26.

**Table 26: The Relationship Between Grades and Financial Literacy**

	Answers	N	Mean Rank	p-value
<b>The Relationship Between Grades and Financial Literacy</b>	First Grade	115	174.95	.037*
	Second Grade	97	211.62	
	Third Grade	83	217.60	
	Fourth Grade	105	204.69	
	<b>Total</b>	<b>400</b>		

"H<sub>3</sub>: There is a significant difference between the grade groups of the students studying." hypothesis cannot be rejected. H<sub>0</sub> is rejected.

Kruskal - Wallis H test is applied to determine whether there is any difference between different ages and the financial literacy levels. The results are presented in Table 27.

**Table 27: The Relationship Between Ages and Financial Literacy**

	<b>Answers</b>	<b>N</b>	<b>Mean Rank</b>	<b>p-value</b>
<b>The Relationship Between Grades and Financial Literacy</b>	1980-1993	95	148.48	.000
	1994-1998	286	216.83	
	1999-2000	19	214.79	
	<b>Total</b>	<b>400</b>		

"H<sub>4</sub>: There is a significant difference between the age groups of the students studying." hypothesis cannot be rejected. H<sub>0</sub> is rejected.

When Table 28 is analyzed, it is seen that there is a difference between financial literacy by success score.

**Table 28: The Relationship Between Success Score and Financial Literacy**

	<b>Answers</b>	<b>N</b>	<b>Mean Rank</b>	<b>p-value</b>
<b>The Relationship Between Success Score and Financial Literacy</b>	0 - 1.00	9	206.22	.024
	1.01 - 2.00	43	241.64	
	2.01 - 3.00	230	203.21	
	3.01 - 4.00	118	179.79	
	<b>Total</b>	<b>400</b>		

"H<sub>5</sub>: There is a significant difference between the success score groups of the students studying." hypothesis cannot be rejected. H<sub>0</sub> is rejected.

Kruskal - Wallis H test is applied to determine whether there is any difference between different mother's education level and the financial literacy levels. The results are presented in Table 29.

**Table 29: The Relationship Between Mothers Education Level and Financial Literacy**

	Answers	N	Mean Rank	p-value
<b>The Relationship Between Mothers Education Level and Financial Literacy</b>	Not literate	10	182.10	.730
	Literate	16	243.38	
	Primary Education	153	198.69	
	High School	139	202.54	
	University	73	193.58	
	Graduate	9	200.11	
	<b>Total</b>	<b>400</b>		

"H<sub>9</sub>: There is a significant difference between the educational level groups of the mothers of the students studying." hypothesis is rejected. H<sub>0</sub> is not rejected.

Kruskal - Wallis H test is applied to determine whether there is any difference between different father's education level and the financial literacy levels. The results are presented in Table 30.

**Table 30: The Relationship Between Father's Education Level and Financial Literacy**

	Answers	N	Mean Rank	p-value
<b>The Relationship Between Fathers Education Level and Financial Literacy</b>	Literate	13	173.04	.926
	Primary Education	90	200.59	
	High School	144	200.30	
	University	136	203.93	
	Graduate	17	195.29	
	<b>Total</b>	<b>400</b>		

"H<sub>10</sub>: There is a significant difference between the education level groups of the fathers of the students studying." hypothesis is rejected. H<sub>0</sub> is not rejected.

**Table 31: Summarizes the Results of Hypotheses**

<b>Hypothesis</b>	<b>P - value</b>	<b>Results</b>
H <sub>1</sub> : There is a significant difference between students' gender and financial literacy levels.	0.000	Cannot to be rejected
H <sub>2</sub> : There is a significant difference between the faculty groups of the students studying.	0.000	Cannot to be rejected
H <sub>3</sub> : There is a significant difference between the grade groups of the students studying.	0.037	Cannot to be rejected
H <sub>4</sub> : There is a significant difference between the age groups of the students studying.	0.000	Cannot to be rejected
H <sub>5</sub> : There is a significant difference between the success score groups of the students studying.	0.024	Cannot to be rejected
H <sub>6</sub> : There is a significant difference between the students' credit card usage and their financial literacy levels.	0.057	Rejected
H <sub>7</sub> : There is a significant difference between the students' use of internet banking and their financial literacy levels.	0.062	Rejected
H <sub>8</sub> : There is a significant difference between the students' level of participation in the private pension system and their financial literacy levels.	0.199	Rejected
H <sub>9</sub> : There is a significant difference between the educational level groups of the mothers of the students studying.	0.730	Rejected
H <sub>10</sub> : There is a significant difference between the education level groups of the fathers of the students studying.	0.926	Rejected

#### **4. DISCUSSION**

As the age of participation in the financial system starts with university years and as the individuals continue their habits after years, the importance of young adulthood increases. Financial literacy levels of individuals in these periods form the basis for later periods of their lives. Therefore, there is a need to work with university students in the literature. The study is conducted with a survey performed by Kılıç et al (2015). Since the survey points at general problems, it makes important determinations.

The study is designed to measure financial literacy levels of undergraduate students. The study is conducted with the survey used before in the literature. Participants are asked questions about basic financial information and demographic characteristics. Assuming that the students are sincere in their answers, it is possible to say that they have an average level of financial literacy. The descriptive statistics of the participants are presented in the analysis part of the study.

Before evaluating the hypothesis, test results, when we evaluate the correct answers as points, the financial literacy levels of Yildiz Technical University undergraduate students increased to 59 points. This score is 54 for female students and 64 for male students. This result was similar to the studies in the literature.

Hypothesis testing was applied to determine whether there is a relationship between financial literacy and gender. According to the hypothesis, there is a relationship between financial literacy and gender. It is concluded that male students have high financial literacy levels compared to female students. Similar results are observed in the literature. Chen and Volpe (1998), Lusardi (2010), Lusardi and Mitchell (2011), Atkinson and Messy (2012), Kılıç et al (2015), Almenberg and Dreber (2015), Ergün et al (2014) are some of the studies that have reached the same conclusion.

Financial literacy rate was found to be higher in male participants than female participants. Various studies have been carried out for female. There is a need to increase the number



of these studies and control their efficiency. In order to change these results supported in the literature, special studies can be carried out for professional groups where women are the majority, for example, teaching. In this regard, training of organizations can be supported. Thus, this welfare-enhancing policy on women will lead individuals to have more income in the long run and increase the spread of the financial system. When the characteristics of the survey are analyzed, it is seen that women are more distant from mathematical operations. In this regard, a virtual market can be established and the ability to make transactions spreading to daily life can be increased. This will direct individuals to budget in the long run and increase the savings required for investment.

Moreover, it is seen that there was a difference between the faculties that students are signed in and their financial literacy levels. The students of the faculty of economics and administrative sciences and arts and Sciences showed the best results. In the literature, some studies have reached similar results: Beckman (2013), Cameron et al (2014), Golemac and Zrinka (2015), Dorjana and Shkelqim (2016), Kılıç et al (2015), Bayram (2015). We can say that the related courses increase the financial knowledge level of the students. In this respect, the courses related to the financial system at the basic level will positively affect the financial literacy level of the course.

On the other hand, in order to improve students' financial literacy levels, they should provide materials to schools at the beginning of each semester. This should start, for example, with posters with information about the economy and then be transformed into various organizations. In particular, according to the survey, the financial literacy levels of some faculties were found below. According to the results obtained after similar studies, activities can be organized in the conference halls of these faculties.

The same situation is observed with the students' grades, ages, and their success score. The hypothesis about the financial literacy and age of the students is accepted. It was seen that the first and last year students had lower financial literacy levels than the other students. In this regard, it can be thought that the orientation process developed with the newly started university and the ideas about how to successfully finish the courses in the last year and continue the life in the next period are widespread. Similar reasons support the hypothesis that measures the relationship between age and financial literacy. It is seen

that the financial literacy level of the group whose success score levels cannot be considered successful is high. It can be said that the students are aware of the financial system but they have low interest in their courses. For this, it is necessary to prepare programs to support the students in order to increase the level of education and financial literacy in the school.

Another approach is that young people are more interested in financial information. Rodrigues et al. (2012) it is concluded that there is a relationship between financial literacy and age in Portugal. According to result in financial literacy level of the older age group is higher. Financial literacy levels decrease as students' success score scores increase. In this respect, we can say that the students focus on their lessons more than the average and cause them to stay away from the developments. On the other hand, the fact that younger students have higher financial literacy levels compared to older students in financial literacy may be related to high technological developments.

There is a no difference seen between students' use of internet banking, private pension system and credit card use and financial literacy. The percentage of students in the pension system is 18%. It is seen that the students do not have any information about the private pension system. The main reason for is that private pension system is not well introduced in Turkey. In addition, due to the fact that the policies implemented are more employee related, it is expected for the study to be performed in this way. The private pension system is offered to the consumer group with 25% state contribution. Then, according to the state policy, it has become obligatory for employers to initiate their insurance as mandatory for their employees. However, the regulations related to students have not been made sufficiently. Internet banking can now be used for the most basic needs. It can be used for basic mathematical needs in everyday life, for instance, for students who live in different places from their families to receive money or pay bills. However, due to the increase in the variety of financial products and services, diversity has also brought a complex structure. Therefore, it is understandable that there is no relationship between financial literacy and internet banking, especially for students who do not have income or who are in a low-level group. The use of credit cards, in the same way, is an example of these

reasons. The income level is limited by the opportunities that a particular group can already benefit from.

There is no significant difference between the financial literacy levels of the students and their parents' educational level. This is because individuals are less likely to spend time with their parents. In particular, the fact that working parents live separately from their family home at their student years may affect the rejection of hypotheses. There are several studies in the literature on the relationship between the educational level of parents and financial literacy. Probably, the financialization process has become more effective in recent years, so reducing the effectiveness of parents in the financial literacy process. In other words, the fact that there is no accumulation to be transferred from the family can be mentioned among the reasons. We can say students should focus on themselves. There are also similar results in the literature for instance Lusardi et al (2010). In Ergün et al (2014), it is found that the education level of parents is not correlated with the financial literacy of students.

## 5. CONCLUSION

With the rapid development of technology and the increase in the variety of financial products and services, individuals' need for financial products and services in daily life increases. At the same time, individuals were given more responsibility with the development of the financial system and the increasing diversity of financial products and services. In such an environment, it is important for individuals to be aware of financial risks. Financial literacy surveys in developed or developing countries showed that the level of financial literacy is not sufficient. The Economist (2008) and OECD (2011) studies support this hypothesis. The countries concerned have made their own policies and have supported these activities with international organizations.

Financial literacy will bring technological innovations and financial liberalization. As a result, the competition will increase and the markets will operate efficiently. The efficient operation of the markets will mean the separation of inactive options from the market over time. The increase in earnings and volume will increase the well-being of individuals and the development of the national economy. The state should ensure that the main markets are transparent. In this way, individuals will want to learn more and will be involved in more markets as they meet them.

Increasing financial literacy is important for every age group in society. However, the group of university students, also known as young adults, is slightly more important than the other age groups. This age group will start working life in the near future and will have a regular income. With the high level of financial literacy acquired during student years and their ability to manage spending, savings, investment and borrowing levels, they will provide an environment for welfare increase in terms of individual and social economy.

Several studies have been carried out with financial literacy worldwide. Recently, the number of studies on financial literacy has been increasing in Turkey. Simultaneous conduct of financial literacy studies with several universities will allow the financial

literacy levels to be more comparable. Analyzing the results as comparable will provide a different perspective on the analysis of the levels.

In the literature, the difference between male and female, in general, has made the need for a study on this subject. Training activities can be organized for female or incentive programs can be organized.

Introduction to financial literacy lessons can be introduced to course plan for all university students. Increasing the club activities at preparing programs for financial literacy at the universities for certain periods will contribute to increasing the students' financial literacy levels. Announcing these kinds of activities on universities' social platforms to students while sharing small information will be helpful to increasing financial literacy.

Also according to the study, participation rates are low for the private pension system in which they can contribute to individual welfare and welfare of the country as a saving tool. In this regard, it can be said that the saving volume of the country in the following periods is low. It may be desirable to carry out studies to promote internet banking by banks. By creating a virtual environment for the students, they will be able to see practically which investment tools they can increase their savings quickly.

Financial literacy will play an active role in increasing the saving rates that can be used to increase investments, which is one of the main problems of developing countries, as individuals increase their tendency to save. Efforts to increase the saving rates, which are among the main problems of developed or developing countries, will result in the increase in domestic savings, which countries prefer more. When countries try to increase their savings, they make efforts to increase domestic or foreign savings. However, due to the low sustainability of foreign savings and various costs, they are not among the main preferred methods.

The level of financial literacy needs to be high to make effective decisions on issues affecting the well-being of individuals such as spending, savings, investment and borrowing. Effective decisions taken within the financial system will ensure the efficiency of the markets. Thus, with the increase of savings and investments, the economy of the country will grow and develop.

## REFERENCES

- Atkinson, Adele and Messy, Flore-Anne. 2012. **Measuring Financial Literacy: Results of the OECD INFE Pilot Study**, OECD Working Papers on Finance, Insurance and Private Pensions, No. 15, OECD Publishing. <https://www.oecd-ilibrary.org/docserver/5k9csfs90fr4-en.pdf?expires=1556441937&id=id&accname=guest&checksum=8A2168406AF3195E4AEF2864EAA74403> [04.28.2019].
- Basu, Somnath. 2008. **Financial Literacy and the Life Cycle**. Financial Planning Journal January - March 2008, <https://www.scribd.com/document/39345311/Financial-Literacy-and-Life-Cycle#download>. [04.28.2019].
- Capital Markets Boards of Turkey. 2012. **Türkiye Finansal Yeterlilik Araştırması**, Türkiye. <https://www.spk.gov.tr/Duyuru/Dosya/20121116/0> [04.28.2019].
- Chen, Haiyang and Volpe, Ronald P. 1998. **An analysis of personal financial literacy among college students**. Financial Services Review, Vol: 7, No:2, Page:107-128. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.392.4650&rep=rep1&type=pdf> [05.08.2019].
- Cihangir, Mehmet and Ergin, Erhan. 2015. **Finansal Okuryazarlığın Temel Düzeyde İncelenmesi: Osmaniye İlinde Ankete Dayalı Bir Araştırma**, The Journal of academic social science, Vol:3, No:13, Page: 492-511. [http://www.asosjournal.com/Makaleler/834274847\\_649%20Erhan%20Ergin.pdf](http://www.asosjournal.com/Makaleler/834274847_649%20Erhan%20Ergin.pdf) [05.08.2019].
- Cude, Brenda J., Lawrence, Frances C., Lyons, Angela C., Metzger, Kaci, LeJeune, Emily, Marks, Loren and Machtmes, Krisanna. 2006. **College Students and Financial Literacy: What They Know and What We Need to Learn**. Paper presented at the Eastern Family Economics and Resource Management Association 2006 Conference, Newyork, USA.
- Cronbach, Lee. 1951. Coefficient alpha and the internal structure of tests. Psychometrika. Vol: 16, No: 3, Page: 297-334.
- Deng, Hsu-Tong, Chi, Li-Chiu, Teng, Nai-Yung, Tang, Tseng-Chung and Chen, Chun-Lin. 2013. **Influence of Financial Literacy of Teachers on Financial Education Teaching in Elementary Schools**. International Journal of e-Education, e-Business, e-Management and e-Learning, Vol: 3 No: 1, Page: 68-73 <http://www.ijeeee.org/Papers/195-K10068.pdf> [04.28.2019].

- Ergün, Kutlu. 2018. Öğrencilerinin Finansal Okuryazarlığı: Balıkesir Üniversitesi Örneği. Balıkesir University, Phd Thesis, Graduate School of Social Sciences.
- Ergün, Bahadır, Şahin, Arzu and Ergin, Erhan. 2014. **Finansal okuryazarlık: İşletme bölümü Öğrencileri Üzerine Bir Araştırma**. The Journal of International Social Research Vol: 7, No: 34, Page: 847-864.
- Eskici, Yasin. 2014. Seçilmiş Ülke Örnekleriyle Finansal Okuryazarlığın Önemi ve Tasarruflar Üzerindeki Etkileri. Master's Thesis, Aydın: Adnan Menderes University Graduate School of Social Sciences
- FODER. 2012. **Financial Literacy Grant**. <https://www.fo-der.org/wp-content/uploads/2019/05/8.-Financial-Literacy-Grant-Guide.pdf> [04.28.2019].
- Gegez, A. Ercan. 2010, **Pazarlama Araştırmaları**, Beta Press, İstanbul.
- Hall, Keith. 2008. **The Importance of Financial Literacy**. Deepening Financial Capacity in the Pacific Region. Sydney, Australia.
- Harnisch, Thomas L. 2010. **Boosting Financial Literacy in America: A Role for State Colleges and Universities, Perspectives**. American Association of State Colleges and Universities Working Paper. <http://www.aascu.org/policy/publications/perspectives/financialliteracy.pdf> [04.28.2019].
- Henager, Robin and Mauldin, Teresa. 2015. **Financial Literacy: The Relationship to Saving Behavior in Low- to Moderate-income Households**. Family and Consumer Sciences Research Journal, Vol: 44, No: 1, Page: 73–87.
- Hilgert, Marianne. A., Hogarth, Jeanne M. and Beverly, S. G. 2003. **Household Financial Management: The Connection Between Knowledge and Behavior**. Fed. Res. Bull., July <https://www.federalreserve.gov/pubs/bulletin/2003/0703lead.pdf> [04.28.2019].
- Huston, Sandra J. 2010. **Measuring Financial Literacy**. Journal of Consumer Affairs, Special Issue: Financial Literacy, Vol: 44, No: 2, Page: 296-316.
- IBM SPSS Statistic Subscription, **Logical Expressions** [https://www.ibm.com/support/knowledgecenter/en/SSLVMB\\_23.0.0/spss/base/syn\\_transformation\\_expressions\\_logical\\_expressions.html](https://www.ibm.com/support/knowledgecenter/en/SSLVMB_23.0.0/spss/base/syn_transformation_expressions_logical_expressions.html) [09.27.2019].
- Kalaycı, Şeref. 2008. **SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri**, Asil Press, Ankara.
- Kılıç, Yunus, Ata, H. Ali and Seyrek, İbrahim H. 2015. **Finansal Okuryazarlık: Üniversite Öğrencilerine Yönelik Bir Araştırma**. The Journal of Accounting and Finance, Vol:4, No:66 Page: 129-150.

- Kılıç, Selim. 2016. **Statistically Speaking...** Journal of Mood Disorders Volume: 6, No: 1. <http://pbsciences.org/pdf/TR-JMOOD-d28aa15e.pdf> [06.27.2019].
- Lusardi, Annamaria. 2008. **Financial Literacy: An Essential Tool For Informed Consumer Choice?**, National Bureau Of Economic Research, No:14084, Page: 1-29. <https://www.nber.org/papers/w14084> [04.28.2019].
- \_\_\_\_\_. 2013. **The Economic Importance of Financial Literacy for Students.** <http://annalusardi.blogspot.com.tr/2013/04/the-economic-importance-of-financial.html> [04.28.2019].
- Lusardi, Annamaria and Mitchell, O. S. 2011. **Financial Literacy and Retirement Planning in the United States**, Journal of Pension Economics and Finance, Vol: 10, No: 4, Page: 509-525.
- Mevsim, Lütfü Tuğrul. 2016. Üniversite Öğrencilerinde Finansal Okuryazarlık Düzeyinin Belirlenmesi: Erzincan Üniversitesi Örneği. Master's Thesis. Erzincan University, Graduate School of Social Sciences.
- Newbold, Paul, Carlson, William and Thorne, Betty. 2012. **Statistics for Business and Economics**. Pearson Press. Eight Edition.
- National Council of State Legislatures. 2018. **Financial Literacy 2018 Legislation** <http://www.ncsl.org/research/financial-services-and-commerce/financial-literacy-2018-legislation.aspx> [04.28.2019].
- OECD. 2005. **Recommendation on Principles and Good Practices for Financial Education and Awareness**. Recommendation of The Council. <https://www.oecd.org/daf/fin/financial-education/35108560.pdf> [05.08.2019].
- \_\_\_\_\_. 2011. **Measuring Financial Literacy: Questionnaire and Guidance Notes for Conducting an Internationally Comparable Survey of Financial Literacy.** <https://www.oecd.org/finance/financial-education/49319977.pdf> [04.28.2019].
- President's Advisory Council on Financial Literacy. 2008. Annual Report to the President,35. [https://www.treasury.gov/about/organizational-structure/offices/Domestic-Finance/Documents/PACFL\\_Draft-AR-0109.pdf](https://www.treasury.gov/about/organizational-structure/offices/Domestic-Finance/Documents/PACFL_Draft-AR-0109.pdf) [04.28.2019].
- Sekita, Shuizuka. 2011. **Financial Literacy and Retirement Planning in Japan**. Network for Studies on Pensions, Aging and Retirement (Netspar). Discussion Paper. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1809681](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1809681) [05.08.2019].
- Sevim, Nurdan, Temizel, Fatih and Sayılır, Özlem. 2012. **The Effects of Financial Literacy on the Borrowing Behaviour of Turkish Financial Consumers**. International Journal of Consumer Studies, Vol: 36, No: 5, Page: 573-679



- Şarlak, Zeynep. 2019. **Finansal Okuryazarlık**. Republic of Turkey Ministry of Family, Labor and Social Services. Ankara. [https://www.aep.gov.tr/wp-content/uploads/2019/04/03\\_02\\_Finansal-Okuryazarl%C4%B1k-Kitab%C4%B1.pdf](https://www.aep.gov.tr/wp-content/uploads/2019/04/03_02_Finansal-Okuryazarl%C4%B1k-Kitab%C4%B1.pdf) [05.08.2019].
- Temizel, Fatih and Bayram, Fatih. 2011. Finansal Okuryazarlık: Anadolu Üniversitesi İktisadi İdari Bilimler Fakültesi (İİBF) Öğrencilerine Yönelik Bir Araştırma. *Journal of Cumhuriyet University Economics and Administrative Sciences*, Vol:12, No: 1, Page: 73-86.
- Temizel, Fatih and Özgüler, İsmet. 2015. **Finansal Eğitime Bakış**. *Business & Management Studies: An International Journal*, Vol: 3, No: 1, Page:1-16
- The Economist. 2008. **Financial literacy - Getting it right on the money** <https://www.economist.com/briefing/2008/04/03/getting-it-right-on-the-money> [05.08.2019].
- The Prime Minister's Office of the Republic of Turkey. 2014. <http://www.spk.gov.tr/Sayfa/Dosya/1076> [05.08.2019].
- Tomášková, Hana, Mohelská, Hana, and Němcová, Zuzana. 2011. **Issues of financial literacy education. Procedia—Social and Behavioral Sciences**, Vol: No: 28, Page: 365–369. <https://cyberleninka.org/article/n/521829> [04.28.2019].
- Xu, Lisa and Zia, Bilal. 2012. **Financial Literacy Around the World: An Overview of the Evidence with Practical Suggestions for the Way Forward**. World Bank Policy Research Working Paper No. 6107. <http://documents.worldbank.org/curated/en/264001468340889422/pdf/WPS6107.pdf> [04.28.2019].
- Willis, Lauren E. 2008. **Evidence and Ideology in Assessing the Effectiveness of Financial Literacy Education**. Faculty Scholarship. Paper 197, <https://pdfs.semanticscholar.org/1ab4/f359e00eac541d012bd19358a89fd51cf62e.pdf> [05.08.2019].
- Yıldız Technical University Course Book, Parametrik Olmayan İstatistik Yöntemleri Dersi. [https://www.academia.edu/6920481/PARAMETR%C4%B0K\\_OLMAYAN\\_%C4%B0STAT%C4%B0ST%C4%B0K\\_Y%C3%96NTEMLER%C4%B0](https://www.academia.edu/6920481/PARAMETR%C4%B0K_OLMAYAN_%C4%B0STAT%C4%B0ST%C4%B0K_Y%C3%96NTEMLER%C4%B0) [05.08.2019].

## APPENDIX

### AP 1. Survey

Questions	True		False		No Idea	
<b>Basic Economics and Finance</b>						
1. Inflation reduces the purchasing power of money.						
2. Inflation rate is lower than 10% in Turkey.						
3. It is advantageous to use credit if the inflation rate is higher than the interest rate on the market.						
4. Renting a house financially allows you to use your budget more easily compared to buying a house.						
5. Only stocks are traded in exchange markets.						
6. The name of the securities market in Turkey is Istanbul Stock Exchange.						
7. Demand deposit account provides interest income.						
8. Ounce is a unit of measure for precious metals such as gold.						
<b>Individual Banking</b>						
9. All banks work with the same transaction fees.						
10. Using a long-term loan is more costly than using a short-term loan.						
11. IBAN is the international bank account number.						
12. EFT is used to transfer money between accounts in the same bank.						
13. Loan applications can be made with the help of internet banking.						
14. Stock trading transactions can be made with the help of internet banking.						
<b>Pension and Insurance</b>						
15. The age of the individual is an important factor in the determination of the car insurance cost.						
16. In Turkey, the name of the institution that employees are affiliated to is SSI (Social Security Administration).						
17. The retirement age in Turkey is 65 for everyone.						
18. Private pension system is a special pension system with monthly premium payments.						
19. In order to be eligible for retirement in the private pension system, a contribution for 10 years is mandatory.						

<b>Investment</b>						
20. If you buy a company bond, you become a partner.						
21. When you invest in stocks, you gain interest earnings.						
22. Equity investment is a riskier investment than bond investment.						
23. Foreign currency is a savings tool.						
24. From two projects which have the same risk levels, Project A yields more returns than project B. Therefore, project B should be chosen from two projects.						
<b>Tax and Legislation</b>						
25. VAT rate is applied as 18% for all products in Turkey.						
26. It is necessary to register to the Chamber of Commerce and Industry before establishing a new business.						
27. Each business owner must register with the tax office.						
28. "Tax Year" starts on 1 January and ends on 31 December.						
		<b>Dollar</b>	<b>Euro</b>	<b>Sterling</b>		
29. What currency is the most valuable currency between the US dollar, the Euro and the Sterling?						
<b>Mathematics and Interest Calculations</b>						
30. Tuna Bey has started a new job that will pay 2000 TL per month. Each month, he has to pay 900 TL for rent, 350 TL for transportation, 500 TL for kitchen expenses and 100 TL for dressing costs. How many months will it take for Tuna to save 600 TL?	<b>a.</b> 1 month <b>b.</b> 2 months <b>c.</b> 3 months <b>d.</b> 4 months <b>e.</b> No Idea					
31. If the monthly interest rate on the housing loan is 1%, what should be the annual interest rate?	<b>a.</b> Less than 12% <b>b.</b> %12 <b>c.</b> More than 12% <b>d.</b> No Idea					
32. Assume that you have 100 TL in your bank account and interest rate is 5% per year. After 1 year, how much money you will have in your account?	<b>a.</b> Less than 105 TL <b>b.</b> 105 TL <b>c.</b> More than 105 TL <b>d.</b> No Idea					
33. Assume that you have 100 TL in your bank account. If the annual interest rate is 5% and the inflation rate is 6%, then how much will your purchasing power be in 1 year?	<b>a.</b> 100 TL <b>b.</b> Less than 100 TL <b>c.</b> More than 100 TL <b>d.</b> No Idea					
34. Zeynep and Bilge are at the same age. Zeynep deposits 1000 TL every year since the age of 30 and Bilge deposits 2000 TL every year since the age of 40. When they turn 50, which one do you think will have more money in her account?	<b>a.</b> They will have equal amounts of money. <b>b.</b> Bilge. Because she has made more saving every year. <b>c.</b> Zeynep. Because she has invested longer.					

	<b>d.</b> Zeynep. Because their accumulation has increased using compound interest rate for longer. <b>e.</b> No Idea
Birth Year	
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
Faculty	
Success Score	<input type="checkbox"/> 0-1.00 <input type="checkbox"/> 1.01-2.00 <input type="checkbox"/> 2.01-3.00 <input type="checkbox"/> 3.01-4.00
Grade	<input type="checkbox"/> First Grade <input type="checkbox"/> Second Grade <input type="checkbox"/> Third Grade <input type="checkbox"/> Fourth Grade
Monthly Expenditure (TL)	<input type="checkbox"/> 0-500 <input type="checkbox"/> 501-1000 <input type="checkbox"/> 1001-1500 <input type="checkbox"/> 1501-2000 <input type="checkbox"/> 2001+
Educational Level of Fathers	<input type="checkbox"/> Not Literate <input type="checkbox"/> Literate <input type="checkbox"/> Primary Education <input type="checkbox"/> High School <input type="checkbox"/> University <input type="checkbox"/> Graduate
Educational Level of Mothers	<input type="checkbox"/> Not Literate <input type="checkbox"/> Literate <input type="checkbox"/> Primary Education <input type="checkbox"/> High School <input type="checkbox"/> University <input type="checkbox"/> Graduate
Do you use a credit card?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you participate in the private pension system?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you use internet banking?	<input type="checkbox"/> Yes <input type="checkbox"/> No

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