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Determination of Factors That Affect Use of E-Commerce in Eastern Turkey Through Categorical Data Analysis

Türkiye'nin Doğu Bölgesinde E-Ticaret Kullanımını Etkileyen Faktörlerin Kategorik Veri Analizi ile Belirlenmesi

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ABSTRACT

E-commerce can be defined as carrying out, handling and facilitating commercial activities over computer networks. E-commerce is an output of the latest technological developments witnessed in recent years that further facilitate free trade on a global scale as well as communication of information. This study aimed to investigate the differences in the use of e-commerce by individuals living in eastern part of Turkey and determine the relationship between demographic, economic and personal characteristics of individuals and use of e-commerce. Microdata set obtained from Household Information Technologies Use Survey was used in the study. Sampling method employed in the study was stratified 2-stage cluster sampling. Binary logistic regression analysis was used to determine factors associated with the individuals' use of e-commerce. According to the study, the likelihood of an individual with an income level of ₺6001 and above in the eastern region to use e-commerce was found to be 54.5% higher compared to the reference group (₺2000 and below).

As a result of the study, variables such as income level, age, gender, occupation, use of social media, searching for information on goods and services on the internet, selling goods or services on the internet, use of internet banking, use of e-government, number of information equipment available in the household and household size were found to be associated with the use-of e-commerce.

Considering the findings of the study, it is necessary to make internet use widespread by facilitating development of e-commerce in less developed regions and improving infrastructure for information and communication technology in these regions. Therefore, interventions specific to region need to be taken into consideration for access to information on e-commerce.

Keywords: Electronic commerce, online shopping, online purchase, e-commerce, Turkey, binary logistic regression.

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ÖZ

E-ticaret, bilgisayar ağları üzerinden ticari faaliyetlerin yürütülmesi, işlem görmesi ve olanak tanınması olarak tanımlanabilir. E-ticaret, küresel ölçekte ticaretin serbestleştirilmesinin yanı sıra, bilgi iletişimini daha da kolaylaştıran son yıllarda tanık olunan en son teknolojik gelişmelerin bir ürünüdür. Bu çalışmanın amacı, Türkiye'de doğu bölgesinde yaşayan bireylerin e-ticaret kullanım farklılıklarını araştırmak ve bireylerin demografik, ekonomik ve kişisel özellikleri ile e-ticaret kullanımı arasındaki ilişkiyi belirlemektir. Çalışmada, Hanehalkı Bilişim Teknolojileri Kullanım Araştırmasından elde edilen mikro veri seti kullanılmıştır. Araştırmanın örnekleme yöntemi 2 aşamalı tabakalı küme örneklemesidir. Bireylerin e-ticaret kullanımı ile ilişkili faktörlerin belirlenmesi için binary logistic regresyon analizi kullanılmıştır. Çalışmaya göre doğu bölgesinde geliri ₺6001 ve üstünde olan bir bireyin referans gruba (₺2000 ve altı) göre e-ticaret kullanma olasılığı 54.5% daha fazladır.

Çalışmanın sonucunda eğitim durumu, gelir düzeyi, yaş, cinsiyet, meslek, sosyal medya kullanımı, internette mal ve hizmetler hakkında bilgi arama faaliyetinde bulunma, internette mal veya hizmet satışı faaliyetinde bulunma, internet bankacılığı kullanımı, e- devlet kullanımı, hanedeki bilişim ekipmanı sayısı ve hanehalkı büyüklüğü değişkenlerinin e-ticaret kullanımıyla ilişkili olduğu tespit edilmiştir.

Çalışmanın sonucuna göre gelişmişlik düzeyi düşük olan bölgelerde e-ticaretin geliştirilmesi kolaylaştırılarak ve bu bölgelerde bilgi ve iletişim teknolojisi altyapısı iyileştirilerek internet kullanımının yaygınlaştırılması gerekmektedir. Dolayısıyla e-ticaret ile ilgili bilgilere ulaşmada bölgeye özgü müdahalelerin hesaba katılması gerekmektedir.

Anahtar Kelimeler: Elektronik ticaret, çevrimiçi alışveriş, çevrimiçi satın alma, e-ticaret; Türkiye, lojistik regresyon**.**

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1. INTRODUCTION

Various shopping techniques and methods have been used throughout human history in line with the conditions of periods. As one of the great changes in this period, internet environment is among these shopping methods (Barnes and Vidgen, 2002). It can be argued that today's technologies and innovations have a great effect on the change in people's shopping habits. Rapid development in information and internet technologies, use of these technologies in almost all areas of daily life affect individuals' motivations regarding internet shopping (Corbitt et al. 2003).

Internet, a new marketing channel, offers different types of products and services for consumers (Silahtaroğlu & Dönertaşlı, 2015). An electronic marketplace has the advantage of offering more choice, lower prices, easy search and access to online customers. For this reason, the market share of internet is increasing every passing day. Accordingly, demographic characteristics and behavior patterns of consumers gain importance in terms of buying or not buying (Thompson & Teo, 2000). Mostly written as e-commerce, electronic commerce refers to trade products and services or to ease commerce by using computer networks such as internet (Gümüş & Kısa, 2016).

Online commerce provides consumers with 24 hours shopping opportunity. In addition, consumers should not visit physical stores of sellers, which locate in a different city or country, in order to do shopping (Gökmen, 2012). Therefore, consumers save both time and travel expenses. When compared to traditional shopping, it is seen that online shopping provides consumers with more control and bargaining power. Because it is likely to get more information about the products and services available on the internet in online shopping (Huseynov & Yıldırım, 2016).

As the contribution of shopping made by internet in the economy has increased, the competition has also raised in this field. As internet shopping has some advantages compared to traditional business,

enterprises are also in a tendency towards internet shopping (Lee et al. 2017). It is seen both in the world and in our country that there has been a significant increase in both the number and volume of internet shopping that individuals do by smart devices such as mobile phones, personal digital assistant (PDA), computers, tablets (Changchit et al., 2019). Consumers tend to cross border shopping due to permanent growth in global trade and rapid development in digital society (Stoklosa, 2020). These tendencies have promoted traditional foreign trade styles to be raised in various dimensions of sustainability. Consumers can be offered attractive products by competitive prices and wide product range, thus, time and space distance between consumers and suppliers can be significantly shortened (Valarezo et al., 2018). Consumers use internet for searching information regarding products, and they are expected to carry out this more in the future (Afsar, Qureshi, Rehman and Bangash, 2011). Contrary to traditional shopping, internet shopping saves consumers time in finding a product. In addition, internet shopping offers lower search cost due to a decrease in energy cost used when comparing product prices. For this reason, internet shopping help consumers obtain price and product information from various sellers more rapidly and easily (Shin and Biocca, 2017).

Economic and social development differs in time and space on earth (Tvrdoň & Skokan, 2011). While this difference allows advantageous spaces to progress, others fall behind. Accordingly, it is seen that this results in a spatial inequality. This problem may occur between countries as well as between regions in a country. Today, regional development difference applies to all countries, whether these are developed and developing countries. In this case, countries show a great effort to overcome this problem (Gezici & Hewings, 2007).

The digital divide between the regions with different development levels influences the use of telecommunications and other advanced technologies (Donnermeyer and Hollifield, 2003). Socioeconomic factors affect the use of information and communication technology, and also leads to regional differences. Each region has its special infrastructure, economy and population. It is observed that this provides a basis for environmental diversification of related location (Mills & Whitacre, 2003). Accordingly, this also affects individuals' difference in internet shopping according to regions (Yeh, Hsiao, &Yang, 2012).

Although traditional shopping methods are still used more across the world, internet shopping is observed to increase rapidly. According to Global E-Commerce Report, the two shopping categories that consumers do more via internet than stores in 2018 are book, music, movie & video games (60%) and toys (39%). In general, the purchases made online are as follows: 43% of electronics & computer category, 36% of sports equipment & outdoor, 37% of health & beauty, 40% of clothing & footwear, 32% of jewelry/watches, 33% of household appliances, 30% of DIY/home improvement, 30% of furniture & homeware and 23% of grocery (Global E-Commerce Statistics, 2019). When examining the sectors, in which internet shopping was used, by continents, the sectors in which most internet shopping done are as follows: packaged food (40%) in Asia-Pacific region, video games in North America (31%), personal care products in South America (28%), fashion in Eastern Europe (49%), electronic goods (36%) in Western Europe and fashion (35%) in the Middle East and Africa (Global E-Commerce Statistics, 2019).

It is seen that e-commerce first started in the 1990s and then achieved a rapid increase at the beginning of the 2000s (Kaya et al., 2019). In research carried out in 28 countries, the average internet use of

people, who ordered or purchased a product or service over the internet in the last year, was 87% in Europe while it was 72% in Turkey. The average rate of people who ordered or purchased a product or service was found to be 60% in Europe whereas it was 25% in Turkey (Eurostat, 2018).

In literature, there are some studies on the fact that demographic factors affect individuals' attitudes towards online purchasing behavior (Cheung, Chan, & Limayem, 2005; Lightner, 2003; Sim & Koi, 2002). The distribution of different demographic groups is worth analyzing in terms of the use of e-commerce by region. This study conducted a systematic analysis to investigate the impact of selected demographic factors on e-commerce use among individuals.

In this study, the research questions regarding the e-commerce made by individuals living in the Eastern regions of Turkey are as follows: "What are the socio-demographic characteristics of individuals living in the eastern regions?" and “Is there a relationship between the demographic, economic and personal characteristics of individuals living in the Eastern regions and their use of e-commerce?”.

2. MATERIAL and METHOD

2.1. Data

In this study, the Household Information Technologies (IT) Usage Survey micro data set performed by the Turkish Statistical Institute in 2019 was used. The Household Information Technologies Survey has been carried out since 2004 in order to provide information on information and communication technologies in houses and the use of these tools. The Household Information Technologies Survey is also a primary data source providing information about the use of these technologies (TÜİK, 2019). In this study, the data obtained from 8002 individuals who participated in the Household Information Technologies Survey 2019 from eastern regions were used.

2.2. Outcome Variables

In the Household Information Technologies Survey, the Statistical Territorial Unit where people live is given. Turkey is classified into 12 regions in Level 1 under Nomenclature of Territorial Units for Statistics (NUTS). Only eastern regions were used in this study. The provinces in the eastern regions are shown in detail in Table 1. The eastern region was employed in the study (Ünver & Alkan, 2021).

Table 1. Nomenclature of Territorial Units for Statistics - Level 1

Region	Code	NUTS -1	Provinces
Eastern Regions	TR9	Doğu Karadeniz	Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane
	TRA	Kuzeydoğu Anadolu	Erzurum, Erzincan, Bayburt, Ağrı, Kars, Iğdır, Ardahan
	TRB	Ortadoğu Anadolu	Malatya, Elâzığ, Bingöl, Tunceli, Van, Muş, Bitlis, Hakkâri
	TRC	Güneydoğu Anadolu	Gaziantep, Adıyaman, Kilis, Şanlıurfa, Diyarbakır, Mardin, Batman, Şırnak, Siirt

The dependent variable of the study is the e-commerce use of individuals in the eastern regions in the last year. The individuals participating in the research received the code "1" if they used e-commerce in the last year as of the period of the survey and "0" if they did not.

2.3. Independent Variables

The independent variables to be included in this study are the ones obtained by the Household Information Technologies Usage Survey and the ones to be determined as a result of the literature search. The quantitative independent variables of the study are the number of information equipment in the household and the size of the household. The categorical variables included in the model were measured by a nominal and ordinal scale. Qualitative variables are as follows: income level (₺2000 and below, ₺2001-₺4000, ₺4001-₺6000 and ₺6001 and above), age (15-24, 25-34, 35-44, 45- 54, 55-64 and 65, and above), gender (male, female), education level (uneducated, primary school, secondary school, high school, university), use of social media in the last three months (yes, no), search for information about goods and services on the internet in the last three months (yes, no), goods or service selling activity on the internet in the last three months (yes, no), internet banking use (yes, no), e-government use in the last 12 months (yes, no). Ordinal and nominal variables were identified as dummy variables in order to observe the effects of the categories of all variables to be included in binary logistic regression (Alkan, Oktay, Ünver, & Gerni, 2020).

2.4. Statistical Analysis

Survey statistics in Stata 15 (Stata Corporation) were used to account for the complex sampling design and weights. Weighted analysis was performed. One of the main areas of statistical inference is to test hypotheses. SPSS 20 and Stata 15 programs were utilized to analyze the data. First of all, the frequencies and percentages of the individuals participating in the research were obtained for demographic, economic and personal factors by regions. In this study, binary logistic regression method was used to explore the relationship between demographic, economic and individual factors and e-commerce use by region.

Binary logistic regression analysis was conducted to determine the factors that were influential on e-commerce use. This particular analysis is used to study the relationship between the dependent variable and the independent variable(s) in cases where the result (dependent) variable has two options (binary/dichotomy). Binary logistic regression not only provides the opportunity to evaluate the statistical significance of each independent variable as a risk factor but also the opportunity to calculate the odds ratio. The cumulative logistic distribution function is used in the binary logit model (Alkan & Ünver, 2020).

3. RESULTS

3.1. Characteristics of Participants

The frequencies and percentages of the variables used in the study are provided in Table 2. According to Table 2, while 20.3% of the individuals were between 25-34, 8.7% of them were in the age group of 65 and over. When examining the variable of education, it was seen that 27.4% of the participants graduated from primary school, whereas 12.5% of them had a university graduate. In addition, 53% of the participants were male, and 47% of them were female. While the monthly income of 49.7% of individuals was ₺2000 and below, 6.2% of them had an income of ₺6001 and above. When examining Table 2, it is seen that while 45.6% of the participants used social media, 20.4% of them used internet

banking. It is observed that 34.1% of the participants used the e-government application in the last 12 months.

When examining Table 2, it is specified that 31.6% of the participants engaged in a search for information about goods and services on the internet in the last three months, and 13.3% of them carried out a goods or service selling activity on the internet in the last three months. In the study, it was tested whether there was a multicollinearity between the independent variables to be included in the binary logistic regression model. Those with variance inflation factor (VIF) values of 5 and above were considered to cause moderate, whereas those with 10 and above caused a high degree multicollinearity (Alkan & Abar, 2020). In this study, there is no variable causing a multicollinearity problem between variables.

Table 2. Findings on Factors Related to E-Commerce Use

Qualitative Variables		**n**	**%**	**VIF**	**1/VIF**
Income level	₺2000 and below	3973	49.7	1.35	0.742
	₺2001-₺4000	2770	34.6	ref.	ref.
	₺4001-₺6000	763	9.5	1.24	0.807
	₺6001 and above	496	6.2	1.3	0.77
Age	15-24	1615	20.2	3.85	0.26
	25-34	1621	20.3	3.32	0.301
	35-44	1618	20.2	3.18	0.314
	45-54	1355	16.9	2.7	0.37
	55-64	1096	13.7	2.27	0.44
	65 and above	697	8.7	ref.	ref.
Gender	Male	4240	53	ref.	ref.
	Female	3762	47	1.27	0.787
Education level	Uneducated	2027	25.3	4.44	0.225
	Primary School	2191	27.4	3.95	0.253
	Secondary School	1569	19.6	3.06	0.327
	High School	1214	15.2	2.22	0,45
	University	1001	12.5	ref.	ref.
Social media	Yes	3652	45.6	1.84	0.543
	No	4350	54.4	ref.	ref.
Goods/service information	Yes	2532	31.6	1.95	0.512
	No	5470	68.4	ref.	ref.
Goods/service sales	Yes	1066	13.3	1.36	0.736
	No	6936	86.7	ref.	ref.
Internet banking	Yes	1636	20.4	1.91	0.524
	No	6366	79.6	ref.	ref.
E-government use	Yes	2731	34.1	2.14	0.466
	No	5271	65.9	ref.	ref.
Quantitative Variables		**Mean**	**S. Dev.**		
The number of information equipment in the household		1.82	1.05	1.40	0.71
Household size		4.85	2.41	1.27	0.79

3.2. Model Estimation

The binary logistic regression model was used to determine the factors associated with the e-commerce use of the participants. The results of the estimated model are provided in Table 3. When examining Table 3, it is seen that income level, age (15-24, 25-34, 35-44, 45-54), gender, education level, social media use, goods/services information, goods/services sales, internet banking use, e-government use, the number of information equipment in the household and the household size variables were found to be significant.

Table 3. Estimated Coefficients of Factors Associated with Individuals' Use of E-Commerce

Variables	**β**	**S.E**
Constant	-3.77[a]	0.382
Income level (reference category: ₺2001-₺4000)		
₺2000 and less	-0.374[a]	0.121
₺4001-₺6000	-0.383[b]	0.162
₺6001 and above	0.304[c]	0.171
Age (reference category: 65 and above)		
15-24	1.89[a]	0.357
25-34	1.912[a]	0.346
35-44	1.529[a]	0.346
45-54	0.758[b]	0.354
55-64	-0.091	0.415
Gender (reference category: male)		
Female	-0.683[a]	0.115
Education level (reference category: university)		
Uneducated	-1.835[a]	0.339
Primary School	-1.047[a]	0.192
Secondary School	-0.801[a]	0.168
High School	-0.327[b]	0.152
Social media (reference category: no)		
Yes	0.712[a]	0.139
Goods/service information (reference category: no)		
Yes	0.692[a]	0.12
Goods/service sales (reference category: no)		
Yes	1.185[a]	0.12
Internet banking (reference category: no)		
Yes	1.072[a]	0.125
E-government use (reference category: no)		
Yes	0.672[a]	0.134
The number of information equipment in the household	-0.132[a]	0.048
Household size	0.277[a]	0.028

[a]p<.01; [b]p<.05; [c]p<.10

The estimated odds ratios of the factors related to the e-commerce use of individuals are given in Table 4. If it is OR<1 according to the logistic regression analysis, the examined factor (relative to the reference) has little effect on the investigated case. When it is OR>1, It has an enhancing effect compared to the reference group (Alkan, Oktay, & Ünver, 2020).

According to the logistic regression analysis results provided in Table 4, the odds ratio of e-commerce uses of an individual with an income ₺6001 and above is higher than the reference group (OR=1.355; 95% CI =0.969–1.895). The odds ratio of e-commerce use of an individual with an income between ₺4001-₺6000 is lower than the reference group (OR=0.682; 95% CI=0.496–0.937). The odds ratio of e-commerce use of an individual within 25-34 age group has a higher odds of e-commerce use compared to the reference group (OR=6.765; 95% CI=3.435–13.321). Similarly, an individual in 45-54 age group has a higher odds of e-commerce use compared to the reference group (OR=2.135; 95% CI=1.067–4.272). The odds ratio of e-commerce use of a female living in the easter region is lower than a male (OR=0.505; 95% CI=0.403–0.633). An individual with a high school graduate has a lower odds ratio of e-commerce use than the reference group (OR=0.721; 95% CI=0.536–0.971). The odds ratio of e-commerce use of an individual with uneducated is lower than the reference group (OR=0.16; 95% CI=0.082–0.31). In a similar vein, while the odds ratio of e-commerce use of an individual with primary school graduate is lower than the reference group (OR=0.351; 95% CI =0.241–0.511), the odds ratio of e-commerce use of an individual with secondary school graduate is lower than the reference group (OR=0.449; 95% CI=0.323–0.624). An individual using social media uses e-commerce more than others (OR=2.038; 95% CI=1.553–2.675). The odds ratio of e-commerce use of an individual having a goods or service sales on the internet in the last three months is higher than others (OR=3.271; 95% CI=2.588–4.134). The odds ratio of e-commerce use of an individual performing an information search activity on the internet in the last three months is higher than others (OR=1.999; 95% CI =1.581–2.528). An individual using internet banking has a higher odds ratio of e-commerce use than others (OR=2.922; 95% CI=2.285–3.737). The odds ratio of e-commerce use of an individual using the e-government application in the last twelve months is higher than others (OR=1.958; 95% CI=1.507-2.545). As the number of information equipment in the household increases, the odds ratio of e-commerce use increases (OR=1.319; 95% CI=1.202–2.448). As the household size increases, the odds ratio of e-commerce use decreases (OR=0.876; 95% CI=0.83–0.925).

Table 4. The Estimated Odds Ratios of The Factors Related to the E-Commerce Use of Individuals

Variables	**OR**	**S.E**	**95% CI**	
			Lower	**Upper**
Constant	0.23[a]	0.009	0.011	0.049
Income level (reference category: ₺2001-₺4000)				
₺2000 and less	0.688[a]	0.083	0.542	0.872
₺4001-₺6000	0.682[b]	0.111	0.496	0.937
₺6001 and above	1.355[c]	0.232	0.969	1.895
Age (reference category: 65 and above)				
15-24	6,62[a]	2.361	3.290	13.32
25-34	6.765[a]	2.338	3.435	13.321
35-44	4.613[a]	1.596	2.342	9.088
45-54	2.135[b]	0.755	1.067	4.272
55-64	0.913	0.379	0.405	2.058
Gender (reference category: male)				

Female	0.505[a]	0.058	0.403	0.633
Education level (reference category: university)				
Uneducated	0.16[a]	0.054	0.082	0.31
Primary School	0.351[a]	0.067	0.241	0.511
Secondary School	0.449[a]	0.076	0.323	0.624
High School	0.721[b]	0.109	0.536	0.971
Social media (reference category: no)				
Yes	2.038[a]	0.283	1.553	2.675
Goods/service information (reference category: no)				
Yes	1.999[a]	0.239	1.581	2.528
Goods/service sales (reference category: no)				
Yes	3.271[a]	0.391	2.588	4.134
Internet banking (reference category: no)				
Yes	2.922[a]	0.367	2.285	3.737
E-government use (reference category: no)				
Yes	1.958[a]	0.262	1.507	2.545
The number of information equipment in the household	1.319[a]	0.063	1.202	1.448
Household size	0.876[a]	0.024	0.83	0.925

[a]p<.01; [b]p<.05; [c]p<.10

4. DISCUSSION and CONCLUSION

It is seen that e-commerce has become one of the biggest megatrends of the global economy after internet has become rapidly widespread. In this study, the data obtained from 8002 individuals who participated in the Household Information Technologies Survey 2019 from eastern regions were used. The factors affecting the e-commerce use of individuals in Turkey were determined using binary logistic regression analysis. The analysis results suggested that education level, income level, age, gender, social media use, search for information about goods and services on the internet, goods or service selling activity on the internet, internet banking use variables have been found to have a relationship with the e-commerce use.

It has been concluded in the study that as the education level of individuals has increased, their possibility to use e-commerce has increased. The studies in the literature have shown similar results (Akman & Rehan, 2014; Ünver &Alkan, 2021; Tarafdar &Vaidya 2006). As the income levels of individuals have increased, their possibility to use e-commerce has increased. Similar conclusions have been achieved in the prior studies (Hwang, Jung, & Salvandey, 2006; Cristóbal-Fransi, et al. 2015; Akman &Mishra, 2010). In the study, it has been identified that as the age of the individuals has increased, their possibility to use e-commerce has decreased. The studies in the literature have shown similar results (Bhatnagar, & Ghose, 2004; Alqahtani, Goodwin, & de Vries, 2018; Beneke, Scheffer, & Du, 2010). The study suggested that the e-commerce use rate of males is higher than females. Similar conclusions have been achieved in the prior studies (Zhang, 2005; Hashim, Ghani, & Said, 2009; Potosky, 2007). It has been found that individuals using social media have higher e-commerce more use than others. The studies in the literature have shown similar results (Pucci, 2019; Çera, Phan, Androniceanu, & Çera, 2020). It has been concluded that the individuals carrying out goods or service sales activity on the internet have had a higher e-commerce use than others. Similar conclusions have been achieved in the prior studies (Vicente, 2015; Ünver& Alkan, 2020). The individuals using internet

banking has been found to use e-commerce more than other individuals. The studies in the literature have shown similar results (Duroy, Gorse, & Lejoyeux, 2014; Çera et al., 2020). As the number of information equipment increases, the possibility of using e-commerce increases. Similar conclusions have been achieved in prior studies (Hossein et al., 2017; Abar and Alkan, 2020). It has been concluded that as the household size increases, the possibility to use e-commerce decreases. The studies in the literature have shown similar conclusions (Stranahan, 2007; Abar and Alkan, 2020).

At the end of the study, it has been specified that as the educational level of individual raises, their tendency towards online shopping also increases. The study suggests that as the income levels of individuals increase, their possibility to use e-commerce also enhances. This may be associated with the fact that individuals with higher incomes have higher qualifications and new technologies. It has been also identified that males have a higher e-commerce use rate than females. Prior studies have explained this by time efficiency, avoiding crowd environments and 24-hour shopping opportunity (Javadi et al., 2012). Demographic characteristics affect the actions of individuals before engaging in a certain behavior. Accordingly, it is of paramount importance that the factors related to online shopping should be understood by those doing online shopping.

As regional development is an important factor in the development of individuals' e-commerce use, the effect of development level on e-commerce use is seen to become more important. The conclusions of the study suggest that region-specific interventions should be taken into account in accessing e-commerce-related information. Accordingly, the development of e-commerce should be facilitated in the regions with low development level, and internet use should be expanded by improving the information and communication technology infrastructure in these regions. The conclusions of this study may provide policy makers with important information on increasing e-commerce shopping volume in Turkey and how to promote the use of e-commerce in developing countries to increase social welfare and life quality by ensuring effective customer satisfaction with the operational efficiency provided by e-commerce practices.

The share of Turkey in e-commerce is increasing every passing day, and provides significant profits to the country's economy by raising the commerce volume and potential in both national and international markets. Despite the e-transformation rates observed in public and private sectors, increasing number of e-commerce users, legal and sectoral regulations, it is observed that e-commerce potential could not be fulfilled completely, lagged behind in developed countries. Development and standardization of technological infrastructure is the first step that should be taken in this regard. Despite high urbanization rates, regional differences in internet access rates still pose a serious problem. The most important steps to be taken in terms of the development of e-commerce may be ranked as follows: to remove regional differences, to increase investments in fixed and mobile infrastructures, to decrease taxes on products and services to make ICT technologies accessible to everyone, to promote and support new entrepreneurs to enter the market. In addition, development of legal regulations, raising entrepreneurship ecosystem, increasing investments in techno-parks will both revive domestic market and result in micro and macroeconomic advances by drawing foreign investments and significantly increase Turkey's competitive power.

As in every study, this study has several limitations. First of all, it should be taken into consideration that the data used in this study consist of secondary data, and the variables required for statistical analysis comprised of the variables in the data set. Secondly, as they are not included in the data set, some variables such as internet access in the household, internet use duration, household members' having

electronic devices allowing them to do online shopping, internet shopping attitudes of parents, siblings, other members of the household or close friends. Furthermore, as the data were cross-sectional, an absolute causal relationship between socioeconomic factors related to e-commerce use could not be obtained. Another limitation is the inability to observe direct or indirect effects of the factors between themselves as no modelling has been used in the analysis process. For this reason, the data obtained in this data gathering method may be biased.

It is considered that the study will fill the related gap in the literature since it has been carried out on a large sample and some demographic factors that are not generally included in the studies conducted in this regard have been included in the analysis. In addition, as the study has a methodological perspective and has been carried out by using data gathering and analysis methods in accordance with the modelling, it provides a basis for different scenarios, such as identifying personal and environmental factors affecting individuals regarding e-commerce use, having more use options, having a wider duration of use, increasing sectoral occupational groups, diversification of demographic characteristics and determining the relationship of these factors with each other.

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