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The Effect of Individuals' Financial Risk Tolerance, Financial Literacy and Financial Attitude on their Financial Behaviors*

Bireylerin Finansal Risk Toleransı, Finansal Okuryazarlık ve Finansal Tutumunun Finansal Davranışları Üzerindeki Etkisi

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Kişisel finans literatüründe yapılan araştırmalar, bireylerin finansal kararlarında psikolojik faktörlerden etkilendiğini ortaya koymaktadır. Bu bağlamda bireylerin finansal davranışlarını incelemeye yönelik çalışmalarda sosyokültürel ve demografik faktörlere yönelik araştırmalar yetersiz kalmaktadır. Araştırmada finansal risk toleransı, finansal okuryazarlık ve finansal tutum faktörlerinin bireylerin finansal davranışları üzerindeki etkileri incelenmeye çalışılmıştır. Türkiye'de yer alan İstanbul, Ankara, İzmir, Kocaeli, Bursa, Sivas ve Karabük şehirlerinden 1347 kişinin gönüllü katılımıyla elde edilen veriler anket yöntemi ile toplanmıştır. Toplanan veriler çoklu doğrusal regresyon yöntemi ile analiz edilmiştir. Sonuç olarak; bireylerin finansal davranışlarını etkileyen faktörleri incelemeyi amaçlayan çalışmada, finansal risk toleransı, finansal okuryazarlık ve finansal tutumun, finansal davranış üzerinde anlamlı bir etkiye sahip olduğu tespit edilmiştir.

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A B S T R A C T

Studies in the personal finance literature reveal that individuals are influenced by psychological factors in their financial decisions. In this context, research on sociocultural and demographic factors is insufficient in studies to examine financial behavior of individuals. In the research, the effects of financial risk tolerance, financial literacy, and financial attitude factors on individuals' financial behaviors are tried to be examined. The data obtained with the voluntary participation of 1347 individuals from İstanbul, Ankara, İzmir, Kocaeli, Bursa, Sivas, and Karabük cities of Turkey were collected by questionnaire method. The collected data were analysed by multiple linear regression method. As a result, in the study, which aims to examine the factors affecting the financial behavior of individuals, it has been determined that financial risk tolerance, financial literacy and financial attitude have a significant effect on financial behavior.

1. Introduction

Developments in information and communication technologies and changes in financial markets reveal the importance of financial information, experience and risk

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analysis skills that individual investors will need in financial matters. In this context, educating individuals on financial issues and increasing their awareness levels come to the fore in realizing responsible financial attitudes and behaviors.

Research to explain the financial behavior of individuals attracts the attention of many people. Decreases in savings compared to increases in household indebtedness, and imbalances in expenditures and investments show that there is a need to examine the financial behavior of individuals around the world. It is necessary to increase the level of financial literacy to direct individuals to the right investment instruments suitable for their risk profiles, and to make the right decisions on financial issues such as spending, savings and planning. Financial literacy is the combination of financial knowledge, financial attitude and behavior that is necessary for individuals to make correct financial decisions with different characteristics that they face throughout their lives.

Many studies in the literature ignore the subjectivity of individuals and use demographic and socioeconomic factors to interpret their financial behavior. In this context, the factors affecting the financial behavior of individuals under the personal finance perspective are discussed in the research.

Financial decisions made by individuals throughout their lives affect their financial well-being. At this point, individuals are expected to act in line with their financial risk tolerance and exhibit responsible financial attitudes and behaviors. Although there are many factors that affect the financial behavior of individuals, financial literacy, financial attitude and financial risk tolerance, which are frequently discussed in the literature, have a separate place. The research aims to examine the role of individuals' financial literacy, financial attitude and financial risk tolerance. It has been determined that each variable whose effect is measured on financial behavior has significant effects.

The research consists of four parts. The first part contains the introduction. In the second part, the literature about the variables included in the research is included. In the third part, findings related to data collection method, scales, explanatory factor analysis and correlation analysis are given. The last section is the section where the findings of the research are discussed, and the results are presented.

2. Literature

2.1. Financial Behavior

While defining the concept of financial behavior, it is associated with variables such as the individual's financial knowledge and motivation, risk tolerance, spending and saving propensity (Allgood & Walstad, 2011). In other words, financial behavior can be expressed as individuals' financial situation analysis, spending, saving, investment, debt and credit management (Alkaya & Yagli, 2015). According to the other study, financial behavior; cash management, credit management, saving and investment are divided into four basic sub-factors (Hilgert et al., 2003). The findings of this study suggest that financial behaviors, which are divided into four main factors, may be hierarchical. For example, cash-strapped consumers can engage in cash flow management practices and get loans, but cannot save and invest.

In order to understand how financially responsible and foresighted an individual is, it is recommended to be examined the types of financial products in his portfolio. In this way, investors' commitment to financial products, financial resources and how well they manage them can be determined. In another study, it was investigated whether the financial literacy levels of individuals affect the saving and borrowing behavior by determining the relationships between household financial behaviors and financial literacy levels (Güler & Tunahan, 2017). Lusardi (2008), in his study examining the saving behavior of American households, found that low financial literacy and lack of financial education influenced saving behavior. In studies on financial literacy, argues that financial education given at an early age affects financial behaviors in the later period (Bernheim, Garrett & Maki, 2001). Bernheimet et al., (2001) also reported that individuals who received education in countries with financial education displayed more responsible financial behaviors than those who did not. Various evidence has been obtained in studies aiming to measure the effect of low financial literacy and lack of education on saving behavior. The findings of the study are that it is necessary to increase retirement savings as well as the private savings they will need for sudden losses in their income through financial education (Lusardi, 2008b). The results of the study examining the effects of financial literacy and financial attitude on the borrowing behavior of individual investors reveal that there is no significant difference between men and women. An important finding has been suggested that individuals with average financial literacy are less prone to credit card borrowing when they have strong financial attitudes (Ibrahim & Alqaydi, 2013).

Studies in the field of financial literacy have suggested that financial information acquired at an early age may affect later financial behaviors. It has been found that adults who attend school in states that provide personal financial education exhibit more responsible financial behaviors during their peak earnings period (35-49 years old) than adults who do not have education (Bernheim et al., 2001). Financial attitudes and behaviors of university students; it was investigated whether it is related to financial knowledge levels and sociodemographic characteristics. Significant relationships were found between the “Financial Literacy Attitude and Behavior Scale” and its sub-dimensions, and the participants' financial knowledge levels and sociodemographic variables. In the results of the study, spending behaviors and interest in finance were low; Attitudes and perceptions about spending and saving were found to be at a moderate level (Sarıgül, 2015). In addition; as the level of financial knowledge of students increases, their spending behaviors are balanced and their interest in financial matters increases (Sarıgül, 2015).

2.2. Financial Literacy

Financial literacy is used as a level of competence that shows how much information individuals have about financial issues and how much responsibility they have in their financial attitudes and behaviors around the world. Financial literacy can be defined as developing financial awareness and understanding of financial concepts and practices. Financial literacy, which is broader than financial knowledge; enable individuals to make rational decisions in financial matters. Increases in consumers' credit card debt reports, inability to save or decrease in savings rates, and personal bankruptcies cause states to review and improve their financial education policies (Bernheim, Garrett, & Maki, 2001).

When the effect of financial literacy on the behavioral tendencies of individual investors is examined, it has been determined that half of the volunteers have low financial literacy levels, their financial information sources are family and friends and they are heavily exposed to trends (Ateş et al., 2016). When the effect of financial literacy on individuals' personal debts was examined, an average effect was observed, and no significant difference was noted for males and females. It has also been reported that individuals with strong financial attitudes are less prone to credit card borrowing (İbrahim & Alqaydi, 2013).

Studies in the financial literacy literature aim to determine the financial literacy levels of individuals (Bernheim & Garrett, 2003; Chen et al., 1998; Lusardi, 2008a; Lusardi & Mitchell, 2014; Fettahoğlu, 2015). Financial literacy level has important effects on individuals' financial behaviors such as retirement planning and credit/credit card use (Allgood & Walstad, 2013; Lusardi & Mitchelli, 2007; Van Rooij et al., 2012).

When a comparison is made between men and women in terms of financial literacy levels and when they are asked to answer questions that measure knowledge of basic financial concepts, women get lower scores than men in financial literacy assessments (Lusardi & Mitchell, 2017). It has been reported that low financial literacy is mostly seen among women and young individuals with insufficient experience (Chen et al., 1998). In another study, it was stated that households with low financial literacy also had less tendency to plan for retirement (Lusardi & Mitchelli, 2007).

There is a literature that focuses on explaining the relationship of demographic factors such as gender, education, experience, income, which are the determinants of financial literacy, with financial literacy (Hassan Al-Tamimi & Anood Bin Kalli, 2009; Lusardi & Mitchell, 2008; Müller and Weber, 2010).When the effect of financial literacy on saving and investment behaviors is examined, it is suggested that individuals prefer to invest in financial information to access higher-yielding assets (Delavande et al., 2008). In this way, they will be able to hire financial advisors who can identify better performing assets and/or reduce investment expenditures (Delavande et al., 2008). In another study, it is predicted that financial literacy and wealth will be strongly related to the life cycle and affect retirement (Jappelli & Padula, 2013).

2.3. Financial Risk Tolerance

The attitudes and behaviors of individuals towards risk and its determinants continue to be the focus of attention of many segments. Risk in general; it can be defined as the probability of realizing different results than expected in the face of an event. Financial risk is expressed as the probability of obtaining less than the expected return (Sung & Hanna, 1996).

Financial risk tolerance can be defined as the maximum amount of uncertainty that an individual will be willing to accept (Grable, 2016). Offering investment alternatives suitable for financial risk tolerance levels and creating a portfolio in this direction causes individual investors to provide more return on their investments and to increase the satisfaction they receive from their investments. When individuals' financial risk tolerance levels are known, they are directed to riskier investments and higher returns are obtained. This makes them more satisfied with their investment.

Individuals' financial risk tolerance may change over time with the effect of internal and external factors. In a study, it is stated that financial risk tolerance, which is affected by emotions and personal attitudes, varies according to external factors (Cordell, 2001). In the study of Grable, Lytton, and Oneil in 2004, risk tolerance is evaluated as a flexible and variable attitude (Grable et al., 2004).

In studies on financial risk tolerance, it has been found that demographic and socioeconomic factors show little change in the measurement of financial risk tolerance (Grable and Joo, 1999). It was emphasized that the effect of demographic factors decreased when other factors such as financial information, solvency, and number of dependents were added to the model of the study (Grable & Joo, 1999). In the study of Grable & Joo (2000); the findings of the study in 1999 were supported and it was determined that high risk tolerance was associated with a high level of knowledge and internal locus of control in men (Grable & Joo, 2000). The determination of individuals' financial risk tolerance is expressed as the most remarkable feature that financial advisors should know about their clients (Gibson et al., 2013; Hanna & Lindamood, 2004; Roszkowski & Grable, 2005).

2.4. Financial Attitude

Attitude can be expressed as a concept that activates and shows continuity in accordance with behaviors. The concept of attitude generally describes the reaction tendency of the individual about any subject in his/her environment. In this context, financial attitude can be associated with attitudes about financial issues, financial products, and services. Financial attitudes are expressed as attitudes that activate individuals' long-term financial behaviors including savings and expenditures (Gönen & Özmete, 2007).

Although financial attitude is thought to be an innate feature, it is stated that information about money management is learned in childhood. It is stated that the financial attitudes of young individuals are affected by their families, and then shaped by their close friends, which affect the individuals' decisions regarding their future financial behavior (Hıra, 1997).

Financial attitude, which is related to the retirement plans, savings and investments of individuals, is accepted as a concept that is predicted to affect the financial behavior of individuals. It is possible for individuals to show a consistent attitude because of their experiences in spending, consumption and saving for the future. If individuals have a negative attitude towards saving for the future, it is expected that these individuals will be less inclined to save. Likewise, individuals who prioritize their short-term wishes are less likely than expected to make long-term plans (Alkaya & Yagli, 2015). Financial attitude is a financial attitude that is a response as "like"/"dislike" or "useful"/"not useful" regarding an individual's financial behavior (Potrich et al., 2016). The financial attitude affects the decisions to be taken in monetary matters such as spending and saving for the future. For example, individuals who are worried about their future will have a different tendency to spend and save compared to individuals who are not worried about their future (Denk et al., 2018).

3. Methodology

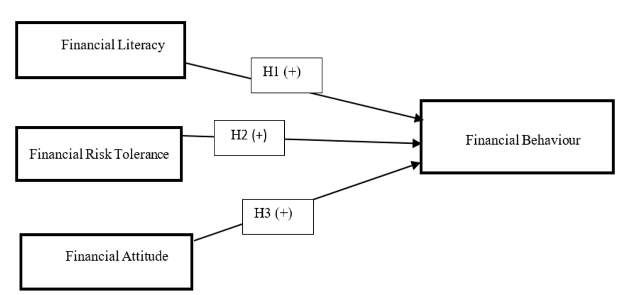
This research, which was conducted to explain the financial behaviors of individual investors, aims to examine the role of financial literacy, financial risk tolerance and financial attitude on these behaviors. By using simple random sampling method, it was tried to reach each subgroup in terms of demographic characteristics. For this research, the ethics committee approval decision was taken by Gebze Technical University Human Research Ethics Committee dated 17.12.2018 and numbered 2018/06. The survey method, which is the primary data collection method, was used. The data of the study were obtained from 1347 individuals over the age of 18 with financial independence in İstanbul, Ankara, İzmir, Kocaeli, Bursa, Sivas, and Karabük cities. Participants are mostly business owners and managers, public and private sector employees, academics and teachers, civil servants and consists of occupational groups such as retirees. The descriptive statistics of the sample provide information about the participants. Accordingly, 43.5% of the survey participants' are female and 56.5% of them are male, 44% undergraduate graduate and between the ages of 25-50. In addition, approximately 66% of the participants are married and 34% are single. The questionnaire was hand-delivered to the participants. The questionnaire form is in two parts. The first part consists of questions to determine the demographic characteristics of the participants, and the second part consists of 5-point Likert scale statements that were created to measure the participants' thoughts on financial literacy, financial risk tolerance, financial attitude and financial behavior.

In tests created by grading like the Likert scale, evaluations are made by calculating the Cronbach Alpha Coefficient (Tavşancıl, 2006: 28). As can be seen from Table 1, the scales used in the study.

SPSS 21.0 statistical program was used while analyzing the research data, and regression analysis was used when measuring the relationships between the variables. In this study, to measure the concept of financial literacy, Lusardi and Mitchell (2007) scale, for financial risk tolerance, "Grable et al. (2015) scale, to measure financial attitude and financial behavior; Scales developed by Potrich, Ani Caroline Grigion, Kelmara Mendes Vieira, and Wesley Mendes-Da-Silva (2016) were used. The scale validity of the variables was examined by performing explanatory factor analysis with the help of SPSS program. Relationships between variables were investigated using Pearson correlation analysis. Afterwards, hypothesis testing was performed with multiple linear regression analysis. The research model and the hypotheses are as follows:

1. H1: Financial risk tolerance positively affects the financial behavior of the individual investor.
2. H2: Financial attitude positively affects the financial behavior of the individual investor.
3. H3: Financial literacy positively affects the financial behavior of individual investors.

Figure 1 Research Model



In the study, explanatory factor analysis was performed to ensure scale validity. After factor analysis, correlation analysis was applied to determine the relationship between variables. To test the hypotheses; Multiple linear regression analysis was performed with financial behavior dependent variable, financial literacy, financial attitude, and financial risk tolerance independent variables.

The Kaiser-Meyer-Olkin (KMO) value, which indicates the suitability of the factor analysis and the adequacy of the sample, was obtained as 0.932. The fact that this value is above 0.70 indicates the appropriateness of the factor analysis and the adequacy of the sample (Field, 2009). The reliability and factor loads of the scales used to measure the variables of the study are shown in Table-1 below.

In the questionnaire used in the research, the statements directed to measure the variables of financial literacy, financial risk tolerance, financial attitude and financial behavior were subjected to reliability analysis. In tests created by grading like the Likert scale, evaluations are made by calculating the Cronbach Alpha Coefficient (Tavşancıl, 2006). As can be seen from Table-1, the scales used in the study. Cronbach Alpha coefficient for financial literacy scale was calculated as 0.879, for financial risk tolerance scale as 0.688, for financial attitude scale as 0.905 and for financial behavior scale as 0.898. The Cronbach Alpha coefficient was greater than 0.70 in all scales, except for a small difference in the financial risk tolerance scale.

It is accepted that the level of reliability is sufficient due to its large size (Nunnally & Bernstein, 1994). Factor analysis consists of many variables that measure the same construct, but a small number of identifiable. It is a multivariate statistic aimed at obtaining meaningful variables (Büyüköztürk, 2008). In the research, by applying exploratory factor analysis, it is expected that the expressions will show high factor loads under the relevant factors.

Table 1 Factor Loadings

Expressions	Financial Risk Tolerance	Financial Literacy	Financial Attitude	Financial Behaviour
I prefer investments with higher returns even if the risk is high.	0.824			
I like to invest in variable income and risky instruments compared to fixed income investment instruments.	0.778			
When I invest in stocks, I don't worry.	0.676			
If you had to make an investment of 10,000 usd, which investment option would be more attractive to you?	0.582			
When purchasing a product or service, I pay attention to the price/performance ratio.		0.976		
When purchasing a product or service, I compare prices.		0.955		
I aim to spend less than my income in order to be able to save.		0.646		
I know what a change in inflation and interest rates means.		0.554		
I am knowledgeable about financial products.		0.503		
I consider my income and my budget when I spend.		0.504		
It is important to plan for the future financially.			0.923	
Managing my money today is important to my future.			0.911	
It is important to save money on a monthly basis.			0.908	
It is important to control monthly expenses.			0.849	
I find it important to have and follow a monthly expense plan.			0.833	
When making installments, I find it important to compare current loan offers.			0.577	
I save money monthly.				0.997
I save money.				0.967
I plan my financial future.				0.801
I keep my expenses under control.				0.769
I check my credit card statement for possible errors and debts.				0.624
Before making big purchases, I analyze my financial situation.				0.590
I set long-term financial goals for my spending.				0.572
I know how much I will pay when I use a credit card.				0.550
Cronbach's Alphas	0,688	0,879	0,905	0,898

As seen in Table 1, the Cronbach alpha values of the factors since it is between 0.70 and 0.90, it is stated that they are suitable in terms of internal consistency (Nunnally & Bernstein, 1994). Cronbach's alpha coefficients of all the variables in the study, except for financial risk tolerance, are over 0.70. Although the financial risk tolerance is 0.688, it is accepted because there is a very small difference.

The results of the Pearson correlation analysis, which was conducted to show statistically the relationship between the variables of the study, are shown in Table-2.

Table 2 Correlations

Variables	1	2	3	4
1.Financial Behaviour	1	,566**	,690**	,038
2.Financial Attitude	,566**	1	,619**	-,022
3.Financial Literacy	,690**	,619**	1	,005
4.Financial Risk Tolerance	,038	-,022	,005	1

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

After the normal distribution of the variables was determined, the relationship between each other was tested with correlation analysis and the results of the analysis are shown in Table 2. Accordingly, all variables except financial risk tolerance are positively related to each other.

Table 3 Results of Regression

Financial Behaviour			
Independent variables	**Beta**	**t**	**p**
Financial Attitude	,226	8,926	,000
Financial Literacy	,550	21,691	,000
Financial Risk Tolerance	,040	2,008	,045
F	428,594	,000	
R Square	.508		
Adjusted R Square	.507		

The result of the regression analysis shows the R-squared value in the dependent variable explains the financial behavior as 0.508 or 50.8%. In this study, ANOVA was used to determine the importance of the regression model. Statistical significance can be expressed in Table-3, F ratio, consistent with the data, regression model, $F(3, 1343) = 428{,}594$, $p < 0.05$. This result indicates that the model and the data are suitable.

According to Table-3, the t-test for financial literacy, financial attitude and financial risk tolerance variable has 0.05 significance. Therefore, hypotheses H1, H2, and H3 were accepted as indicated in Table-4.

Table 4 Hypothesis

	Hypothesis	Result
H1	Financial risk tolerance positively affects the financial behavior of the individual investor.	Accepted
H2	Financial attitude positively affects the financial behavior of the individual investor.	Accepted
H3	Financial literacy positively affects the financial behavior of individual investors.	Accepted

4. Discussion and Conclusion

The results of the analysis mean that the factors of financial literacy, financial attitude and financial risk tolerance have an impact on financial behavior. Variables that are significant have coefficients of 0.550 (Financial literacy), 0.226 (Financial attitude), and 0.040 (Financial risk tolerance). This study concluded that investors' financial literacy levels, financial attitudes and financial risk tolerances have a direct relationship on their financial behaviors. In the study, it was seen that the financial literacy variable reached the highest coefficient. An increase in financial literacy by one unit shows a positive change in financial behavior by 0.550 points. Financial literacy means that the financial knowledge and equipment possessed by the individual positively reflects his attitude and actions in financial matters. For this reason, it is very important to carry out studies to increase the financial awareness of individuals. Therefore, financial literacy is a very important variable focused on financial attitudes and behaviors. In the study, the significant effect of financial literacy on the financial behavior of individuals was similarly reported in other studies (Andarsari & Ningtyas, 2019; Arifin, 2017; Aydemir & Aren, 2017; De Bassa Scheresberg, 2013; Grable et al., 2009; Hassan Al-Tamimi & Anood Bin Kalli, 2009; Hilgert et al., 2003; Ida & Dwinta, 2010; Lusardi & Mitchell, 2014; Lusardi & Mitchelli, 2007; Robb & Woodyard, 2011).

Research on financial literacy has determined that the individual's financial behavior reflects her knowledge of financial concepts and uses this knowledge for financial behavior and decisions. On the other hand, in a study in which financial literacy and financial behavior were meta-analysed, it was suggested that the major impact of financial literacy on financial behavior may arise from problems with measuring financial literacy or from ignoring other characteristics (Fernandes et al., 2013).

Financial attitude and financial risk tolerance are also factors focused on financial behaviors. It is very important to know the financial risk tolerance of individuals and to create a suitable financial product portfolio. In this way, financial risk tolerance is a concept that financial institutions should focus on in terms of increasing the returns from assets and investments, minimizing losses, and ensuring customer satisfaction. It is important that financial institutions that act as intermediaries for those in need of funds and those with surplus funds in financial markets act because of individual and psychological factors that have an impact on the individuals to transform these resources into investments with high returns. In this context, financial advisors should guide individuals in choosing investment instruments that are suitable for their psychological and individual characteristics. For this reason, before the investment portfolios are determined, individual investors should be evaluated in terms of psychological and individual factors, and those with high risk tolerance should be directed to risky assets and risk-averse individuals to fixed income investments.

In conclusion, the research emphasizes the importance of financial risk tolerance, financial literacy and financial attitude variables in explaining financial behaviors. It is thought that these variables will contribute to the relevant persons and organizations requesting information on the examination of the financial behavior of individuals. Increasing the economic welfare of individuals and countries in macro terms can only be achieved by the responsible financial behavior of these individuals. In this context, it is recommended that the government and other institutions develop policies in a way that examines financial behaviors and that variables such as financial literacy, financial attitude and financial risk tolerance, which have a significant impact on these behaviors, will lead individuals to display responsible financial behavior. On the other hand, it is important for financial institutions to get to know their customers better and to be able to balance planning, spending, investment and savings by displaying financial behaviors appropriate to their profiles in financial matters. In this way, individuals who make financial investments will also be able to get higher earnings and more satisfaction.

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