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The Relationship between Online Shopping and Traditional Shopping (Shopping Trip), Case Study: The City of Tehran

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Abstract
Development of science and technology and expansion of communication networks have overhauled many traditional aspects of human life. Shopping is a traditional urban practice that plays a central role not only in economics but also in urban development and transportation. Some may argue that home delivery services provided by online shopping (e-shopping) systems reduce the number of shopping trips to retailers, but online shopping may lead to generation of additional trips made by those buyers who first search, select, or even buy a product online and then travel to an actual vendor to examine, test, or compare it. Therefore, accurate determination of complex relationship between these two methods of purchase can yield valuable data for transportation planners. Some researchers have reported a negative correlation between online buying and the number of shopping trips, and yet others have reported the exact opposite. The objective of this study is to assess this relationship for Tehran residents, to provide a path for adoption of new policies geared to reduce congestion and traffic. To pursue this objective, 435 questionnaires were distributed and filled by Tehran residents and the obtained raw data was analyzed by SPSS23 software; the results were then processed by AMOS 23 software to develop a structural equation model. The final results showed that online searching has a positive impact on both online shopping and traditional shopping, but they also showed that e-shopping has in fact a positive impact on traditional shopping. The results obtained in this study point toward the presence of a complementary relationship between e-shopping and in-store shopping, which means that people who use internet to purchase products are also committed to traditional methods of shopping.

Keywords: Online shopping, Shopping trip, Structural equation modelling

1. Introduction

Demand and consumer generated trips are among key topics discussed in traffic and transportation literature. A common variety of these trips are those made with the sole purpose of shopping, and like business trips, they play an integral role in modern human life. While not being as important as business trips, shopping trips still play a significant role in our transportation problems; a role which cannot be simply neglected.

It is a well-known fact that advent and development of information and communication technology (ICT) has completely changed the course of human life by interweaving the human needs to a phenomenon called Internet. This medium of communication has enabled us to do many of our daily activities including business, shopping, and enjoying entertainment with minimum need for physical transportation. ICT is composed of several sectors, with electronic commerce (e-commerce) being perhaps the most important, and e-shopping is one of the three major modes of e-commerce.

The rapid growth of e-commerce has triggered major changes in transportation. The effect of e-commerce on transportation demand can be divided into 3 categories: 1- The impact of substitution of shopping trips with e-shopping on transportation demand: once buyers start to use online shopping instead of traditional approach, we may expect to see a lower number of shopping trips. This replacement allows buyers to avoid visiting the actual vendors, and thereby reduce traffic, pollution, and fuel consumption, thereby saving their time and money. 2- The impact of changes in sales centers on transportation demand: buyers engaged in e-shopping often purchase the product directly from the major suppliers, pushing the retailer out of the process. This leads to reduced rate of cargo transport between major suppliers and retailers and allow buyers to avoid visiting the centers located in highly congested city centers. 3- The impact of changes in the costs pertaining to demand: online shopping has a series of advantages that attract any buyer; through online shopping, buyers gain quick access to comprehensive information about the desired product and quantitative and qualitative comparisons, they save money and time otherwise to be spent on physical travel to actual stores, and make a simple and convenient purchase without having to get out of the house. These advantages stimulate the economic activity and demand and lead to increased demand for transportation.

2. Literature review

The relationship between online shopping and traditional shopping can be analyzed from two different perspectives. First, the transportation perspective (civil engineering) which is focused on the role of ICT on travel behavior; Second, the commerce and marketing perspective (economics and management disciplines) which assess the effect of buyers and sellers using ICT on traditional sales. According to researches carried out previously on this subject, the relationship between e-shopping and in-store shopping can be in 4 different forms, which lead to different results in different cities and populations; these four relationships are substitution, complementarity, modification, and neutrality (Mokhtarian, 2004; Salomon, 1985).

Substitution relationship refers to scenarios where online shopping replaces the traditional methods of shopping. In these scenarios, the trips made with the purpose of shopping gradually decrease and eventually disappear. Substitution of shopping trips with e-shopping, especially for certain commodities such as electronic and digital gadgets, triggers a gradual change in business trend and environment, and in the long run alters people's transportation behavior. For example, (Dixon and Marston, 2002) interviewed 450 individuals in a city in southern England and reported that two-thirds of online shoppers (28% of the entire respondents) stated that all or most of their in-store shopping has been replaced with online purchases. (Bhat et al. 2003) performed a similar research on 255 individuals living in Halle and Karlsruhe, Germany, and reported that 78% of people who buy online, make fewer shopping trips, while other 22% make more trips. Thus he concluded that for most

respondents, the use of computer and online shopping has replaced the traditional shopping methods. A study conducted by (Corpuz and Peachman, 2003) on 1487 Australian internet users reported that when Internet transaction is not available, 35% of respondents use a traditional method for shopping. (Tonn and Hemrick, 2004) collected the data of 118 Internet users in Knoxville, Tennessee USA, and found both substitution and complementation relationships (mostly substitution) between online and traditional shopping of different types of commodities. They studied the trips made to five different types of vendors (bookstores, supermarkets, clothing stores, music stores, and others) and reported that for example, 39% of respondents used online shopping instead of physical trips to bookstore in one or several occasions, while 14% made more trips to bookstore as the result of using internet or e-mail. In case of supermarkets, 7% of respondents made more trips and 5% made fewer trips as the result of online shopping.

Complementary relationship between e-shopping and shopping trips refers to trips made as the result of using internet (for example to browse and examine the product to be purchased, or for excursion rather than actually spending time for traditional shopping, etc.). Complementary relationship is expressed with two concepts: 1- Reinforcing effect: this effect refers to situations where online buying directly contributes to increase in the number of shopping trips (when the use of internet generates additional trips that otherwise would not have occurred). For example, according to a research conducted by (Steinfield et al. 2001), internet-based marketing promotion practices such as online advertisement and incentives lead to generation of additional shopping trips. 2- Efficiency effect: this effect refers to situations where traditional shopping is a necessary or enhancive complement of online shopping, increasing its efficiency (or vice versa). (Hernandez et al. 2001) surveyed 1937 Canadian shoppers and found that for commodities constituting the greatest share of online sales (such as computer hardware, travel tickets, etc.), online browsing/comparing followed by a traditional (in-store) purchase generates a sale averagely 3 times higher than online sales. (Ferrell, 2004) investigated the impact of teleshopping on shopping trips and concluded that teleshopping has a positive impact on the number of shopping trips made by Americans. Population of this study was comprised of 14563 Americans households residing in San Francisco. Three studies conducted by (Farag et al. 2005, 2006 and 2007) showed that in the Netherlands, the more internet users search online about products, the more they make non-daily shopping trips; and this result point to complementary relationship of online searching with in-store shopping.

e-shopping can also have a modifying effect on traditional shopping. In this type of relationship, online shopping alters traditional shopping rather than replacing it. E-shopping can alter the duration of shopping trip, the mode of transport, or destination (hence the distance traveled to make the purchase). For example, before going to a store, buyers can use internet to obtain necessary information regarding their desired product and store. In this case, the traditional trips to stores remain unchanged, but buyers commit less time to browsing and purchasing because they already have access to a good portion of information necessary to make a decision, and this leads to decreased duration of shopping trip. An early study on this subject was conducted by (Tacken, 1990) who reported that because of modern shopping (teleshopping via internet, phone, email, etc.) 28% of his study population use car less frequently, 23% often travel on foot and 14% use bicycle. (Ferrell, 2005) found a substitution relationship between online shopping and traditional shopping. He also found some evidence regarding modification relationship between these modes of shopping and reported that Americans who teleshop (via internet, telephone and TV ads) commit less time to shopping trips and also tend to travel a shorter distance to make a purchase.

There are a few studies that have found no association between online and traditional shopping. For example, (Casas et al. 2001) studied the percentage of shopping trips in total individual trips made by 9132 Americans residing in Sacramento, California, and reported that there is no significant relationship between the number of shopping trips made by online shoppers and conventional shoppers, so the relationship between these two parameters can be described as neutral.

This study aims to use structural equation modelling (SEM) to determine the relationship between e-shopping and in-store shopping of people residing in Tehran. Next sections present a brief introduction

to SEM, and then describe the processes of data collection and model development, and finally conclusions.

3. Research Methodology

Depending on the type of available data, the complex relationship between online shopping and traditional shopping can be studied though a variety of methods such as binary and multiple logit models, path analysis, structural equation modelling (SEM) and probit model. Recent studies have been keen to use SEM, since it provides relatively more accurate results and allows the researcher to use latent or unobservable variables like people's attitudes. These features have popularized SEM in a variety of disciplines such as agriculture, psychology, economics....; a popularity that has also spread to engineering applications. For example, (Farag, 2007) used this technique to study the relationship between the frequencies of online shopping, traditional shopping, and online searching, and (Cao, 2012) employed it to ascertain a complementary relationship between these two methods of purchase.

SEM is a very general and powerful multivariate analysis technique from the family of multivariate regressions; more precisely, it is a General Leaner Model (GLM) that allows researchers to test a set of regression equations simultaneously. This model provides a comprehensive statistical approach to test the hypotheses about the relationship between observed and latent variables. As mentioned, the main types of variables used in this model include latent and observed variables. Latent variables are those that cannot be directly observed or measured (e.g. attitude, satisfaction, motivation, etc.), and observed variables are those that are directly measured. These variables are in fact the questions (items) of questionnaires.

SEM is composed of two models: i) measurement model and ii) structural model. In measurement model, researcher defines the relationships between latent and observed variables. Measurement model specifies that how latent variables are associated with or measured by observed variables. The relationships between observed and latent variables are shown by factor loadings. A factor loading determines that to how well an observed variable can gauge the change in latent variable. It should be noted that measurement model is sometimes referred to as confirmatory factor analysis (CFA), because description and calculation of parameters assumed in CFA model have similar basis. Measurement model is based on the information about a data structure that is obtained earlier in the form of a theory, hypothesis or research-based fact. In structural model, researcher defines the causal relations between latent variables or between latent variables and observed variables. In these equations, structural factors are defined to show the intensity (statistical significance) and direction (positive or negative) of relations. In addition, each structural equation has a measurement error, which represents the fraction of latent dependent variable that is not predicted or explained by latent independent variable. SEM can analyze causal relationships between two endogenous (dependent) variables and also between endogenous and exogenous (independent) variables; so this model can estimate the best results for causal relations. In addition, this model can estimate the coefficients of direct effect ($X \rightarrow Y_2$), indirect effect ($X \rightarrow Y_1 \rightarrow Y_2$) and overall effect (a combination of both effects) of variables on each other. A structural equation model can be expressed as:

$$Y = BY + \Gamma X + \zeta \quad (1)$$

where Y is a $N_Y \times 1$ matrix containing the endogenous variables (N_Y : the number of endogenous variables); X is a $N_X \times 1$ matrix containing the exogenous variable (N_X : the number of exogenous variables); B is a ($N_Y \times N_Y$) structural matrix representing the direct impact of endogenous variables on each other; Γ is a ($N_Y \times N_X$) structural matrix representing the direct impact of exogenous variables on endogenous ones; and ζ is a ($N_Y \times 1$) matrix representing the error.

There are a number of fit indices that can be used to measure how good a model fits to the structural equation. These include x^2 / df (chi-square divided by degrees of freedom), whose value for a good model should be less than 3; Root Mean Square Error of Approximation (RMSEA), whose value should be less than 0.05; and GFI, AGFI and CFI which must be greater than 0.9.

4. Data Collection

The population of this study comprised the residents of Tehran. Respondents were not limited to any particular age group, social class, or level of education. After designing and preparing the research questionnaire (via assessing several national and international questionnaires and consultation with several professors specialized in this field, Cao and Farag) a total of 454 questionnaires were distributed and filled by Tehran residents. To increase the accuracy, 19 questionnaires were excluded from data analysis, reducing the total number of samples to 435. The initial phase of data collection was carried out in 10 days through randomized personal interviews at the venue of Tehran International Book Fair. It is necessary to mention that people from all over the country attend this Book Fair, so before the starts of interview respondent were asked whether they were residing in Tehran. Due to massive attendance in book fair, which hindered the process of interviews, authors failed to collect their desired number of samples during this 10-day event, so after the book fair the process of data collection was continued in parks and other public places. Overall, data collection procedure was carried out over a month.

As mentioned, most questionnaires were filled by people attending the International Book Fair. It should be mentioned that before selecting this event for data collection, authors consulted with a number of experts with past experiences in this regard. In the recent decade, Tehran International Book Fair has seen a significant growth and development in almost all aspects, so this public event currently attracts a wide variety of people with different age groups, social class, income levels, and professions with a balanced gender distribution, and it is not restricted or limited to book readers, authors, publishers or researchers., This process of data collection, like any other similar process undertaken in other studies, naturally faced problems such as disinterest in participation, inadequate attention, and misplaced or incomplete filling of questionnaire on part of respondents. After collecting the valid questionnaires, raw data was imported into SPSS23 software for descriptive analysis. Economic and demographic characteristics of 435 individuals participating in this study are presented in Table 1. According to descriptive analysis, of 206 male respondents, 18.4% (38 individuals) have never bought anything online, and for 229 female respondents this ratio is 30.1% (69 individuals). Meanwhile, 8.7% (18 individuals) of male participants and 4.8% (11 individuals) of female participants use internet at least once a month to purchase their non-daily needs. In terms of age group, respondents of 26 to 30 years old have the lowest percentage of people who have never done any online shopping and the highest percentage of people who use internet purchase at least once a month. 27.9% (85 individuals) of 305 single (unmarried) respondents, and 16.9% (22 individuals) of 130 married respondents have no previous experience of e-shopping but 7.2% (22 individuals) of single respondents and 5.4% (7 individuals) of married respondents e-shop at least once a month.

Table 1. Demographic characteristics of respondents

	Frequency/Mean	Percentage
Gender		
Male	206	47.8
Female	229	52.6
marital status		
Single	305	70.1
Married	130	29.9
Household income		
Less than 1 million Tomans	41	9.4
1 to 1.9 million Tomans	127	29.2
2 to 2.9 million Tomans	131	30.1
3 to 3.9 million Tomans	61	14
More than 4 million Tomans	75	17.2
Employment status		
Full-time employment	152	34.9
Part-time employment	82	18.9
Unemployed	199	45.8

Retired	2	0.5
Educational level Below a bachelor degree Bachelor degree Higher than a bachelor degree	 84 203 148	 19.3 46.7 33.9
People with driving license	324	74.5
People with ATM card	420	96.6
Number of household members	4.03	
Number of cars per household	1.34	
Age	28.03	

5. Development of Structural Equation Model

5.1. Measurement model

This study uses maximum likelihood estimation (MLE) via Amos23 software to develop both measurement and structural models. As mentioned in pervious section, measurement model or confirmatory factor analysis (CFM) tests the hypothesis to determine the extent of consistency between data and a certain factor structure (established by earlier researches). In this study, authors use the structure established in previous researches to determine how and to what extent the latent dependent variables are explained by observed variable. Table 2 show the items of questionnaire (devised based on 5-point Likert scale), latent variables (positive attitude toward e-shopping, positive attitude towards traditional shopping, and Internet usage experience) and factor loading pertaining to each item.

Table 2. Standardized coefficients of measurement model

Latent variable	Standardized coefficient	T-value
Positive attitude toward traditional shopping		
1. I often go shopping without prior planning.	0.203*	
2. In the right circumstances, shopping is fun and enjoyable.	0.489	3.287
3. Sometimes shopping is an excuse for me to go out of the home or workplace.	0.804	2.456
Positive attitude toward e-shopping		
4. online shopping is more complex than in-store shopping.	-0.553*	
5. Quality of a product available on the Internet is lower than its counterpart in an actual store.	-0.483	-6.381
6. It is important to me to view and test the product before buying it.	-0.392	-5.582
7. Waiting to receive a product bought from the Internet is annoying	-0.317	-4.761
8. Online payment via ATM card is a reliable transaction.	0.416	5.819
9. E-shopping without leaving home is highly enjoyable.	0.537	6.722
10. E-shopping is cheaper than traditional shopping.	0.261	4.047
Internet usage experience		
11. Where do you usually use the Internet?	3.335*	
12. How long ago you first started to use the Internet?	0.499	3.375
13. What type of internet connection you use at home?	0.300	3.015
14. How often you use the internet for personal (not professional) purposes?	0.389	3.332

*: item fixed on 1.00

As the above table shows, the first three items measure the latent variable “Positive attitude toward traditional shopping” and considering the higher coefficient of the third item it can be considered the best criterion to measure this variable. Likewise, for latent variables “positive attitude toward e-shopping” and “Internet usage experience”, the items having a higher coefficient are more capable of measuring the variable. For example, the fourth item has the highest coefficient for gauging “Negative attitude toward e-shopping” and the ninth item is the most prominent for measuring “Positive attitude toward e-shopping”. Similarly, the twelfth item is the best item for explaining the Internet usage experience.

Note that T-value represents the level of significant. If -1.96<T-value<+1.96, the hypothesis is rejected, otherwise it is verified at a significance level of 95%. When T-value<-2.56 or T-value>+2.56, the hypothesis is confirmed at a significance level of more than 99%. Table 3 shows the fit indices of the model, which indicate an acceptable fit.

Table 3. Fit indices of the measurement model

Index	measured value	Acceptable threshold for a good model
x^2 / df	1.883	Less than 3
RMSEA	0.045	Less than 0.05
GFI	0.956	Greater than 0.9
AGFI	0.938	Greater than 0.9
CFI	0.846	Greater than 0.9

5.2. Structural model

To develop a structural model, authors examined different latent, observed, endogenous and exogenous variables and repeatedly tested their relationships. Values corresponding to direct and overall effect of these relationships are presented in Tables 4 and 5. Here, exogenous variables include age, income, gender, teleshopping and education level; and endogenous variables are frequencies of online shopping, traditional shopping, and online searching, Internet usage experience, positive attitude toward traditional shopping and positive attitude toward e-shopping. As previously mentioned, direct effect is association of two variables without inclusion or involvement of any intermediate variable; in indirect effect, an intermediate variable links the two variables; and overall effect is the sum of direct and indirect effects.

Table 4. Direct effects (standardized coefficients)

		Endogenous (dependent) variables					
		Internet usage experience	Positive Attitude toward traditional shopping	Positive Attitude toward e-shopping	Frequency of online searching	Frequency of online shopping	Frequency of Traditional shopping
Exogenous variables	Education level	0.473**					
	Age	-		-0.117*			-0.107*
	Income	0.222**					-
	gender (female)	-0.147*	0.380**	-0.392**			-
	Tele-shopping			0.181**		0.152**	
Endogenous variables	Internet usage experience			0.309**	0.262**	-	
	Positive Attitude toward e-shopping				0.218**	0.383**	
	Frequency of online searching					0.220**	-

	Frequency of online shopping						0.250**
	Positive Attitude toward traditional shopping						0.201*

**: P<0.01 *: P<0.05 - : not significant at 0.2 level
Empty cells point to absence of any relationship in the model.

Table 5. Total effects (standardized coefficients)

		Endogenous (dependent) variables					
		Internet usage experience	Positive Attitude toward traditional shopping	Positive Attitude toward e-shopping	Frequency of online searching	Frequency of online shopping	Frequency of Traditional shopping
Exogenous variables	Education level	0.473		0.146	0.155	-	-
	Age	-		-0.117	-0.030	-0.040	-0.107
	Income	0.222		0.069	0.073	-	-
	gender (female)	-0.147	0.380	-0.473	-0.134	-0.192	0.010
	Tele-shopping			0.181	0.039	0.230	0.056
Endogenous variables	Internet usage experience			0.309	0.329	0.156	-
	Positive Attitude toward e-shopping				0.218	0.431	0.101
	Frequency of online searching					0.220	0.022
	Frequency of online shopping						0.250
	Positive Attitude toward traditional shopping						0.201

As the above tables show, household income has s significant positive effect on Internet usage experience, meaning that households having a higher income use Internet more frequently. This may be due to better access to internet based or related equipment and technologies, which aid high-income households to improve their Internet usage experience. It can also be seen that households having a higher income have a better attitude toward e-shopping and more frequently use online searching to acquire information about their desired products. Comparing the results pertaining to tele-shoppers (people who already use telephone, email, etc. to purchase products) and traditional shoppers shows that tele-shoppers more frequently use internet to browse products and are more inclined to proceed with online-shopping. This shows that past experience of teleshopping aids people to more easily try online shopping instead of making a shopping trip. People with high internet usage experience use internet more frequently to browse goods and online stores and purchase their desired products. In line with the results of (Farag, 2007), results obtained here show that females have more limited internet

usage experience than males, so fewer females use internet to browse their desired products and they often have a more positive attitude toward traditional shopping; this means that they are more inclined to make a trip to the actual store and buy the product from that place. Level of education has a very significant positive impact on the Internet usage experience (its coefficient is 0.473, which is quite high). The necessity of using internet to advance in education exposes people to extensive and various online experiences, which lead to generally high Internet usage experience of more educated people, and therefore their higher inclination to online shopping. This significant relation is also reflected in positive attitude of more educated people toward online shopping and higher rate of educated people that use internet to search about products. Note that younger people are found to be more inclined to buy online, have a better attitude toward this practice and use internet more frequently to acquire information about products (Farag, 2007), but older persons are also more involved with e-shopping than in-store shopping. This could be due to fast-paced city life, traffic jams and bustle of Tehran, which push older people who do not want to commit the time and energy required by traditional shopping to experience modern shopping, and ultimately change their shopping method (from traditional to electronic) after enjoying its advantages such as convenience and time/cost effectiveness. As can be expected, positive attitude toward e-shopping increases the frequency of online shopping and online searching. Similarly, positive attitude toward traditional shopping increases the frequency of people using a traditional method of shopping.

Assessing the relationships between the main variables and endogenous variables (frequencies of online shopping, traditional shopping, and online searching) shows that frequency of online searching has a positive correlation with frequency of online shopping. This means that people who use online searching become motivated to purchase the produce the same way and often avoid spending extra time and money to make a shopping trip. However, it should also be mentioned that increased frequency of online searching also increases the frequency of traditional shopping (though this effect is milder than the case of online shopping). This result suggests that some people first use internet to acquire information about product or store, and then make a trip to the actual store for traditional purchase (to see the product up close, examine, compare, etc.); this result is consistent with results of (Cao, 2012). Also, frequency of online shopping is correlated with frequency of traditional shopping, which means that people who use internet to purchase products are still committed to traditional shopping; this result is consistent with results of (Zhou and Wang, 2014). The relationships determined between these three variables point toward a complementary relationship between online shopping and shopping trips rather than a substitution relationship. Instead of reducing the number of shopping trips, online shopping has led an increase in this variable, which is not totally unexpected since investigations of (Cao, 2010 and 2012) in USA and (Farag, 2007) in Netherlands have also reported the same relationship. Table 6 shows the fit indices of the structural model and their allowable values. The values listed in this table demonstrate the acceptable fit of the model.

Table 6. Fit indices of the structural model

Index	Measured value	Acceptable threshold for a good model
x^2 / df	2.032	Less than 3
RMSEA	0.049	Less than 0.05
GFI	0.925	Greater than 0.9
AGFI	0.902	Greater than 0.9
CFI	0.797	Greater than 0.9

6. Conclusion

Development of electronic commerce can play an important role in transportation systems, and determination of causal relationship between e-shopping and traditional in-store shopping can help us find the boundaries of this role. Transportation planners may expect the online shopping to act as a

substitute for traditional shopping trips, but although some researchers have shown such relationship, recent studies conducted in different countries have pointed toward the presence of a complementary relationship, which means that online buying contributes to the increase of shopping trips. These additional numbers of trips are in fact triggered and facilitated by online shopping. For example, online marketing promotion, advertisement and incentives encourage people to make additional shopping trips; increased adaptation of people to this trend also leads to further generation of shopping trips. This study sought to use the data collected from 435 participants to assess the abovementioned relationship for Tehran residents. The Amos23 software was used to develop a SEM model and ultimately it was found that online searching has a positive impact on both online shopping and traditional shopping. The results also showed a positive correlation between e-shopping and in-store shopping. The results obtained in this study point toward the presence of a complementary relationship between online shopping and traditional shopping, which is also reported by previous studies. For some commodities, online buying can replace traditional methods of purchase, but for many others it leads to increased volume of traditional sale. This means that online shopping cannot act as a definitive solution for Tehran's congestion and traffic problems.

Transportation planners can theorize policies to increase people's tendency to online shopping such that the outcome would decrease the number of shopping trips. When designed and implemented properly, these policies should be able to alter the relationship between these two factors toward a more desirable direction (to a substitution or modification relationship). Iran is a developing country with good potential for more widespread use of internet and other modern technologies, which can be employed to improve online services and vendors and perhaps encourage people to substitute the traditional methods of purchase with online shopping (at least for some selected commodities) and enjoy its short and long term advantages such as convenience, time and cost effectiveness and maybe the reduced traffic. Future studies are suggested to examine the aforementioned relationship for other Iranian cities such as Isfahan Mashhad, Tabriz, and to incorporate the type of purchased products (both daily and non-daily) in their model and analysis. Comparing the results with other models such as logit, probit or hybrid models may also be of interest.

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