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Relationship Between Internet Usage, E-Skills, Personal Data Protection and Demographics Variables with Preference of E-Commerce

Mehmet Emirhan KULA[1] and İkram Yusuf YARBAŞI[2]

[1]Department of Business Administration, Erzurum Technical University, Erzurum, Turkiye
[2]Department of Econometrics, Erzurum Technical University, Erzurum, Turkiye
E-mail: emirhan.kula@erzurum.edu.tr

Abstract. According to statistics, approximately 46% of the world's population, in other words 3.4 billion people, have become internet users. While the world population has increased by an average of 1.1% per year since 2000, the total number of internet users, which we call the internet population, has increased by approximately 13.2% every year and the spread of the internet has continued rapidly. E-commerce stands out as an attractive channel for many companies that want to start a business or increase their sales, because it can be implemented quickly and does not bear the costs of conventional retail. As a matter of fact, this study was conducted to investigate the relationship between various individual internet usage and electronic skills, personal data protection sensitivity, and some demographic characteristics and e-commerce preferences of individuals. For this purpose, the MNP model was used to investigate the determinants of e-commerce (internet place to buy goods) preferences. According to the findings obtained from the MNP model, regional differences, gender, internet usage skills (e-mail, reading news online, searching for information about health, web site sharing, job search, selling goods and services) in e-commerce preference, computer-mobile skills (banking, file transfer, application installation, photo editing), and personal data security (preventing the use of personal information and reading privacy text) have been determined to have significant effects.

Keywords: E-Commerce Preference, Internet Usage, E-Skills, Personal Data Protection, Qualitative Choice Models

Introduction

Individuals need to have a set of skills that can be called 21st-century skills beyond their basic skills. While pure knowledge was valuable and valid in the past centuries, only individual knowledge is not sufficient today [1]. The 21st century necessitates the individual to be an individual who can think creatively and critically, cooperate with others, have problem-solving and high communication skills, know how to reach the necessary information, and use technology while reaching the information, in order to be successful both in education and business life. At the same time, it is necessary to be an individual who is open to new ideas, flexible and adaptable, knows his responsibilities, has self-management and initiative, has developed social and cultural skills, is productive, and has leadership skills [2].

Although 21st-century skills are conceptually subject to different classifications in different disciplines, technology literacy is accepted as a basic necessity of life for many people, as are the

common features of all definitions, such as reading/writing skills, mathematical literacy, and social communication skills. In other words, the degree of affinity established with information technologies facilitates individuals' access to employment, social networks, and international borders.

Diversity in information technologies is also reflected in the shopping preferences of individuals at certain points. Electronic commerce (e-commerce) is defined as the activities of selling products produced through computer networks, advertising, providing technical support after sales and making payments [3]. E-commerce, which has grown rapidly in recent years, is reshaping the shopping habits of consumers and the business models of companies, especially retailers [4]. Because in today's globalizing world, other geographies have become more visible and instantly accessible than at any other time in history [5]. Although it provides individuals with conveniences such as time savings and instant access to goods and services in their daily lives, meeting even the smallest daily needs through electronic commerce enables individuals or institutions that are parties to commercial contracts to obtain and store large amounts of personal data [6].

Especially in recent times, the violation of personal data has brought along various legal discussions. It can be said that the collection of data belonging to real persons by recording began with the emergence of the state organization. Because the state needs to know its human resources in order to protect itself and provide public service. Although it seems that the data belonging to real persons are kept by private sector organizations and individuals other than the state, it seems as a result of the consumption economy, the development of information and communication technologies also has an effect [7]. Today, public and private organizations collect a lot of data. Personal databases, which are created from the collected data and have many variables, enable the establishment of relationships for various purposes. As a matter of fact, while living in a world where consumer data is becoming increasingly important, consumers become both producers and consumers of their own individual information. This horizontal plane from individual skills to consumption habits means new data, new technology, new market, new competitors and new strategies for businesses [8,9]. In other words, while the subject is related to individual skills and preferences on one side, there are e-commerce strategies of companies on the other side of the coin.

Because the development and diversification of behavioral science, business activities and economic models have followed each other for centuries [10]. As a matter of fact, this study was conducted to investigate the relationship between various individual and electronic skills, personal data protection sensitivity and some demographic characteristics, and the electronic commerce (e-commerce) preference of individuals.

Literature Review

While the world population continues to increase, all economies continue their digital change and transformation. The acceleration of digital transformation in every sector increases the interest and inclination of users toward digital. In addition, the increase in the level of digital maturity of users of all ages and genders actually accelerates and directs digitalization. In other words, this situation mutually affects each other and supports each other's development day by day [11]. As a matter of fact, while approximately 22 percent of the world's population was Internet users in the 2000s [12], when it comes to the 2020s, the population aged 14-64 spends an average of 6 hours a day using the Internet, and about half of this time is spent using the Internet from mobile devices [13].

In this sense, the Internet, as an information technology, is a "super highway" that connects people and data via other computers (or other information technology devices). This journey creates certain

effects according to the user profile. So much so that the way people belonging to different social groups perceive and classify social life also differs. For example, gender is one of the most important factors affecting individuals' participation in leisure activities [14]. Similarly, [15] found in a survey of households in Thailand, a developing country, that the main impulse of Internet usage is access to the Internet. Access to the Internet can create diversity in various social groups (age, gender, region of residence, etc.).

The study is important in that it has been determined that access to the Internet is a more priority parameter than access to a computer in Internet usage. In addition, [16] conducted a survey on 200 company employees in Turkey by categorizing Internet usage according to user profile and usage pattern.

The results show that while gender has a positive effect on Internet usage, factors such as age and income level do not have a significant effect on daily Internet usage (e-commerce, e-banking, e-government). On the other hand, [17] found that variables such as gender, educational status, and household income seriously affect consumers' e-commerce preferences, as a result of their survey at two large universities in the southeastern United States.

Of course, in addition to demographic variables, individual e-skills, and Internet usage preferences, there is also the personal data side of e-commerce preference. Because the protection of personal data has been important in the past, but the global information age production style we are going through has increased the value of data and led it to become a large market [9].

What is important at this point is that certain transactions made consciously or unconsciously on the Internet may harm personal rights and freedoms. The protection of personal data is a tool, the purpose is the protection of the person himself [18]. In this sense, for example, General Data Protection (2016) has been put into practice in order to control personal data management among member states and stakeholders within the scope of the European Digital Single Market Strategy, which is thought to contribute to the economic integration of the European Union through an online competition [19]. [20] found that the EU has more comprehensive and singular legislation in their research on personal data protection regulations between the European Union and China. On the other hand, they found that in China and many other Asian countries, they tried to operate things with more than one regulation instead of a single regulation. Although the awareness of personal data may vary from person to person, the fact that personal data is legally secured in the digitalized world at least has a deterrent and punitive feature against possible violations.

Data, Methodology and Findings

Research Questions and Model

In light of the aforementioned explanations, the research seeks answers to the stated research questions. (1) Do demographic variables (gender and region of residence) affect e-commerce preference?, (2) Do individual Internet usage skills (communication skills, access to information skills, social and political participation levels, professional life skills and skills to use some online services) affect e-commerce preference?, (3) Do individual e-skills (filing, software, processor usage, tabulation, data and photo editing skills) affect e-commerce choice?, (4) Does personal data management affect the choice of e-commerce?

The research model of the study is shown in Figure 1.

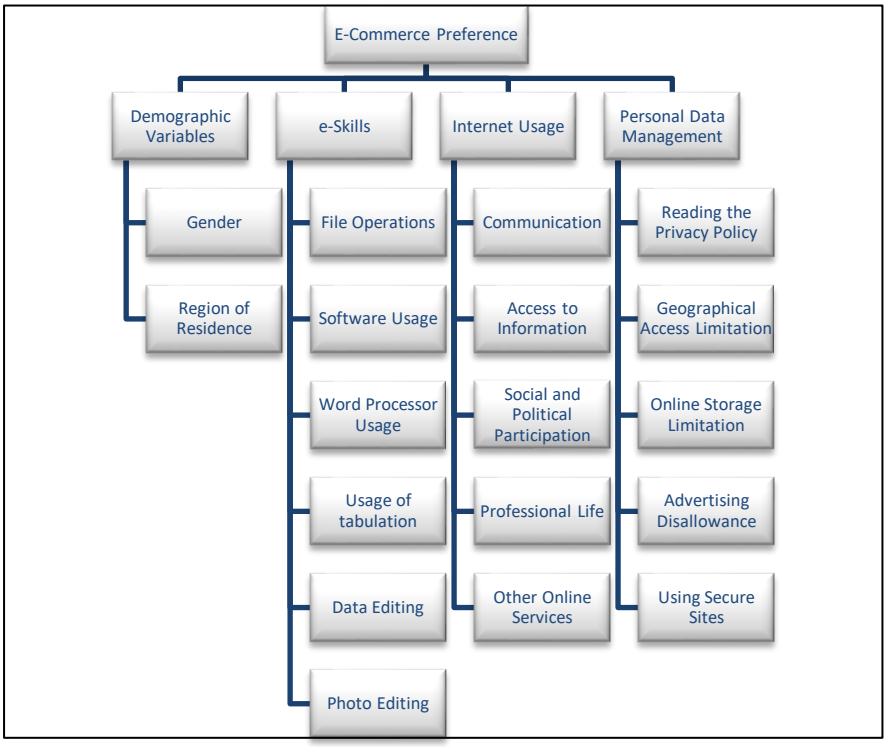

Figure 1: The Research Model

Data

In this study, the data of the Household Information Technologies Usage Statistics Micro Data Set carried out by the Turkish Statistical Institute in 2021 were used. In the Household Information Technologies Usage Research, it was aimed to determine the information society criteria and to produce related statistics. All Turkish households were included in the sample selection. The total sample size includes 9438 people [21].The variables used in this study were selected from the questions in the Household Information Technologies Usage Statistics microdata set. Definitions of the variables to be used in the analysis are given in Table 1.

Table 1. Definitions of the Variables to be Used in the Analysis

Variable		Categories
Dependent Variable		
Which of the following goods have you purchased online in the last three months?		**1:Domestic Sellers 2:Overseas Sellers 3:Both Domestic and Overseas Sellers**
Independent Variable		
Gender		**1:Male, 0:Female**
Area of Residence (Level 1 Statistical Territory Units Classification)		
	TR1	**1:Yes, 0:No**
	TR2	**1:Yes, 0:No**
	TR3	**1:Yes, 0:No**
	TR4	**1:Yes, 0:No**
	TR5	**1:Yes, 0:No**
	TR6	**1:Yes, 0:No**
	TR7	**1:Yes, 0:No**
	TR8	**1:Yes, 0:No**
	TR9	**1:Yes, 0:No**

	TRA	**1:Yes, 0:No**
	TRB	**1:Yes, 0:No**
	TRC	**1:Yes, 0:No**
Which of the following activities have you used the Internet (including mobile applications) for a specific purpose in the last three months?		
Communication	Sending/receiving e-mail	**1:Yes, 0:No**
	Making voice or video calls via the Internet (using WhatsApp, Facetime, Viber, Messenger, Skype, Snapchat, etc.)	**1:Yes, 0:No**
	Creating a profile on social media (Facebook, Twitter, Instagram, Snapchat, etc.), sending messages or photos, and sharing content.	**1:Yes, 0:No**
	Messaging (WhatsApp, Messenger, Skype, BIP, Viber, Snapchat etc.)	**1:Yes, 0:No**
Access to Information	Reading online news sites/newspapers / news magazines	**1:Yes, 0:No**
	Searching health-related information (such as injuries, illnesses, nutrition, and improving health)	**1:Yes, 0:No**
	Searching for information about goods and services	**1:Yes, 0:No**
Social and Political Participation	Sharing opinions on social or political issues via websites or social media (blogs, Facebook, Twitter, Instagram, YouTube, etc.).	**1:Yes, 0:No**
	Participating in an online discussion/vote on a social or political issue	**1:Yes, 0:No**
Professional Life	Looking for or applying for a job	**1:Yes, 0:No**
Other Online Services	Sale of goods or services (Facebook Marketplace, Gittigidiyor, Sahibinden, Letgo, Sahaf, Dolap, BebeCruz, Tarz2 etc.)	**1:Yes, 0:No**
	Internet banking (website or mobile banking applications)	**1:Yes, 0:No**
Which of the following activities have you done in the last three months?		
Copying or moving files (document, data, image, video), folders, between devices (email, Messenger, WhatsApp, USB, cable) or in the cloud		**1:Yes, 0:No**
Downloading or installing software or mobile apps		**1:Yes, 0:No**
Changing software, application or device settings (adjusting language, colors, contrast, text size, toolbars / menu)		**1:Yes, 0:No**
Using word processing software		**1:Yes, 0:No**
Creating presentations or documents by adding text, documents, images, videos, animations, tables or graphics		**1:Yes, 0:No**
Using tabulation software		**1:Yes, 0:No**
Using the advanced features of the tabulation program (functions, formulas, macros, Visual Basic, etc.) to edit, analyze, configure or manipulate data.		**1:Yes, 0:No**
Editing photo, video or audio files		**1:Yes, 0:No**
Coding in a programming language		**1:Yes, 0:No**
Which of the following methods have you used in the last three months to manage access to your personal data over the Internet?		
Reading the privacy policy of the website or applications before giving your personal data		**1:Yes, 0:No**
Restricting or blocking access to your geolocation		**1:Yes, 0:No**
Limiting access to your profile, content information on social networking sites, or shared online storage		**1:Yes, 0:No**
Not allowing your personal data to be shared for advertising purposes		**1:Yes, 0:No**
Checking the features of websites to ensure the security of your personal data (https sites, sites with a secure logo or certificate)		**1:Yes, 0:No**
Requesting update or deletion of personal data from websites, search engines administrator, or provider		**1:Yes, 0:No**

Multinomial Choice Models

Choice models are used to determine the decision maker's behavior. Multinomial logit (MNL) and probit models (MNP) are used to determine the factors affecting the preferences of categorical variables where the ordering is unimportant. Multinomial models are used when there are more than two alternatives to the dependent variable and are classified as ordered and non-ordered models according to the characteristics of the dependent variable [22]. Ordinal models are used when the categories of the dependent variable have an order, while non-order models are used when there is no ordering between

the categories of the dependent variable. In multinomial models, the aim is to model the probability values of situations as a function of covariates and to explain the results in terms of probability values for the preferences of different situations [23].

The most important assumption of multinomial logit (MNL) models is the assumption of independence of unrelated alternatives (IIA). This assumption assumes that one individual's choice of alternative over another will not change when a third viable alternative is added or subtracted. In practice, an individual may switch between alternatives based on their unique assessment of the benefits derived from each alternative. When the IIA is violated, the MNL is an incorrectly determined model and the estimated coefficients are biased and inconsistent [24]. [25] noted that MNP estimates show more accurate results than MNL estimates because they do not assume IIA.

MNL and MNP models are nonlinear models that can be used for the same purposes. The difference between these models is due to the assumptions about the error term. Due to the limitations of the IIA body required in the MNL model, the more flexible MNP model is preferred [26]. The error terms are assumed to have a normal distribution in the MNP model, which removes the IIA constraint. The advantage of this model is that it allows errors between choices to be correlated, which removes the IIA constraint [27]. Multinomial models are based on the random utility theory, that is, on the assumption that consumers will choose the alternative that will provide them with the highest utility among specific options. The utility function in the MNP model is given in Equation 1.

$$U_{ij} = x'_{ij}\beta + \varepsilon_{ij} \qquad j = 1, \dots, J \tag{1}$$

The log-likelihood term corresponding to choosing option 1 in Equation 1 for the MNP model, assuming that the individual will maximise her utility, is given in Equation 2.

$$Prob[Y_i = 1] = Prob[U_1 > U_j, j = 1, \dots, J, j \neq 1]$$
$$Prob[Y_i = 1] = P\left(\varepsilon_2 - \varepsilon_1 > (x_1 - x_2)'\beta, \dots, \varepsilon_j - \varepsilon_1 > (x_1 - x_j)'\beta\right) \tag{2}$$

Equation 2 is represented as in Equation 3 with the help of integral and is treated as $\eta_{kj} = \varepsilon_{ik} - \varepsilon_{ij}$ here.

$$Prob[Y_i = 1] = \int_{-\infty}^{x_i'\beta_1 - x_i'\beta_2} \dots \int_{-\infty}^{x_i'\beta_1 - x_i'\beta_j} f\left(\eta_{21}, \dots, \eta_{j1}\right) d_{\eta_{21},\dots,\eta_{j1}} \tag{3}$$

Error terms in utility equations are correlated with each other. The increase in the number of binary correlations complicates the solution of integrals. Some simulation methods are used in the estimation of the MNP model [28]. The MNP model, in which the probabilities are independent of each other and show a multivariate normal distribution, is shown in Equation 4.

$$Y_i^* = \beta_0 + \beta_1 X_i + \varepsilon_i \tag{4}$$

For observable alternatives,

$$\begin{aligned} &Y_i^* < 0 \text{ for } Y_i = 1 \\ &0 \leq Y_i^* < A_1 \text{ for } Y_i = 2 \\ &A_1 \leq Y_i^* < A_2 \text{ for } Y_i = 3 \\ &\vdots \\ &A_{M-2} \leq Y_i^* \text{ for } Y_i = M. \end{aligned} \tag{5}$$

Under all these assumptions, probabilities are calculated as follows.

$$\begin{aligned} &Prob(Y_i^* = 1) = \pm(-\beta_0 - \beta_1 X_i) \\ &Prob(Y_i^* = 2) = \pm(A_1 - \beta_0 X_i) - \pm(-\beta_0 - \beta_1 X_i) \\ &\vdots \\ &Prob(Y_i^* = M) = 1 - F(A_{m-2} - \beta_0 - \beta_1 X_i) \end{aligned} \tag{6}$$

In Equation 6, F(.) represents the cumulative distribution function of the standard normal variable. Estimates of $\beta_0, \beta_1, A_1, A_2, \dots, A_{m-2}$ are obtained from log-likelihood functions. In the MNP model, the maximum likelihood method is used to calculate the preference probabilities. Since the integral calculations of the dependent variable for more than four alternatives are very difficult, it is preferred to keep the number of categories as low as possible [29]. The interpretation of explanatory variables in the MNP model is performed by marginal effects by choosing a comparison group.

Findings

In this study, the factors affecting the e-commerce preferences of individuals are investigated with the MNP model, which is one of the unordered qualitative preference models, specific to the unordered variables given in Table 1. The MNP model to be estimated is given below.

$$
\begin{aligned}
ecommerce_{preference} &= \beta_0 + \beta_1 WestMarmara + \beta_2 Aegean + \beta_3 EastMarmara + \beta_4 Westanatolia \\
&+ \beta_5 Mediterrenian + \beta_6 Middle\ anatolia + \beta_7 West\ Blacksea \\
&+ \beta_8 East\ Blacksea + \beta_9 NortheastAnatolia + \beta_{10} Middle\ EastAnatolia \\
&+ \beta_{11} Southeastern\ Anatolia + \beta_{12} Gender + \beta_{13} Email\ Send \\
&+ \beta_{14} SocialMedia\ Engagement + \beta_{15} Making\ a\ VideoCall \\
&+ \beta_{16} Sending\ a\ Message\ from\ the\ Internet \\
&+ \beta_{17} OnlineNewsReading\ from\ the\ Internet \\
&+ \beta_{18} Searching\ for\ Health\ Information\ on\ the\ Internet \\
&+ \beta_{19} GettingGoodsandServicesInformationfromtheInternet \\
&+ \beta_{20} Website\ Sharing + \beta_{21} job\ search\ on\ the\ Internet \\
&+ \beta_{22} Goods\ and\ Services\ Sales \\
&+ \beta_{23} Performing\ Bank\ Transactions\ on\ the\ Internet \\
&+ \beta_{24} Making\ a\ File\ Transfer + \beta_{25} Ability\ to\ Install\ Application \\
&+ \beta_{26} Making\ Device\ Setting\ Changes + \beta_{27} Creating\ Documents \\
&+ \beta_{28} Ability\ to\ Use\ Spreadsheet\ Software \\
&+ \beta_{29} Ability\ to\ Perform\ Data\ Editing + \beta_{30} Photo, video, audio\ file\ editing \\
&+ \beta_{31} Writing\ Code\ in\ Program\ Language + \beta_{32} Reading\ privacy\ text \\
&+ \beta_{33} Limit\ geolocation + \beta_{34} Dlimit\ storage \\
&+ \beta_{35} Blocking\ the\ use\ of\ personal\ information + \beta_{36} Prefer\ safe\ websites \\
&+ \beta_{37} Personal\ data\ update\ and\ request\ deletion + u_i
\end{aligned}
$$

The descriptive statistics and percentages of the variables used in the study according to their distribution within the preferred place of online shopping are shown in Table 2.

17% of individuals who only shop domestically, 13% of individuals who only shop overseas, and 27% of individuals who shop online both domestically and overseas live in Istanbul. 6.2% of individuals living in the West Marmara do domestic shopping, 3.4% overseas, and 4.8% do online shopping both domestically and overseas. 12.2% of individuals living in the Aegean region do domestic shopping, 6.9% do overseas shopping, and 7.7% do online shopping both domestically and overseas. 10.9% of individuals living in the East Marmara region do domestic shopping, 10.3% do overseas shopping and 11.6% do online shopping both domestically and overseas. 11.5% of individuals living in the Western Anatolia region do domestic shopping, 17.1% do overseas shopping, and 11.9% do online shopping both domestically and overseas. While 49.9% of individuals who shop online only domestically are

men, 50.1% are women. While 52.6% of individuals who shop online only from overseas are men, 47.4% are women. 63.1% of individuals who shop online both domestically and overseas are men and 36.9% are women. Also 70% of individuals who shop only domestically, 59% of individuals who only shop from abroad, and 81% of individuals who shop both at home and abroad can send e-mail.

95.3% of individuals who only shop online domestically, 96% of individuals who shop online only from overseas, and 96.9% of individuals who shop online both domestically and overseas make voice or video calls via the Internet. 86.5% of individuals who only shop online domestically, 87.4% of individuals who shop online only from overseas, and 89.4% of individuals who shop online both domestically and overseas share content on social media. 95.5% of individuals who only shop online domestically, 97.1% of individuals who shop online only from overseas, and 99.1% of individuals who shop online both domestically and overseas are texting. 81.1% of individuals only shop online domestically, 82.3% of individuals who shop online only from overseas, and 85.9% of individuals who shop online both domestically and overseas online read the news sites/newspapers/news magazines.

Table 2. Descriptive Statistics on Variables

		ONLINE SHOPPING			
Variable	**Category**	**Only Domestic**	**Only Overseas**	**Both Domestic and Overseas**	**Total**
Region	**İstanbul**	1543 (17.7)	24 (13.7)	147 (27)	1714 (18.2)
	West Marmara	543 (6.2)	6(3.4)	26 (4.8)	575 (6.1)
	Aegean	1060 (12.2)	12 (6.9)	42 (7.7)	1114 (11.8)
	East Marmara	947 (10.9)	18 (10.3)	63 (11.6)	1028 (10.9)
	West Anatolia	1002 (11.5)	30 (17.1)	65 (11.9)	1097 (11.6)
	Mediterrenian	801 (9.2)	4 (2.3)	59 (10.8)	864 (9.2)
	Central anatolia	515 (5.9)	22 (12.6)	33 (6.1)	570 (6.0)
	West Blacksea	509 (5.8)	5 (2.9)	42 (7.7)	556 (5.9)
	East Blacksea	481 (5.5)	1 (0.6)	5 (0.9)	487 (5.2)
	Northeast Anatolia	287 (3.3)	22 (12.6)	25 (4.6)	334 (3.5)
	Central East Anatolia	457 (5.2)	2 (1.1)	21 (3.9)	480 (5.1)
	Southeastern Anatolia	573 (6.6)	29 (16.6)	17 (3.1)	619 (6.6)
Gender	**Male**	4353 (49.9)	92 (52.6)	344 (63.1)	4789 (50.7)
	Female	4365 (50.1)	83 (47.4)	201 (36.9)	4649 (49.3)
Sending e-mail	**No**	2580 (26.9)	71 (40.6)	99 (18.2)	2750 (29.1)
	Yes	6138 (70.4)	104 (59.4)	446 (81.8)	6688 (70.9)
Making a Video Call	**No**	410 (4.7)	7 (4.0)	17 (3.1)	434 (4.6)
	Yes	8308 (95.3)	168 (96.0)	528 (96.9)	9004 (95.4)
Social Media Participation	**No**	1173 (13.5)	22 (12.6)	58 (10.6)	1253 (13.3)
	Yes	7545 (86.5)	153 (87.4)	487 (89.4)	8185 (86.7)
Sending Messages via the Internet	**No**	134 (1.5)	5 (2.9)	5 (0.9)	144 (1.5)
	Yes	8584 (98.5)	170 (97.1)	540 (99.1)	9294 (98.5)
Reading Online News from the Internet	**No**	1649 (18.9)	31 (17.7)	76 (13.9)	1756 (18.6)
	Yes	7069 (81.1)	144 (82.3)	469 (86.1)	7682 (81.4)
Searching for Health Information on the Internet	**No**	1198 (13.7)	32 (18.3)	78 (14.3)	1308 (13.9)
	Yes	7520 (86.3)	143 (81.7)	467 (85.7)	8130 (86.1)
Goods and Services Information Retrieval	**No**	1412 (16.2)	31 (17.7)	77 (14.1)	1520 (16.1)
	Yes	7306 (83.8)	144 (82.3)	468 (85.9)	7918 (83.9)
Website Sharing	**No**	7323 (84.0)	122 (69.7)	433 (79.4)	7878 (83.5)
	Yes	1395 (16.0)	53 (30.3)	112 (20.6)	1560 (16.5)
Job Search	**No**	7443 (85.4)	140 (80.0)	443 (81.3)	8026 (85.0)
	Yes	1275 (14.6)	35 (20.0)	102 (18.7)	1412 (15.0)
Goods and Services Sales	**No**	7027 (80.6)	128 (73.1)	399 (73.2)	7554 (80.0)
	Yes	1691 (19.4)	47 (26.9)	146 (26.8)	1884 (20.0)
Performing Bank Transactions	**No**	1714 (19.7)	52 (29.7)	74 (13.6)	1840 (19.5)
	Yes	7004 (80.3)	123 (70.3)	471 (86.4)	7598 (80.5)
Making a File Transfer	**No**	3559 (40.8)	113 (64.6)	185 (33.9)	3857 (40.9)
	Yes	5159 (59.2)	62 (35.4)	360 (66.1)	5581 (59.1)

Installing Application	**No**	4940 (59.7)	118 (67.4)	250 (45.9)	5308 (56.2)
	Yes	3778 (43.3)	57 (32.6)	295 (54.1)	4130 (43.8)
Making Device Setting Changes	**No**	5946 (68.2)	149 (85.1)	325 (59.6)	6420 (68.0)
	Yes	2772 (31.8)	26 (14.9)	220 (40.4)	3018 (32.0)
Creating Documents	**No**	5697 (65.3)	137 (78.3)	289 (53.0)	6123 (64.9)
	Yes	3021 (34.7)	38 (21.7)	256 (47.0)	3315 (35.1)
Using Tabulation Software	**No**	5964 (68.4)	146 (83.4)	306 (56.1)	6416 (68.0)
	Yes	2754 (31.6)	29 (16.6)	239 (43.9)	3022 (32.0)
Performing Data Editing	**No**	7023 (80.6)	154 (88.0)	381 (69.9)	7558 (80.1)
	Yes	1695 (19.4)	21 (12.0)	164 (30.1)	1880 (19.9)
Photo, Video, Audio File Editing	**No**	4755 (54.5)	135 (77.1)	238 (43.7)	5128 (54.3)
	Yes	3963 (45.5)	40 (22.9)	307 (56.3)	4310 (45.7)
Coding in Program Language	**No**	8244 (94.6)	166 (9.4)	489 (89.7)	8899 (94.3)
	Yes	474 (5.4)	9 (5.1)	56 (10.3)	539 (5.7)
Reading Privacy Text	**No**	4388 (50.3)	127 (72.6)	253 (46.4)	4768 (50.5)
	Yes	4330 (49.7)	48 (27.4)	292 (53.6)	4670 (49.5)
Limiting the Geolocation	**No**	5142 (59.0)	137 (78.3)	288 (52.8)	5567 (59.0)
	Yes	3576 (41.0)	38 (21.7)	257 (47.2)	3871 (41.0)
Limiting the Storage	**No**	4945 (56.7)	131 (74.9)	268 (49.2)	5344 (56.6)
	Yes	3773 (43.3)	44 (25.1)	277 (50.8)	4094 (43.4)
Blocking the Usage of Personal Information	**No**	4310 (49.4)	130 (74.3)	220 (40.4)	4660 (49.4)
	Yes	4408 (50.6)	45 (25.7)	325 (59.6)	4778 (50.6)
Preferring the Safe Websites	**No**	4808 (55.2)	135 (77.1)	245 (45.0)	5188 (55.0)
	Yes	3910 (44.8)	40 (22.9)	300 (55.0)	4250 (45.0)
Updating Personal Data and Requesting Deletion	**No**	7219 (82.8)	157 (89.7)	427 (78.3)	7803 (82.7)
	Yes	1499 (17.2)	18 (10.3)	118 (21.7)	1635 (17.3)

Note: Values in parentheses indicate percentages.

86.3% of individuals who only shop online domestically, 81.7% of individuals who shop online only from abroad, and 85.7% of individuals who shop online from both domestically and overseas search health-related information. 83.8% of individuals who only shop online domestically, 82.3% of individuals who shop online only from overseas, and 85.9% of individuals who shop online both domestically and overseas search for information about goods and services. 16% of individuals who only shop online domestically, 30.3% of individuals who shop online only from overseas, and 20.6% of individuals who shop online both domestically and overseas share their views on social or political issues via websites or social media. 14.6% of individuals who only shop online domestically, 20% of individuals who shop online only from overseas, and 18.7% of individuals who shop online both domestically and overseas are looking for a job or applying for a job via the Internet. 19.4% of individuals who only shop online domestically, 26.9% of individuals who shop online only from overseas, and 26.8% of individuals who shop online from both domestically and overseas sell goods or services via the internet.

80.3% of individuals who only shop online domestically, 70.3% of individuals who shop online only from overseas, and 86.4% of individuals who shop online both domestically and overseas use internet banking (website or mobile banking applications). 59.2% of individuals who only shop online domestically, 35.4% of individuals who shop online only from overseas, and 66.1% of individuals who shop online both domestically and overseas perform the operations of copying or moving files (document, data, image, video) between folders and devices (email, Messenger, WhatsApp, USB, cable) or on the cloud. 43.3% of individuals who only shop online domestically, 32.6% of individuals who shop online only from overseas, and 54.1% of individuals who shop online both domestically and overseas download or install software or mobile applications. 34.7% of individuals who only shop online domestically, 21.7% of individuals who shop online only from overseas, and 47% of individuals who

shop online from both domestically and overseas perform presentation or document creation operations by adding text, document, image, video, animation, table or graphics.

31.6% of individuals who only shop online domestically, 16.6% of individuals who shop online only from overseas, and 43.9% of individuals who shop online from both domestically and overseas use tabulation software. 19.4% of individuals who only shop online domestically, 12% of individuals who shop online only from overseas, and 30.1% of individuals who shop online both domestically and overseas use the advanced features of the tabulation program to edit, analyze, configure, or modify data (functions, formulas, macros, Visual Basic, etc.). 45.5% of individuals who only shop online domestically, 22.9% of individuals who shop online only from overseas, and 56.3% of individuals who shop online from both domestically and overseas organize photo, video, or audio files. 49.7% of individuals who only shop online domestically, 27.4% of individuals who shop online only from overseas, and 53.6% of individuals who shop online both domestically and overseas read the privacy policy of the website or applications before providing personal data. 41% of individuals who only shop online domestically, 21.7% of individuals who shop online only from overseas, and 47.2% of individuals who shop online from both domestically and overseas restrict or block access to geographical location. 43.3% of individuals who only shop online domestically, 25.1% of individuals who shop online only from overseas, and 50.8% of individuals who shop online both domestically and overseas limit access to profiles, content information on social networking sites, or shared online storage spaces. 50.6% of individuals who only shop online domestically, 25.7% of individuals who shop online only from overseas, and 59.6% of individuals who shop online both domestically and overseas do not allow the sharing of personal data for advertising purposes. 44.8% of individuals who only shop online domestically, 22.9% of individuals who shop online only from overseas, and 55% of individuals who shop online both domestically and overseas prefer secure websites. They control the features of websites to ensure the security of personal data (https sites, sites with a secure logo or certification). 17.2% of individuals who only shop online domestically, 10.3% of individuals who shop online only from overseas, and 21.7% of individuals who shop online from both domestically and overseas request the updating or deletion of personal data from the websites, search engines administrator or provider.

In the study, firstly, the multinomial logit model was estimated. As a result of the Hausman test, it was determined that the assumption of this model, the independence of irrelevant alternatives, could not be met, that is, the change in the coefficients was systematic (X2=-1205,20; p=0,000). As a result of this result, the multinomial probit model was used, which does not require the assumption of irrelevant alternative independence. In the study, Stata 15.0 and IBM SPSS Statistics 25.0 programs was used in the analysis of the econometric model.

According to the marginal effect results of the multinominal probit model shown in Table 3, individuals living in the Western Marmara region are 3.5% more likely to shop only domestically compared to those living in Istanbul, while they are 3.4% less likely to shop both domestically and overseas. Individuals living in the Aegean region are 4.6% more likely to shop only domestically compared to those living in Istanbul, while they are 4.3% less likely to shop both domestically and overseas. Individuals living in the East Marmara region are 1.9% less likely to shop both domestically and overseas than those living in Istanbul. Individuals living in the Western Anatolia region are only 1.1% more likely to shop overseas than those living in Istanbul, while the probability of shopping both domestically and overseas is 2.4% lower. Individuals living in the Mediterranean region are only 1.9% more likely to shop domestically than those living in Istanbul, while the probability of shopping only overseas is 1.1% lower. Individuals living in the Central Anatolian region are 2% more likely to only

shop overseas than those living in Istanbul, while the probability of shopping both domestically and overseas is 1.9% lower. Individuals living in the Eastern Black Sea region are 8.3% more likely to do only domestic shopping, while the probability of shopping only overseas is 1.5%, and the probability of shopping both domestically and overseas is 4.1% lower than those living in Istanbul.

Table 3. Marginal Effects on the Multinomial Probit Model

Variable	Category	dy/dx	Std.Err.	z	P>|z|
Area of Residence (Reference Category: İstanbul)					
West Marmara	1	0,035***	0,013	2,780	0,005
	2	0,000	0,007	0,030	0,980
	3	-0,034***	0,011	-3,250	0,001
Aegean	1	0,046	0,010	4,780	0,000
	2	-0,004	0,005	-0,790	0,428
	3	-0,043	0,009	-4,930	0,000
East Marmara	1	0,017	0,011	1,530	0,127
	2	0,002	0,005	0,410	0,678
	3	-0,019*	0,010	-1,920	0,055
West Anatolia	1	0,012	0,011	1,160	0,245
	2	0,011**	0,006	2,020	0,044
	3	-0,024**	0,009	-2,550	0,011
Mediterrenian	1	0,019*	0,012	1,680	0,094
	2	-0,011***	0,004	-2,770	0,006
	3	-0,008	0,011	-0,750	0,452
Central Anatolia	1	-0,001	0,014	-0,080	0,935
	2	0,020**	0,008	2,470	0,014
	3	-0,019	0,012	-1,540	0,124
West Blacksea	1	0,007	0,014	0,490	0,625
	2	-0,005	0,006	-0,970	0,330
	3	-0,002	0,013	-0,120	0,908
East Blacksea	1	0,083***	0,009	9,410	0,000
	2	-0,015***	0,004	-4,110	0,000
	3	-0,069***	0,008	-8,400	0,000
Northeast Anatolia	1	-0,037*	0,020	-1,880	0,060
	2	0,035***	0,011	3,030	0,002
	3	0,003	0,017	0,170	0,865
Central East Anatolia	1	0,053***	0,011	4,690	0,000
	2	-0,013***	0,004	-3,160	0,002
	3	-0,041***	0,011	-3,790	0,000
Southeastern Anatolia	1	0,031***	0,012	2,590	0,010
	2	0,019***	0,007	2,710	0,007
	3	-0,050***	0,010	-5,170	0,000
Gender (Reference Category: Male)	1	0,027***	0,006	4,750	0,000
	2	-0,002	0,003	-0,740	0,459
	3	-0,025***	0,005	-5,000	0,000
Sending e-mail (Reference Category:No)	1	0,012*	0,007	1,770	0,076
	2	0,004	0,003	1,240	0,216
	3	-0,016**	0,006	-2,590	0,010
Social Media Participation (Ref. Category: No)	1	0,020	0,015	1,320	0,188
	2	-0,008	0,007	-1,150	0,250
	3	-0,011	0,013	-0,850	0,393
Making a Video Call (Ref. Category: No)	1	0,010	0,009	1,220	0,224
	2	0,000	0,004	-0,110	0,911
	3	-0,010	0,008	-1,300	0,192
Sending Messages via the Internet (Ref. Cat: No)	1	0,000	0,025	-0,010	0,995
	2	0,005	0,009	0,550	0,584
	3	-0,005	0,023	-0,210	0,837
Reading Online News via the Internet (Ref.Cat :No)	1	0,016**	0,008	2,100	0,035
	2	-0,005	0,004	-1,340	0,182
	3	-0,011	0,007	-1,620	0,106

Searching for Health Information on the Internet (Ref.Cat: No)	1	-0,018**	0,008	-2,170	0,030
	2	0,006	0,004	1,600	0,109
	3	0,012	0,007	1,590	0,111
Goods and Services Information Retrieval (Ref.Cat: No)	1	-0,004	0,008	-0,520	0,606
	2	-0,003	0,004	-0,740	0,462
	3	0,007	0,007	0,990	0,324
Website Sharing (Ref.Cat:No)	1	0,021***	0,007	3,060	0,002
	2	-0,015***	0,003	-4,590	0,000
	3	-0,006	0,006	-1,010	0,311
Job Search (Ref. Cat: No)	1	0,016**	0,007	2,220	0,026
	2	-0,008**	0,004	-2,120	0,034
	3	-0,008	0,006	-1,330	0,184
Goods and Services Sales (Ref.Cat:No)	1	0,020***	0,006	3,060	0,002
	2	-0,006*	0,003	-1,810	0,070
	3	-0,014**	0,006	-2,470	0,014
Performing Bank Transactions (Ref.Cat.:No)	1	-0,006	0,008	-0,720	0,471
	2	0,005	0,003	1,390	0,166
	3	0,001	0,007	0,140	0,891
File Transfer (Ref.Cat.:No)	1	-0,018***	0,007	-2,670	0,008
	2	0,011***	0,003	3,150	0,002
	3	0,007	0,006	1,220	0,222
Installing the Application (Ref.Cat.:No)	1	0,012*	0,007	1,880	0,060
	2	-0,006*	0,003	-1,790	0,073
	3	-0,006	0,006	-1,100	0,272
Making Device Settings Change (Ref.Cat.:No)	1	-0,016**	0,008	-2,050	0,040
	2	0,010***	0,004	2,480	0,013
	3	0,006	0,007	0,910	0,362
Creating Documents (Ref.Cat.:No)	1	0,012	0,008	1,520	0,129
	2	-0,003	0,004	-0,660	0,512
	3	-0,009	0,007	-1,350	0,176
Using the Tabulation Software (Ref.Cat.:No)	1	0,003	0,009	0,380	0,703
	2	0,003	0,005	0,720	0,472
	3	-0,007	0,008	-0,870	0,384
Performing Data Editing (Ref.Cat.:No)	1	0,011	0,009	1,290	0,196
	2	-0,006	0,005	-1,040	0,300
	3	-0,006	0,007	-0,810	0,420
Photo, Video, Audio File Editing (Ref.Cat.:No)	1	-0,002	0,006	-0,360	0,719
	2	0,012***	0,003	3,430	0,001
	3	-0,009	0,005	-1,740	0,082
Coding in Program Language (Ref.Cat.:No)	1	0,018	0,011	1,580	0,113
	2	-0,009	0,007	-1,400	0,162
	3	-0,008	0,009	-0,920	0,356
Reading the Privacy Text (Ref.Cat.:No)	1	-0,008	0,006	-1,360	0,174
	2	0,008***	0,003	2,770	0,006
	3	0,000	0,005	-0,020	0,985
Limiting the Geolocation (Ref.Cat.:No)	1	-0,002	0,007	-0,330	0,739
	2	0,004	0,003	1,150	0,249
	3	-0,002	0,006	-0,330	0,744
Limiting Storage (Ref.Cat.:No)	1	0,005	0,007	0,660	0,511
	2	-0,003	0,004	-0,710	0,480
	3	-0,002	0,006	-0,320	0,749
Preventing the Usage of Personal Information (Ref.Cat.:No)	1	-0,002	0,007	-0,260	0,797
	2	0,007**	0,003	2,120	0,034
	3	-0,006	0,006	-0,930	0,354
Preferring Secure Websites (Ref.Cat.:No)	1	0,000	0,007	0,040	0,970
	2	0,004	0,004	1,140	0,254
	3	-0,004	0,006	-0,760	0,446
Requesting Personal Data Update and Deletion (Ref.Cat.:No)	1	0,000	0,008	0,000	1,000
	2	0,000	0,004	0,110	0,913
	3	0,000	0,006	-0,070	0,942

Note: *10%,**5%,***1% show statistical significance at the significance level.

Category: 1: Domestic, 2: Overseas, and 3: It refers to individuals who shop both domestically and overseas.

Individuals living in the Northeast Anatolia region are 3.7% less likely to shop only domestically than those living in Istanbul, while the probability of shopping only overseas is 3.5% lower. Individuals living in the Central East Anatolia region are 5.3% more likely to do only domestic shopping, while the probability of shopping only overseas is 1.3%, and the probability of shopping both domestically and overseas is 4.1% lower than those living in Istanbul. Individuals living in the Southeastern Anatolia region are 3.1% more likely to do only domestic shopping and 1.9% more likely to shop only overseas, compared to those living in Istanbul, while the probability of shopping both domestically and overseas is 5% lower.

It has been determined that while female individuals are 2.7% more likely to do only domestic shopping than male individuals, the probability of shopping both domestically and overseas is 1.6% lower. It has been determined that individuals who follow online news via the Internet are 1.6% more likely to only shop domestically than those who do not. It has been determined that individuals who search for information about health on the Internet are 1.8% less likely to do only domestic shopping than those who do not. Individuals who share websites on the Internet are 2.1% more likely to make only domestic shopping, while the probability of shopping overseas is 1.5% less than those who do not. Individuals who are looking for a job on the Internet are 1.6% more likely to only shop domestically than those who are not, and 0.8% less likely to shop overseas. Individuals who sell online are 2% more likely to shop only domestically compared to those who do not sell, while they are only 0.6% less likely to shop overseas and 1.4% less likely to shop both domestically and overseas. Individuals who know how to transfer files on a computer are 1.8% less likely to make purchases only from domestic compared to individuals who do not know, while they are 1.1% more likely to make purchases only from overseas.

Individuals who know how to install computer and mobile applications are 1.2% more likely to shop only domestically, while the probability of shopping only from overseas is 0.6% lower than those who do not. Individuals who know about the system change are 1.6% less likely to shop only domestically than those who do not, while the probability of shopping only from overseas is 1% higher. Individuals who share photos and videos are 1.2% less likely to shop only from overseas than those who do not.

Individuals who read the privacy policy of the website or applications before giving their personal data are 0.8% more likely to shop only from overseas abroad than those who do not. It has been determined that individuals who do not allow the sharing of their personal data for advertising purposes are 0.7% more likely to make purchases only from overseas, compared to individuals who do.

Conclusions and Discussion

According to statistics, approximately 46% of the world's population, in other words 3.4 billion people, have become internet users. While the world population has increased by an average of 1.1% per year since 2000, the total number of internet users, which we call the internet population, has increased by approximately 13.2% every year and the spread of the internet has continued rapidly. Although almost half of the world's population has become internet users today, the internet population will continue to grow rapidly in the coming period [11]. The dizzying change in technology has found its way in the field of e-commerce, as in all trade formats, and trends that were not in our lives a few years ago have reshaped e-commerce today. E-commerce stands out as an attractive channel for many companies that want to start a business or increase their sales, because it can be implemented quickly and does not bear the costs of conventional retail. As a matter of fact, this study was conducted to investigate the relationship between various individual internet usage and electronic skills, personal data

protection sensitivity, and some demographic characteristics and e-commerce preferences of individuals. For this purpose, the MNP model was used to investigate the determinants of e-commerce (internet place to buy goods) preferences. According to the findings obtained from the MNP model, regional differences, gender, internet usage skills (e-mail, reading news online, searching for information about health, web site sharing, job search, selling goods and services) in e-commerce preference, computer-mobile skills (banking, file transfer, application installation, photo editing), and personal data security (preventing the use of personal information and reading privacy text) have been determined to have significant effects.

According to the findings, when examined in terms of the region, it was determined that the individuals living in Istanbul preferred to shop both domestically and abroad more than other regions. As a strategic priority in e-commerce, it is necessary to establish a website that will attract the attention of consumers, and after doing this, it is necessary to capture and maintain the necessary traffic. In this sense, in a national e-commerce strategy, it is important to choose a location that will increase the e-commerce traffic to a sustainable rate for the beginning. [30] stated that e-commerce activities in the United States started in the era of telemarketing, and they stated that the sales figures in population-dense regions were high in the internet era as they were in the telephone era. On the other hand, [31] is study on households in Italy concluded that although internet use is more common among urban consumers, the size of the city they live in does not affect e-commerce and e-banking transactions. According to the research, the use of e-commerce is mostly shaped by the preferences of participation in cultural and artistic activities, not residence in the city or in the countryside. These different results show us that although the consumer population value of the region is an important factor, it will not give a meaningful result on its own. As a matter of fact, [32] in his comparative research on e-commerce during the Covid-19 period examined the changes in the daily life practices of individuals living in three countries after the pandemic and found that people in Germany (30%), the United Kingdom (46%) and the United States of America. They found that they tend to do more online shopping in their states (52%). At this point, it would not be wrong to argue that the socio-cultural structures of countries are one of the determining factors in e-commerce preferences.

[33] stated that demographic characteristics such as gender affect the actions and decisions of individuals before they engage in a certain behavior. In this sense, the relationship between gender and the environment in which individuals spend their daily lives is important. Because this situation can differentiate the purpose and outputs of internet usage. First of all, it should be noted that although there are cultural differences in internet use, gender discrimination and inequality has decreased to zero in the last quarter century. It is possible to support this situation with studies conducted in the EU countries [34] and Turkey [16]. There are quite different results in online shopping-oriented internet use. In our study, it was found that men prefer to shop from abroad and women prefer to shop domestically. Similarly, the majority of individuals who shop online, both at home and abroad, are men. [35] in his study on students enrolled in e-commerce course in the USA found that women value the benefits of online shopping less than their male counterparts. [36] stated while emphasizing that male users prefer e-commerce more, found that male users prefer the online method more for computer, mobile phone and television shopping, and female users for clothes and perfume shopping. These results show that although e-commerce is the product needed on the basis of motivation, in general, men do not hesitate to buy durable consumer goods online, which have a relatively high price scale. At the same time, male internet users can act bravely and pragmatically compared to female internet users in e-commerce. The balance of usage equality, which emerged as a result of the widespread use of the Internet, especially in

the workplace, has deteriorated in favor of men when the use of e-commerce is considered. Of course, this situation has cultural characteristics as well as the fact that women are more sensitive and sensitive to the product they buy.

It would be useful to mention the use of social media, which has been rapidly increasing in e-commerce preferences, especially in recent years. Because a company's communication and interaction with its target audience through social media can increase brand awareness, website traffic and sales. Considering the time people spend on their social media accounts, the importance of the relationship between social media and strategic business management emerges. According to the results obtained in the research, a significant portion of individuals who only shop online at home, those who shop online only from abroad, and those who shop online both at home and abroad (over 80% in all three categories) share content on social media. The use and sharing of social media require a certain level of skill and can create various effects on the attitudes and behaviors of users. For example, [37] concluded in their research that customers consider the comments and suggestions of other customers on social media when purchasing products from e-commerce sites. In other words, in general, users can be both sellers and buyers of each other and references related to the product or service. On the other hand, according to the research results of [38], the use of social media significantly affects online shopping, but the more intensive use of social media also significantly affects distrust in social media, and as a result, distrust in social media has a significant impact on online shopping. creates a negative effect. In addition to the skill of the user in the relationship between social media and e-commerce, his trust in the social media platform he uses and his belief in the evaluations of other users are important factors.

When the results are evaluated within the scope of e-skills, individuals who know how to install computer and mobile applications are 1.2% more likely to shop only domestically, while the probability of shopping only from abroad is 0.6% less than those who do not. On the other hand, it has been found that individuals who can send e-mails, read news online, share websites, seek jobs, sell goods and services, and install applications are more likely to make domestic purchases. First of all, the issue that needs to be examined is for what purposes the computer and the internet are mostly used. Because the primary priority of people who have access to every computer or internet or can use it at a certain level is not online shopping. In fact, regardless of all other factors, online shopping starts with the customer feeling safe [39] On the other hand, as computer and internet usage skills progress, individuals' e-commerce motivation can increase. There are research results supporting this result [40, 41; 43]. Finally, in the research, it was found that individuals who prevent the use of personal information, read the privacy text, have the ability to transfer files, make photo, audio and video adjustments on a computer or phone, and change settings in electronic devices are more likely to shop from abroad. The sense of trust between the seller and the buyer in e-commerce can no longer be achieved by websites or sales methods that create a perception of trust alone; The main issue for customers is the need to protect online privacy [44]. In this sense, it is understandable that individuals who have a certain level of computer and internet usage skills and experience tend to shop from abroad due to price or quality advantage and consider this method reliable.

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