DAVRANIŞSAL FİNANS KAPSAMINDA FİNANSAL RİSK TOLERANSI VE DİJİTAL FİNANSAL TUTUMUN FİNANSAL YATIRIM KARARLARI ÜZERİNDEKİ ETKİLERİ

THE EFFECTS OF FINANCIAL RISK TOLERANCE AND DIGITAL FINANCIAL ATTITUDE ON FINANCIAL INVESTMENT DECISIONS UNDER BEHAVIORAL FINANCE

Dr. Öğr. Üyesi Adem ÖZBEK
Gümüşhane Üniversitesi, Sosyal Bilimler Meslek Yüksekoklu, Yönetim ve Organizasyon Bölümü, ademozbek@gumushane.edu.tr
Gümüşhane / Türkiye
ORCID: 0000-0001-6599-6337

ABSTRACT
Risk is one of the factors that push the financial behavior of investors out of rationality within the framework of behavioral finance. Constant change in financial markets necessitates financial product diversity. Financial products developed in accordance with the technological requirements of the time are tried to be delivered to the economic units in a fast and easy way with the effective use of technology. The parties that supply and demand these products have to use digital opportunities to reduce time and labor costs. Especially in financial transactions, digital channels that enable individuals to access financial products contain some risks appropriate to their structure. Individual attitudes towards digital financial products and services are determinant at the point of risk taking. The risk tolerance levels of individuals have a significant impact on the extent to which these risks are to be taken or not. In this study, it has been tried to determine the effects of individuals' financial risk expectations and attitudes towards channels that provide digital financial services on financial investment decisions. Research data were obtained by conducting an online survey of 507 people. Correlation methods were used to determine the relationships between variables, and linear regression methods were used to test hypotheses. As a result of the study, it has been determined that individuals' financial risk tolerance levels and digital financial attitudes are effective on financial investment decisions.
Keywords: Behavioral Finance, Financial Risk Tolerance, Digital Use, Financial Attitude, Financial İnvestment Decision

ÖZET
Finansal piyasalardaki sürekli değişim, beraberinde finansal ürün çeşitliliğini gerekli kılmaktadır. Zamanın teknolojik gerekliliklerine uygun geliştirilen finansal ürünler yine teknolojinin etkin kullanımı ile ekonomik birimlere hızlı ve kolay yollardan ulaştırılmaya çalışılıyor. Bu ürünleri arz ve talep eden taraflar zaman ve emek maliyetlerini azaltmak için dijital imkânları kullanmak zorunda kalmaktadır. Özellikle finansal işlemlerde, bireylerin finansal ürünlere erişimlerini sağlayan dijital kanallar, yapılarına uygun birtakım riskler içermektedir.

Bu çalışmada, bireylerin finansal risk beklentileri ve dijital finansal hizmet sağlayan kanallara yönelik tutumlarının, finansal davranışları üzerindeki etkileri belirlenmeye çalışılmıştır. 507 kişiye çevrimiçi olarak anket uygulaması yapılarak araştırma verileri elde edilmiştir. Değişkenler arasındaki ilişkilerin belirlenmesi için korelasyon, hipotezlerin test edilmesi amacıyla doğrusal regresyon yöntemleri kullanılmıştır. Çalışma sonucunda bireylerin finansal risk tolerans seviyeleri ve dijital finansal tutumları sergilenen dijital finansal davranışlar üzerinde etkili olduğu belirlenmiştir.

Anahtar Kelimeler: Finansal Risk Toleransı, Dijital Kullanım, Finansal Tutum, Finansal Davranış, Dijital Finansal Ürün

1.Introduction

Studies on how people interpret and act on information to make informed investment decisions are covered within the scope of behavioral finance (Lintner, 1998). Behavioral finance theories based on psychology try to understand how emotions and cognitive errors affect the behavior of individual investors (Kengatharan et al., 2014). Behavioral finance, unlike conventional finance, assumes that investors are irrational and proposes this assumption by discussing the psychological biases that affect the investor's financial investment decisions (Jureviciene and Jemakova 2012).

Since the 1960s, the subject of perceived risk has been used to explain the behavior of consumers. In reality, perceived risk within the framework of consumer behavior is the risk that the consumer believes exists in purchasing goods or services from a particular financial unit, regardless of whether a risk actually exists. The concept of perceived risk has a strong basis in the field of consumer behavior, which is very similar to the behavioral finance discipline (Ricciardi, 2008: 87). Financial decisions are one of the behaviors that make the importance of the concept of risk felt the most. Recent studies in finance show that although individual investors want to rationally maximize their options, diversify their portfolios and avoid risk in their investment decisions, they cannot achieve this in their investments (Kubilay and Bayrakdaroğlu, 2016: 171).

Risk perception and expectation are subjective, affected by social influences and cognitive biases. For this reason, the danger that a financial decision or behavior contains differs from person to person. Financial risk tolerance is generally defined as the maximum amount of volatility that a person is willing to accept when making a financial decision (Sulaiman, 2012: 109). Pidgeon et al. (1992) stated that risk perception includes people's beliefs, attitudes, judgments and emotions as well as broader social or cultural values. MacGregor et al., (1999) have commented that a number of qualitative factors can influence perceptions of risk, including the potential for large catastrophic losses, unpredictability of outcomes, and emotional responses. An investor's ability to handle risks may be related to demographic factors such as age, gender, marital status, occupation, income, time, liquidity needs, portfolio size, investment knowledge and attitude to price fluctuations (Sulaiman, 2012: 110).

Financial risk tolerance refers to an individual's perception of certain things that are affected by their past experiences, beliefs, and attitudes towards certain situations or activities (Sahi & Kalra, 2013). Ricciardi (2007) expressed an investor's risk tolerance as the level of comfort when choosing an investment option that includes risk. The financial decisions of individuals and the financial behaviors made as a result determine the size of the financial risks they face individually. However, the financial market actors involved are among the most important factors affecting these risks.

Attitude is the evaluation of ideas, events, objects or people and plays an important role in predicting investor behavior in various settings. Financial attitude is considered as preferences and tendencies towards personal finance issues (Aydin & Sycuk, 2019).

Today, on an individual basis, technology is the leading concept that makes life easier. Digital communication, which has developed depending on technology, has created important areas of use for financial transactions as well as in all areas of life. Financial investment instruments are at the forefront of these areas.

Especially during the Covid-19 pandemic period, the digital banking system has helped many economic units to carry out their financial investment activities. In addition to financial investment transactions, digital technology has contributed to the economic life of individuals in the context of insurance, commercial transactions subject to trading and obtaining financial information.

Digital financial transactions involve a number of financial risks that users cannot interfere with. According to the individually developed financial risk expectation, each financial risk is graded according to the size of the risk. The rated financial risk here influences which digital financial service or resource will be used. In this study, it is aimed to determine whether individuals' financial risk tolerance and attitudes towards digital financial products and services are effective on financial investment behaviors.

2. Literature Review

Helen and Simon (2000) stated that behavioral finance started to emerge as a new vision in finance publications in the 1990s, but the real roots of this field date back to 15 years ago. Behavioral finance focuses on issues that affect investors' risk judgment and final decision making, including factors known as cognitive biases or mental errors, as implied by Ricciardi and Simon (2000) in previous articles.

In the financial risk expectancy literature, there are studies to determine to what extent factors such as demographic, socio-economic, and psychological are related to financial risk expectation. Hanna and Chen (1997), in their study, stated that financial risk expectation is a subjective quality and therefore a genetic predisposition. Economists have traditionally tended to view financial risk tolerance as an objective function of the risk an individual can actually take (Van de Venter et al., 2012:795). West and Worthington (2012) reported that an individual's financial risk tolerance has an important role in financial and regulatory policies. In addition, although risk tolerance has been extensively studied in the implementation of the financial planning process and in the development of investment management models, there is no universally accepted measure for risk tolerance (Rahman, 2019: 259).

Grable (2000), in his study, created univariate test statistics to measure the importance of demographic, socio-economic and attitudinal factors in distinguishing the financial risk levels of the participants, and according to the test results, gender, age, occupation, income, educational knowledge and economic expectations of individuals' financial risk tolerance stated that it is important in differentiation between levels. Van de Venter et al. (2012), using the 2002-2006 smart investor survey data, reported that there are external effects on the changes in financial risk tolerance and that the individual's attitude towards financial risk tolerance is affected by important life events. In this direction, Cordell (2001) stated that, as with other personality traits, an individual's financial risk tolerance attitude can change over time as it is affected by important life events and other experiences.

Recent studies on financial risk tolerance have shown that; The relationship between risk perception and customer purchasing behavior is indirectly important, and this risk perception can affect customer purchasing behavior through attitude, benefit, trust and other factors (Li et al., 2019:77). Bhukya and Singh (2015) reported in their study that financial risk perceived by a customer has negative effects on purchase intention, and that consumers will be less likely to shop online when they have a higher level of financial risk.

Jacobs-Lawson and Hershey (2005), in their study in which they determined the effects of psychological variables on retirement savings, reported that higher future time perspective, knowledge of financial planning for retirement, and financial risk tolerance were associated with more aggressive savings profiles. Kubilay and Bayrakdaroğlu (2016) stated that individuals' risk attitudes have multiple dimensions, along with personality traits and psychological biases, and each personality has different prejudices and risk tolerance, as suggested by behavioral finance.

Ostrovsky-Berman and Litwin (2019), in their study investigating the effects of social networks on the level of financial risk tolerance, reported that social networks are effective on the financial decisions of the elderly and their preparation for retirement.

Digital mobile banking provides convenience for online transactions. Wewege (2017) stated that digital banking is a technology-based platform for the exchange of information between banks and consumers and the performance of transactions and services. Museba et al. (2021) reported that the adoption of mobile money service in Uganda has had a positive impact on bridging the digital divide, providing low-income people with access to affordable financial services, with person-to-person and grocery payments being among the most prominent daily transactions with the agency network within the community. In his study conducted in India, Begum (2018) stated that the adoption of digitalization in financial services and the inclusion of a large part of the population in the banking network will help the country's growth and development.

3. Research Methodology
3.1. Purpose and Model of the Research
In this study, it is aimed to determine how individuals' financial risk tolerance and attitudes towards digital financial products and services affect their financial investment decisions. In the model created in this direction, independent variables of financial risk tolerance and digital financial attitude scales constitute the dependent variable of financial investment decision scale.

Figure 1: Research Model
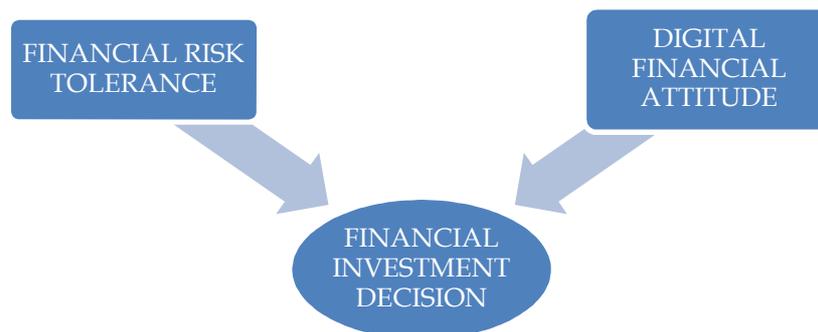
Financial Risk Tolerance
Risk expectation is a concept that has meaning for both financial service providers and investors (Hallahan et al., 2004:57). Risk expectation plays an important role in the optimal portfolio investment decisions of each economic unit. The expectations regarding the risk perception of the individuals participating in the study were measured in the questionnaire as follows:
- Perception of risk in terms of time
- Predictability of risk in financial transactions
- Risk taking in digital financial investment transactions
- Consequences of taking risks

Digital Financial Attitude
Financial services provided through digital channels provide significant time and cost savings. The primary factor affecting the use of these services by individuals is the sense of trust. For this purpose:
- Availability of Internet-based investment financial information
- Availability of digital channels in banking transactions for investment purposes

- Perception of trust in digital financial investment instruments
- The effects of digital banking on financial access have been tried to be measured.

Financial Investment Decision
In the financial investment scale, the investment behaviors that individuals shaped according to their risk expectations and attitudes towards financial investment instruments were tried to be evaluated. In this direction, questions about the use of investment instruments such as stocks, gold and foreign currency through digital channels were included in the questionnaire.

3.2. Sample and Method
The universe of the study consists of working and retired people who want to evaluate their savings with financial investment instruments. For this purpose, an online survey was conducted with 507 people in order to determine their financial risk, digital financial attitude and financial investment decisions. The expressions in the digital financial attitude scale in the questionnaire form were analyzed by Altun (2005) and Demir et al. (2016), statements on the scale of financial risk tolerance are taken from the studies of Sjöberg and Engelberg (2009). The statements in the questionnaire were examined at the meeting of the Scientific Ethics Committee of Gümüşhane University, dated 23/03/2022 and numbered 2022/2, and it was unanimously decided that there was no attitude contrary to ethical values. SPSS 21 program was used in the analysis of the survey data.

3.3. Results
First of all, reliability and normality analyzes were performed regarding the study data. The Cronbach's alpha reliability coefficient is between 0.60 and 0.80, indicating that the scale is quite reliable (Kalaycı, 2010:405). As a result of the analysis, the financial risk tolerance scale was calculated as 0.752, the digital financial attitude scale was 0.813, and the financial investment decision scale was 0.823 in relation to the Cronbach's alpha reliability coefficient. Skewness-Kurtosis values were used in the measurement of the normality of the data. Skewness-Kurtosis values Hair et al. (2013), -1.0 +1.0, according to Tabachnick and Fidell (2013) -1.5- +1.5, and according to George and Mallery (2010) -2.0 +2.0 values, it is stated that the series show normal distribution. The descriptive values of the group data used in the study are presented in Table 1. In the table, it is seen that the Skewness-Kurtosis values of the data are within the limits of -1.0 +1.0 and show a normal distribution.

Table 1. Descriptive Values of the Scales Used in the Study

Scales	N	Mean	Std. Deviation	Skewness	Kurtosis
Financial Risk Tolerance	507	3.0500	0.72688	0.058	0.505
Digital Financial Attitude	507	3.9332	0.70124	-0.150	0.532
Financial Investment Decision	507	3.9609	0.79390	-0.245	0.354

3.4. Demographic Findings

Table 2. Demographic Information of the Participants

		F	%
Gerder	Woman	211	41.6
	Man	296	58.4
Age	18-24	30	5.9
	25-34	147	29.0
	35-44	193	38.1
	45-54	112	22.1
	55-64	22	4.3
	65 and over	3	0.6
Education	Primary education	21	4.1
	High school	84	16.6
	University	325	64.1
	Master	77	15.2
Workplace	Private sector	175	34.5
	Public sector	271	53.5
	Own Busines	47	9.3
	Retired	*14*	*2.8*

In Table 2, 58.4% of the participants are men, 41.6% are women, 38.1% are 35-44 years old, 64.1% are university graduates, 16.6% are high school graduates, 53.5% are public, 34.5% ıt is seen that private sector employees constitute the majority.

Table 3. Gender Variable t-Test Results

	Gerder	N	Averg.	Std.Sp.	F	T	P
Financial Risk Tolerance	Woman	211	2.9439	0.71958		2.792	
	Man	296	3.1256	0.71958	0.105	2.788	0.005
Digital Financial Attitude	Woman	211	3.9722	0.67433		-1.058	
	Man	296	3.9054	0.71965	0.005	-1.070	0.291
Financial Investment Decision	Woman	211	4.0521	0.77931		-2.193	
	Man	296	3.8958	0.79909	0.007	-2.203	0.029

*p<0.05

According to the results of the independent sample t-test, which was conducted to determine whether there is a difference between the financial risk tolerance, digital financial attitude and financial investment decision levels of the participants according to gender, the financial risk tolerance of the participants according to the gender demographic factor ($p = 0.005 < 0.05$) and there is a significant difference (($p = 0.029 < 0.05$) between financial investment decisions. Looking at the averages, it is observed that men's financial risk tolerance is higher than women's, and women's financial investment decision tendencies are higher than men's.

Table 4. Pearson Correlation Coefficients Between Research-Related Variables

		Financial Risk Tolerance	Digital Financial Attitude	Financial Investment Decision
Financial Risk Tolerance	r	1		
	p			
Digital Financial Attitude	r	0.435**	1	
	p	0.000		
Financial Investment Decision	r	0.378**	0.759**	1
	p	0.000	0.000	

*p < 0.05; **p < 0.01

Looking at the correlation levels between the variables in Table 4, it is seen that there is a low correlation between the independent variables and there is no multicollinearity problem. When the relations of the dependent variable with the independent variables are examined, it is seen that there is a 0.378 positive moderate correlation relationship between the financial investment decision and financial risk tolerance, and a 0.759 positive high level correlation relationship with the financial attitude.

Table 5. Results of Regression Analysis of Research-Related Variables

Model	Unstandardized Coefficients		Stand. Coefficients				
	B	Std.error	Beta- β	t	p	VIF	Tolerance
Constant	0.499	0.138		3.612	0.000		
Financial Risk Tolerance	0.059	0.035	0.059	1.847	0.045	1.285	0.811
Digital Financial Attitude	0.830	0.036	0.733	22.828	0.000	1.233	0.625

Dependent Variable: Financial Investment Decision F=346.010 p= 0.000 R2=0.579
Adjusted R2=0.577

In Table 5, the VIF and tolerance values for the variables of the financial investment decision are given. Hair et al. (2006), the lower the VIF value and the larger the tolerance value, the lower the probability of multiple correlations between the variables. Looking at the table values, it is seen that there is no multicollinearity problem between the variables, since the VIF value is below 10 and the tolerance value is above 0.10. The R2 value in the table is 0.579 and the corrected R2 value is 0.577. This value shows that the variables of financial risk tolerance and digital financial attitude explain the financial investment decisions exhibited by approximately 58%. Model F value is 346.010 and p<0.001. A statistically significant and positive relationship was found between the financial investment decisions, financial risk tolerance and digital financial attitudes of the participants at the p=0.005 significance level.

4. Conclusion

With each passing time, many economic factors and financial access opportunities are emerging that affect individual investment behaviors. These factors and opportunities have a direct impact on individual investment behavior with an uncertain financial risk ratio. These risks vary according to the return and value of the investment instrument. At this point, the determinant of the risks that individuals can take in investment decisions is the level of risk tolerance they have.

Today, the concept of financial risk has begun to change with the level of technological infrastructure. With the change in this concept, the meaning of trust has begun to be attributed to the profit and loss expressions within it. A secure environment is needed not only in investment decisions but also in almost all financial transactions. The profit, loss and trust side of financial transactions determine the financial risk tolerances that can be taken on behalf of individuals. In particular, these acceptable risk tolerances have significant effects on individuals' financial attitudes.

In the study, the effects of individuals' financial risk tolerance and digital financial attitudes on financial investment decisions were tried to be determined. For this purpose, the risk definitions and perceptions of individuals in the dimension of risk tolerance, and the attitudes towards the technological infrastructure used for financial transactions in the dimension of digital financial attitudes are discussed. The analyzes show that the participants do not find digital financial channels risky in accessing investment instruments such as stocks, gold, and foreign currency and using digital financial channels for investment purposes. Considering that the widespread use of digital financial services affects financial access positively, this will allow both the development of financial markets and the reduction of consumer product acquisition costs.

REFERENCES

Aydin, A.E. & Akben Selcuk, E. (2019), "An investigation of financial literacy, money ethics and time preferences among college students: a structural equation model", International Journal of Bank Marketing, available at: https://doi.org/10.1108/IJBM-05-2018-0120.

Begum, M. F. (2018). An Overview of Digital Financial Services in India: Concept, Initiatives andAdvantages. *Asian Journal of Management*, 9(3), 1139-1144.

Bhukya, R. & Singh, S. (2015), "Theeffect of perceived risk dimensions on purchase intention: an empirical evidence from Indian private labels market", *AmericanJournal of Business*, Vol. 30 No.4, 218-230, https://doi.org/10.1108/AJB-10-2014-0055.

Cordell, D. M. (2001). Risk PACK: How toevaluate risk tolerance. *Journal of Financial Planning*, 14, 36–41.

George, D. & Mallery, M. (2010). SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 Update (10a Ed.) Boston: Pearson.

Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk taking in every day Money matters. *Journal of business and psychology*, 14(4), 625-630.

Hair, J. F., R. E. Anderson, R. L. Tatham & W. C. Black (2006), Multivariate Data Analysis, *NewJersey: PrenticeHall*.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. & Tatham, R. L. (2013). Multivariate Data Analysis: Pearson Education Limited.

Hallahan, T. A., Faff, R. W., & McKenzie, M. D. (2004). An empirical investigation of personal financial risk tolerance. *Financial Services Review-greenwich-*, 13(1), 57-78.

Hanna, S. D., & Chen, P. (1997). Subjective and objective risk tolerance. Implicationsfor optimal portfolios. *Financial Counselingand Planning*, 8, 17–26.

Jacobs-Lawson, J. M., & Hershey, D. A. (2005). Influence of future time perspective, financial knowledge, and financial risk toleranceon retirement saving behaviors. *Financial Services Review-greenwich-*, 14(4), 331.

Jureviciene, D., & Kristina, J. (2012). The Impact of Individuals' Financial Behaviour on Investment Decisions. Paper presented at the anual meeting fort he Society of 1 st. Electronic International Interdisciplinary Conference, Slovakia, September 3-7.

Kalaycı, Ş. (2010). SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri. 5.bs. Ankara: *Asil Yayın Dağıtım.*

Kengatharan, L., & Kengatharan, N. (2014). The influence of behavioral factors in making investment decisions and performance: Study on investors of Colombo Stock Exchange, Sri Lanka. Asian Journal of Finance & Accounting, 6(1), 1.

Kubilay, B., & Bayrakdaroglu, A. (2016). An empirical research on investor biases in financial decision-making, financial risk tolerance and financial personality. *International Journal of Financial Research,* 7(2), 171-182.

Li, Z., Sha, Y., Song, X., Yang, K., ZHao, K., Jiang, Z., & Zhang, Q. (2019). Impact of risk perception on customer purchase behavior: a meta-analysis. *Journal of Business &Industrial Marketing.*

Lintner, G. (1998). Behavioural finance: Why investors make bad decisions. The Planner, 13(1), 7-8

Macgregor, D.G., Slovic, P., Berry, M. & Evensky, H.R. (1999). "Perception of Financial Risk: A Survey Study of Advisors and Planners. *Journal of Financial Planning*, 12 (8), 68-86.

Masoud, E.Y. (2013), "The effect of perceived risk on online shopping in Jordan", *European Journal of Business and Management*, Vol. 5 No. 6, 76-87.

Museba, T. J., Ranganai, E., & Gianfrate, G. (2021). Customer perception of adoption and use of digital financial services and mobile Money services in Uganda. Journal of Enterprising Communities: People and Places in the Global Economy.

Ostrovsky-Berman, E., & Litwin, H. (2019). Social network and financial risk tolerance among investors nearing and during retirement. *Journal of FamilyandEconomic Issues*, 40(2), 237-249.

Pidgeon, N., Hood, C., Jones, D., Turner, B. & Gibson, R. (1992). "Risk Perception", chapter 5 in TheRoyal Society,

Rahman, M. (2019). Propensity toward financial risk tolerance: an analys is using behavioral factors. *Review of Behavioral Finance.*

Ricciardi, V. (2007), "A literature review of risk perception studies in behavioural finance: the emerging issues", available at: www.slideshare.net/MShareS/a-literature-review-of-risk-perceptionstudies-in-behavioural-finance (accessedSeptember 27, 2014).

Ricciardi, V., & Simon, H. K. (2000). What is behavioral finance? The Business, Education and Technology Journal, 2, (1), 26-34.

Sulaiman, E. K. (2012). An empirical analysis of financial risk tolerance and demographic features of individual investors. *ProcediaEconomicsand Finance*, 2, 109-115.

Tabachnick, B. G. & Fidell, L. S. (2013). Using Multivariate Statistics: International Edition. Pearson 2012.

Türkiye Cumhuriyeti Cumhur Başkanlığı Finans Ofisi, Türkiye Fintek Ekosistemi Durum Raporu, 2021.

Van de Venter, G., Michayluk, D., & Davey, G. (2012). A long itudinal study of financial risk tolerance. *Journal of Economic Psychology*, 33(4), 794-800.

West, T. & Worthington, A. (2012), "Financial risk attitudes and macro economic factors: evidence from the HILDA survey", paper presented at the Annual Meetings of the European Financial Management Association, Griffith University, Nathan.

Wewege, L. (2017). The Digital Banking Revolution: How the Financial Technology Companies Are Rapidly Transforming Retail Banking. BabyBook.