

# Determinants of Online Shopping Decision Process Improvement

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## **Abstract**

The development of the worldwide web has led to the creation of a new type of shopping, called online shopping. The ability to understand the ways the customers and consumers behave and decide is a basic prerequisite for successful marketing goals. The present study aimed to identify determinants of online shopping improvement according to the customer decision process. To this end, the desk method and literature review were used to identify the factors affecting the improvement of online shopping. Thereafter, interpretive structural modeling (ISM) was used to define relationships between the indices affecting the improvement of online shopping. The opinions of 16 experts in management and information technology were used to define these relationships. The individuals were selected by the snowball sampling method. The research results indicated that the model included seven variables, namely channel quality, website quality, product features, advertising, transaction quality, e-customer satisfaction, and online shopping improvement. The model was then tested using the partial least squares-structural equation modeling (PLS-SEM) approach. The test result of the model indicated that 60% and 32% of variations in the purchase improvement variable were directly explained by electronic satisfaction and advertising respectively. The shopping channel, website, and transaction quality indirectly affected the online shopping improvement variable.

**Keywords:** E-commerce; Online Shopping Improvement; Interpretive Structural Modeling (ISM); Partial Least Squares (PLS)

## **Introduction**

Marketing science seeks to affect consumer behavior. Using knowledge of consumer behavior to develop a marketing strategy is an art. In today's competitive world, consumers are not just looking to buy a product, they are also looking to meet their needs or solve their problems. (Samadi, Hoseinzadeh, & Nurani, 2010) At this time, called the age of knowledge, post-industry, temporary societies, and globalization, organizations, and companies must always gain competitive advantages by identifying and investigating consumer behavior. Since consumers are the turning point of all marketing activities, in order to have a successful business, managers must have a clear understanding of why and how consumers behave. Studying the factors that affect consumer behavior and examining the impact of each of these factors on behavior leads to gaining knowledge and understanding of consumer behavior that only then managers will be able to make the right decisions and appropriate to the situation. (Kheiri & Fathali, 2015). Due to the significant increase in the use of the Internet in our country, for retailers who want to improve their e-commerce, it is necessary to determine the online shopping behaviors of their target customers and adopt appropriate marketing and sales strategies according to them (Nazari & Baghdadi, 2013). In recent decades, the issue of purchasing decision-making process in traditional and physical purchases has been considered and studied by a number of researchers; The main basis of this research is the focus on how to choose and rational decision of the consumer to make the required purchases, while the attention to this process in the field of online shopping, especially in our country is very low, also despite the existence of e-commerce in practice and increasingly important, the various areas of research related to e-commerce operations remain unknown. In most studies in the field of e-commerce, only the role of one or more factors on the intention of online customers to buy (the effect of trust on the intention to buy, the effect of perceived risk on the intention to buy, the effect of personalization on the intention to buy, the effect of customization on the intention to buy, the effect of the brand on the intention to buy, etc.) and comprehensive research has not been formed in this regard. Although the quality of e-commerce services in the field of e-commerce has been studied, in-depth attention to how to manage successful operations and identify factors influencing customer decision-making in the field of e-commerce remains relatively unknown. To fill

this gap, the present study seeks to provide a comprehensive framework for e-commerce operations to improve customers' online shopping. The present study gives managers insight into how they can improve their e-marketing based on their customers' decision-making process.

## **2. Research background**

### **2-1. Customer decision-making process**

The existing literature indicates little attention to identifying and measuring indices and scales of the customer decision-making process in online purchases. There is no study with an empirical conceptualization of the comprehensive framework of e-commerce operations based on customers' decisions in cyberspace. In this regard, few studies such as Darley et al. have dealt with this issue in a purely conceptual way (Darley, Blankson, & Luethge, 2010). Today, the Internet has become a widespread platform for business transactions and powerful media for marketing. According to Immarket reports, the number of customers in developed countries (such as the United States, Britain, France, Japan, etc.) who use the Internet to search and buy products is constantly growing, and this amount for a country like the United States, for example, it reached 200 million in 2015. In addition, the percentage of American Internet users who continue to sell online has grown to 90% in 2015. In Iran, despite the significant global growth, Internet sales statistics are low and Internet markets in Iran are not mature enough. The UN Conference on Trade and Development in 2016 announced that Iran ranked 77th out of 137 countries in the field of e-commerce. The exponential growth of e-marketplaces has increased competition among retailers that rely on e-commerce websites as a competitive tool. Therefore, e-retailers should not only focus on customers who make their purchases from the online channel, but also pay special attention to what causes the customer to switch from offline to online channels (Changchit & Klaus, 2015).

According to the proposed models in the field of decision making, the classical five-step decision model in practical application has been highly regarded by researchers and is often used as the main foundation of marketing strategies. Also, some of the proposed models for examining the customer decision-making process (such as: stimulus-response model and parasite-blackwell-miniard model) have incorporated the classic five-step model. Therefore, in this research, the classic five-step model will be used to examine the customer decision-making process. Accordingly, customer decision making consists of five steps: channel selection, search, evaluation, purchase, and results (Darley, Blankson, & Luethge, 2010).

In the first stage of decision-making to make a purchase (problem recognition), customers decide whether to choose an online shopping channel or an offline shopping channel. The quality of the online channel examines and identifies the factors that cause people to use new online shopping methods instead of the traditional way of shopping. Next, when you decide to go it cheap and risk the low bandwidth you are only fooling yourself. Therefore, we define the factors influencing customers' decision in choosing a website to make our purchase as "website quality". In the third step, the website user evaluates the options offered by the virtual vendor. At this stage, two other very effective factors in the choice of product or service by the customer are advertising and product features. And in the final stage, when a person chooses a product or service, the quality of the transaction is an effective factor in finalizing the buying behavior of customers. So what matters here is the quality of the transaction. In short, customers understand "electronic channel quality", "website quality", "advertising", "product features" and "transaction quality" in their online shopping process. They do and based on that, buying behavior is formed.

### **2-2. Online channel**

When customers decide to buy products or services to meet their needs, they must first decide which channel to use to access their purchase. Customers can buy their products or services from online or offline channels (Madlberger, 2006). Traditional customers prefer to go to physical stores and shop offline. However, in developed countries, people are increasingly turning to online shopping and retailers are trying to sell products through online channels. There are also stores that have taken a combination of both traditional and online forms of business. The quality of the online channel refers to the characteristics of the virtual sales channel that influence the customer's decision to make a purchase through the online channel (Wen, Prybutok, Blankson, & Fang, 2014). Because the virtual world is more intangible and new than physical stores, customers turn to online shopping when there are significant benefits to this type of shopping, otherwise due to the novelty and unfamiliarity with this type of environment. The risks involved in such traditional buying transactions will be

more successful. Therefore, the use of online shopping channel is considered when customers assume that the online shopping channel has more advantages than the alternative model. In other words, the perceived value of customers from online shopping is an influential factor in choosing this style of shopping. Therefore, it is important for researchers and online retailers to identify the motivating factors for online shopping (Madlberger, 2006).

### **2-3. Website quality**

Since online shopping gradually moves from a new form to a common way of shopping, the quality of internet websites plays an important role in differentiating websites and their competitiveness. High-quality online shopping websites can be more successful in attracting consumers and affecting their purchasing decisions (Yoo&Donthu, 2001). From an IT perspective, website quality in e-commerce acts as a platform on which e-sellers offer their products or services (Wen, Prybutok, Blankson, & Fang, 2014). The quality literature of traditional retail stores shows that consumers perceive store quality as an important external indicator of the quality of store products. Similarly, high quality online sales sites will attract more attention, more contact, and more traffic by consumers by inducing that they offer higher quality products. In addition, when consumers are satisfied with a website because of its high quality, they are stimulated by the active and positive communication of word-of-mouth electronic advertisements, and other internet searchers provide favorable and acceptable opinions about the quality of the site in question. Comments will be heard through the media and site rating agencies (Yoo&Donthu, 2001). This can lead to building trust and confidence, enhancing the image of competency, capability, and utility in the company; This will persuade the customer to return to the site (Lim & Ting, 2012).

### **2-4. Perceived product quality**

Perceived product quality is important for affecting consumer purchasing decisions (Zhou & Lin, 2015). Understanding the quality of products or services, especially in maintaining long-term relationships, is a key factor for both groups of buyers (offline and online). Perceived product quality is defined as consumer judgment about the overall superiority of products offered by the seller over others (Tsotsou, 2006). In many cases, the focus of the value perceived by the customer is on the quality of the product and the nominal price of the product. According to this thinking, a set of features that together represent a certain level of desirability for the customer is called the value perceived by the customer. The benefits to the customer's income are often measured through the concept of perceived quality of customers, and this is to the extent that the concepts of value perceived by the customer and perceived quality of the customer are typically used interchangeably. In both cases, the highest focus of customer expectations is on product quality and price (Snoj, Korda, Mumel, & Snoj, 2004).

Most researchers accept the theory of the use of Zitelmeil signs as the basis of their research in the field of quality. According to the theory of the use of signs, each product consists of a set of signs that are used as substitute indicators of quality. Symptoms can be classified into two categories: external signs and internal or intrinsic signs. External signs contain attributes of the product that are not part of the product physics (eg price, product brand, packaging). Intrinsic marks represent product-related characteristics that cannot be altered without manipulating the physical properties of the product (e.g., ingredients of a food product, clothing size, vehicle design) (Zeithaml, 1988). Because consumers' perceptions of quality are different from quality goals, research shows that consumers use external features to determine product quality (Chen & Dubinsky, 2003; Longstreet, 2010). On the other hand, intrinsic signs include the actual technical superiority of the product (which can be measured according to some predetermined standards). In contrast, the perceived quality of the product is a very abstract issue, which is determined by general evaluation and according to the specific opinion of the consumer (Zeithaml., 1988). This is especially true in the pre-online shopping phase, when customers have no familiarity with the inherent features of the product so they can judge it (for example, when they have no previous product experience). Customers have a low ability to be tangible, and thus consumers will have a lower perception of product performance. In this situation, the external characteristics of the product are expected to have a significant impact on the perceived quality of the product (Teas & Agarwal, 2000).

### **2-5. Advertising**

Marketing science seeks to affect consumer behavior. Advertising is known as an effective factor in customer buying behavior (Fard, Nemat, & Monfared, 2012). There are different online and offline ways to advertise products or stores. These methods are best chosen to achieve optimal performance, depending on the type of business and target customers. Changing the traditional view of advertising and paying attention to a new form of advertising, appropriate to the type of Internet business has led to the creation and launch of a professional website and adding useful information to the website. At this stage, it is mandatory to pay attention to the possibility of creating word-of-mouth electronic advertisements for the product or virtual store, because this type of advertising forms part of the effective environment of the search and evaluation stage of the person. Most researchers believe that e-commerce is successful when the public trusts the virtual environment (Montazeri, Ebrahimi, Ahmadi, & Rahnama, 2014).

Participation in the virtual community and the content produced by the user are the dominant social activities in cyberspace. Word-of-mouth advertising is information and recommendations about a particular product, service, or store, from a customer perspective, that occur in offline or online environments (Kaplan & Haenlein, 2010). In customer decision-making models, word-of-mouth advertising forms part of the effective environment of the individual search and evaluation phase. Word-of-mouth advertising influences a customer's purchasing decisions by influencing the evaluation of the product, brand, or virtual store in question. Electronic word-of-mouth advertising plays an important role in the purchasing process by reassuring the customer and reducing perceived risk (Tang, Fang, & Wang, 2014). Most e-commerce sites try to persuade their customers to do positive word-of-mouth advertising because customer-generated data gives potential customers a sense of trust, which encourages them to buy from a virtual store. (Yan, et al., 2016).

### **2-6. Transaction quality**

Santos found that the majority of potential website sales were lost due to poor e-services. It is necessary to pay attention to the fact that virtual world customers do not tend to choose websites with poor services. In this regard, some researchers have suggested that more than two-thirds of the budget allocated to websites should be allocated to the development of e-services (Santos, 2003). From the researchers' point of view, the quality of the transaction is even more important than the quality of the electronic channel and the quality of the website, because the buyers at this stage are considered real customers and not just a website user. Therefore, poor service performance leads to reduced satisfaction and consequently customer loss and loss of sales (Wen, Prybutok, Blankson, & Fang, 2014). Various studies have been conducted on the dimensions and development of online service quality scales. Studies in this field are classified into two different categories according to their focus: the quality of online retail services and the quality of website design (Cristobal, Flavián, & Guinalú, 2007). The quality of the website design refers to the features that were mentioned in this study in the decision-making stage of customers to choose a virtual store. Therefore, in this section, which is related to the transaction, the quality of online retail services will be discussed. For this purpose, researchers tried to use its dimensions in e-commerce and providing electronic services in the Internet environment, citing and considering the Servocal scale. This model has been updated by some researchers for the virtual environment. In this model, the criteria that were provided to measure the quality of services in the virtual environment include: \* Tangible: which refers to the appearance of the website (Subramanian, Gunasekaran, Yu, Cheng, & Ning, 2014).

Reliability / Guarantee: The trust given to the user (Sharma & Lijuan, 2014). Providing professional services to customers including consignment tracking system (Schaupp & Bélanger, 2005). ⚡ Accountability: A supportive function to answer customer questions and problems. Ability to provide answers in an accurate, useful, fast and error-free manner (Lee & Lin, 2005). Customization: Customization is one of the biggest benefits of e-commerce (Schaupp & Bélanger, 2005). Flexibility in payment and delivery, personal service delivery through customized content with personal specifications (Zhou & Lin, 2015). Create an Internet configuration, provide specific options for the product, and provide a product with the ability to change to suit the individual. (Schaupp & Bélanger, 2005)

### **2-7. Satisfaction**

The performance of any business depends on the success of its customer retention. Customer satisfaction has long been recognized as one of the main determinants of long-term customer behavior. (Ulaga & Eggert, 2006)

Establishing a customer satisfaction monitoring process helps the organization identify actual and potential problems before the business position of the organization is seriously endangered. Customer satisfaction is a customer's feeling or attitude towards a product or service or organization. Satisfaction acts as a link between the various stages of consumer buying behavior. If customers are satisfied with a particular service, they will probably repeat their purchase. Dissatisfied customers, on the other hand, are likely to change the organization they serve, and in word-of-mouth advertising directly affect an organization's survival and profitability.

### **3. Research Methodology**

The present study utilized various steps to achieve the research objectives, and each step depended on the realization of the previous step:

Step 1: Identifying the variables and indices related to the determinants of online shopping improvement and categorizing them based on customer decision steps.

Step 2: Using the interpretive structural modeling technique to determine the relationships between the identified factors and create the initial research model.

Step 3: Using the Smart-PLS technique to test the conceptual model of the research obtained from the second step.

#### **3-1. Statistical population and sample**

In the interpretive structural modeling technique, the selection of experts was based on their competencies. In this study, 16 people are defined based on the criteria related to the purpose of the research, which are (familiar with management and marketing; have sufficient expertise in the field of information technology; willing to participate in research), in the form of purposeful sampling. In the section of using structural equations (PLS-SEM) to test the research model, the statistical population includes customers of stores active in the field of online business of consumer electronics industry in Shiraz. The research sampling method is simple random sampling. In the structural equation method, it is suggested that the sample size be at least two to three times the number of hidden parameters in the model (AbbassiEsfanjani, 2017); Another well-known rule for determining the minimum required sample in the PLS method is equal to the largest value obtained from the two rules: two multiplications in the number of indicators of the measurement model that has the highest index among the research measurement models and ten multiplications in the most relations in Structure of the main research model related to one variable (Davari&Razazadeh, 2014) According to Ding et al., Modeling of covariance structure between 100 and 150 samples is required and the results of less than 100 samples in these studies are valid. Is not (AbbassiEsfanjani, 2017). According to the above considerations, the minimum sample size for this study was 160 people, and finally 225 complete questionnaires were collected from the statistical population.

#### **3-2. Data collection tools and methods**

Data about the theoretical bases of research, literature, and background were collected to identify variables and indices related to online shopping improvement and their classification based on customer decision-making steps using the desk method and investigating domestic and foreign scientific books and articles. Information related to determining the relationships between identified factors and the formation of the initial research model using semi-structured interviews with experts in the form of five questions related to the factors affecting the improvement of online shopping at each stage of the customer decision-making process; And data related to the test of the conceptual model of the research were collected using a questionnaire. Cronbach's alpha and combined reliability methods were used to assess the reliability of the questionnaire; Also, to evaluate the convergent validity, the mean of variance was extracted, and to evaluate the divergent validity, two criteria of cross-factor loading and Fornell and Larker methods were used, which were confirmed after removing some validity and reliability questions of the questionnaire.

#### **3-3. Presenting a conceptual model of research**

The results of the expert interview analysis showed that the electronic channel quality variables fall into categories and subcategories: task value (usefulness, ease, pleasure), emotional value (pleasure, self-promotion, mastery), social value (social status), and perceived risk. Composed (experience, store image); Also variable website quality from security categories and subcategories (personal information protection, electronic symbol,

secure protocol https), information content (relevance, completeness, comprehensibility, accuracy, up-to-date content, effective information display), system performance (Processing speed, no clutter, navigation, usability, application delivery), visual effects (attractiveness, simulation, magnification, responsive design), and innovation (data mining consulting, comparability, differentiation) ; The advertising variable consists of categories and subcategories of word-of-mouth advertising (user suggestions, submission of each product, referral system to friends, suggestions of friends and acquaintances, rating of products or services) and environmental advertising (virtual, physical); Variables of product characteristics from price categories and subcategories (wide price range, product price guarantee, discount based on number of purchases, discount based on previous purchase, discount based on purchase amount, timed discount), and variety (application variety of products, offer Rare products, related products, wide brand range); And finally, the quality of the transaction variable from the categories and subcategories of trust / guarantee (purchase path, service accuracy, service recovery, pre-invoice viewing, billing, delivery of goods, open box option), responsiveness (submission of suggestions and criticisms, speed of response , Accurate Response, Practical Response, Online Consulting), and Customization (Personalization, Preferential Behavior, Flexibility in Payment Method, Flexibility in Delivery). Interpretive structural modeling was used to determine the relationships between the identified factors and the formation of the initial research model. The steps of interpretive structural modeling to determine the relationships between factors are as follows.

- Identify the subject under study (in this study, the factors affecting the improvement of online shopping).
- Selection of the participating group: Participants must have an acceptable level of content knowledge related to the topic. A review of articles in the field of interpretive structural modeling methodology shows that the number of experts should be at least 4 and it is better to be more than 10 (Forozandeh&Kiarazm, 2015).
- Generating a set of elements: In some cases, a set of elements that need to be structured is predefined. (In this research, semi-structured research literature and interviews have been used to produce a set of elements).
- Formation of self-interactive structural matrix: Using the set of elements identified in the previous step, a content relationship between them is defined with respect to each pair of elements. . To determine these relationships, one must form an interactive structural matrix (AliAhmadi&Kiarazm, 2014). In this research, a seven-by-seven matrix was provided to the experts to form a structural interaction matrix, and the experts completed the matrices based on the following principles: V: means only i leads to j. A: means only j leads to i. X: The
- Formation of the achievement matrix: Then, its interactive structural matrix must be converted into the achievement matrix or the achievement matrix. For this purpose, the symbols of their interactive structural matrix relations should be converted to zeros and ones based on the following rules. If i, j are V in the structural self-interaction matrix, then in the achievement matrix (i, j) becomes one and (j, i) becomes zero. If (i, j) is A in the structural self-interaction matrix, (i, j) becomes zero in the achievement matrix and (j, i) becomes one. If (j, i) is entered as x, then (j, i) in the achievement matrix becomes one and (j, i) also becomes one. If (i, j) is entered as O, then (j, i) and (j, i) become zero. In this study, according to Warfield (1974), in order to determine the relationships between the factors affecting the improvement of online shopping, the opinions of experts (the method of the majority law) have been used (Firuzjaeyan, Firuzjaeyan, Hashemi Petroodi, &Gholamrezazadeh, 2013). Matching access matrix (modified accessibility matrix): Once the initial access matrix is obtained, its internal compatibility must be established. For example, if element 1 leads to element 2 and element 2 leads to element 3, element 1 must also lead to element 3, and if this is not the case in the achievement matrix, the accessibility matrix must be modified (denoted by M Can be replaced. Various methods have been proposed to adapt the matrix, and here are two general methods: Method 1: Some researchers believe that after gathering the opinions of experts and their own structural interaction and achievement matrices, if inconsistencies are observed within the achievement matrix, the questionnaire should be filled out again by experts and then the achievement matrix compatibility should be checked again. It must continue until compatibility is established. Method 2: In this method, mathematical rules are used

to create consistency in the achievement matrix, in such a way that the achievement matrix according to Bolen's rule is equal to  $k + 1$  so that it is  $(K \geq 1)$ . In this research, the second method has been used.

- Determine the level and priority of the identified elements: Then define the set  $R_i$  as the achievable set (output) for each element  $s_i \in S$ . This set will include all elements that can be accessed from the  $s_i$  element. In other words, all the elements that line  $i$  of the modified accessibility matrix belong to are 1. We also need to define the a priori set (input); The set  $A_j$  for each element  $s_j \in S$  is defined so that all elements that can access the element  $s_j$ . In other words, all elements whose column  $j$  is the modified accessibility matrix are 1. The subscription set of two sets, denoted by  $A_i \cap R_i$ , contains all the elements that are present in both sets. If the condition  $A_i = A_i \cap R_i$  holds for an element  $s_i$ , we can say that the element  $s_i$  is not accessible from any of the other elements of the set  $S$  and therefore can be considered as the lowest level of the elements. After determining the lowest level, it is necessary to remove this element from the  $M$  matrix and repeat the above process again. After repeating the above process in the reduced system, the above calculations and table are recalculated to determine the elements of the next levels.
- Model Graph Drawing: Based on the relationships defined in the modified accessibility matrix, it is possible to produce a multi-level directional graph. The resulting graph is a directional graph with a minimum edge that efficiently and hierarchically shows both direct answers and logical inferences and tries to remove redundant edges from the graph.

### 3-4. Conceptual research model test

The model analysis algorithm in the Smart-PLS technique was performed in three phases, namely measurement model fitting (including the examination of reliability and validity of research constructs), structural model fitting, and general model fitting, to test the conceptual research model.

### 4. Research Findings

The results of the experts' discussion on completing the structural self-interaction matrix for the criteria affecting the improvement of online shopping are presented in Table 1.

Table 1: Structural self-interaction matrix

$\begin{matrix} j \\ i \end{matrix}$	1.Channel	2.the Web	3. the product	4 .Advertising	.5 Transaction	.6 Satisfaction	7. Improvement
1. Channel	X	A	O	O	O	V	O
2.the Web	V	X	O	O	O	V	O
.3the product	O	O	X	O	O	V	O
4.Advertising	O	O	O	X	O	A	V
5. Transaction	O	O	O	O	X	V	O
6. Satisfaction	A	A	A	V	A	X	V
7.Improvement	O	O	O	A	O	A	X

The matrix of linguistic variables (structural self-interaction matrix) was then transformed into the accessibility matrix or the achievement matrix, the result of which is presented in Table 2.

Table 2: Achievement matrix

$\begin{matrix} j \\ i \end{matrix}$	1.Channel	2.the Web	3. the product	4 .Advertising	.5 Transaction	.6 Satisfaction	7. Improvement
1. Channel	1	0	0	0	0	0	0
2.the Web	1	1	0	0	0	0	0
.3the product	0	0	1	0	0	0	0
4.Advertising	0	0	0	1	0	0	0
5. Transaction	0	0	0	0	1	0	0

6. Satisfaction	0	0	0	0	0	1	0
7.Improvement	0	0	0	0	0	0	1

According to the obtained matrix, the obtained matrix is modified according to the expressed formula, for  $n = 3$ . After calculating the power of 3 achievability matrices, all non-zero elements will be assumed to be equal to 1. The modified accessibility matrix is shown in Table 3.

Table 3: Modified accessibility matrix

j i	1.Channel	2.the Web	3. the product	4 .Advertisin g	.5 Transactio n	.6 Satisfactio n	7. Improveme nt	Influenc e power
1. Channel	1	0	0	1	0	1	1	4
2.the Web	1	1	0	1	0	1	1	5
.3the product	1	0	1	1	0	1	1	5
4.Advertising	1	0	0	1	0	1	1	4
5. Transaction	1	0	0	1	1	1	1	5
6. Satisfaction	0	0	0	1	0	1	1	4
7.Improvement	0	0	0	0	0	0	1	1
Dependence	6	1	1	6	1	6	7	

Based on the modified capability matrix, the criteria are categorized. The set  $R_i$  and the set  $A_i$ , as well as the sharing of the two sets ( $A_i \cap R_i$ ), are defined for each element in Table 4.

Table 4: Leveling related sets in the first iteration

i				Level number
1	7 و 6 و 4 و 1	6 و 5 و 4 و 3 و 2 و 1		
2	7 و 6 و 4 و 2 و 1	2	2	First
3	7 و 6 و 4 و 3 و 1	3	3	First
4	7 و 6 و 4 و 1	6 و 5 و 4 و 3 و 2 و 1		
5	7 و 6 و 5 و 4 و 1	5	5	First
6	7 و 6 و 4 و 1	6 و 5 و 4 و 3 و 2 و 1		
7	7	7 و 6 و 5 و 4 و 3 و 2 و 1		

Then we remove the second, third and fifth lines that are related to the first level from Table 4 and repeat the above process. The results are presented in Table 5.

Table 5: Leveling related sets in the second and third iterations

i			شماره سطح	
1	7 و 6 و 4 و 1	6 و 4 و 1	6 و 4 و 1	Second
2	7 و 6 و 4 و 1			First
3	7 و 6 و 4			First
4	7 و 6 و 4 و 1	6 و 4 و 1	6 و 4 و 1	Second
5	7 و 6 و 4 و 1			First
6	7 و 6 و 4 و 1	6 و 4 و 1	6 و 4 و 1	Second
7	7	7 و 6 و 4 و 1		Third

After performing the calculations related to Table 5, it was found that the first, fourth and sixth rows belong to the second level of the model, and by removing the first, fourth and sixth rows after performing the calculations related to Table 5, only the remaining row, ie the seventh row, the third level Constitutes the model. According to the above findings, the research model that shows the graph of the research factors based on interpretive structural modeling is presented in Figure 1.

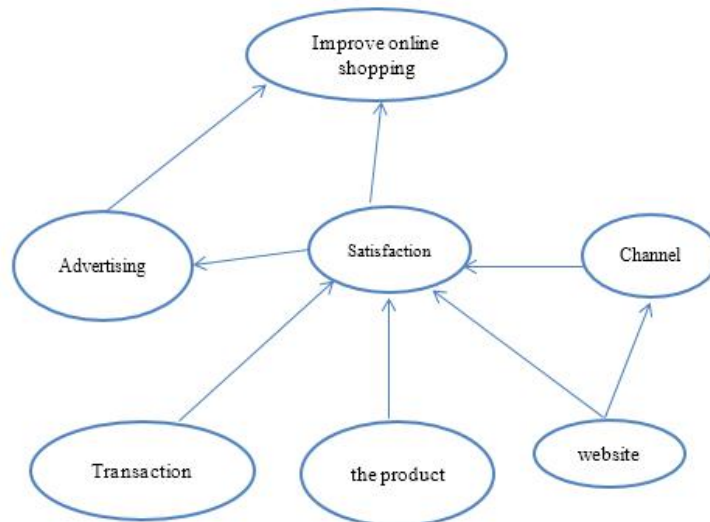


Figure 1: Model obtained from interpretive structural modeling method

#### 4-1. Fitting of measurement models:

The software output related to the fit of the measurement models, which includes "factor load values, Cronbach's alpha coefficients, combined reliability, mean variance extracted, cross-factor load criteria and Fornell and Larker criteria", showed that the value of each of these criteria in the case ranges is confirmed.

Table 6: Software output related to the fit of measurement models

Mean variance extracted	Combined reliability	Cronbach's alpha	Variable
0/572	0/841	0/75	Advertising
0/672	0/911	0/878	Channel quality
0/872	0/953	0/927	Improve online shopping
0/506	0/889	0/862	Product quality
0/954	0/977	0/952	Electronic satisfaction
0/597	0/946	0/937	Deal quality
0/535	0/918	0/903	Website quality

#### 4-2. Route coefficients:

The software output related to the model path coefficients is shown in Figure 2.

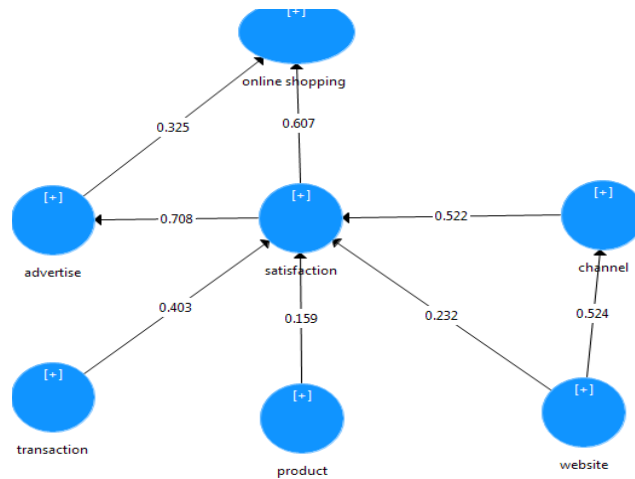


Figure 2: Model path coefficients

**4-3. Structural model fit:**

To evaluate the structural model, t-test criteria, R2, impact size criterion, Stone Geiser criterion and redundancy criterion were used. The t-test is the most important criterion for fitting the structural model of the research. At the 95% confidence level, if the t-values obtained are greater than 1.96, it indicates the correctness of the relationships between the structures of the structural model. Figure 3 shows the values of t for each path. As a result, other hypotheses are confirmed except the hypothesis of the effect of the product on satisfaction.

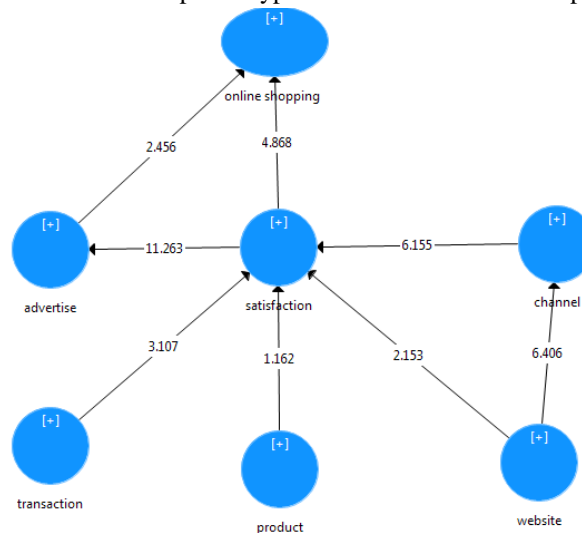


Figure 3: t-values to evaluate the structural part of the research model

**4-4. Criterion R2:**

Investigation of R2 is related to the endogenous latent variables of the model. This criterion is used to connect the measurement part and the structural part and indicates the effect of an exogenous variable on an endogenous variable. Three values of 0.19, 0.33 0.67 are criteria for weak, medium and strong model (Abbasi Esfanjani, 2017). Since the coefficient of determination for advertising structure is 0.502, channel quality is 0.375, electronic satisfaction is 0.739 and online shopping improvement is 0.753, the appropriateness of the fit of the structural model is confirmed.

**Impact size criteria:**

This criterion determines the intensity of the relationship between the model structures and the values of 0.02, 0.15 and 0.35 indicate the magnitude of the small, medium and large impact of one structure on another structure, respectively. According to the values obtained for the size of the impact of each of the constructs of satisfaction on the improvement of purchase 0.754, advertising on the improvement of purchase 0.213, channel

quality on satisfaction 0.549, transaction on satisfaction 0.340, website on channel 0.379, and comparison with index values, model fit The structure of the research is confirmed.

#### **4-5. Stone Geezer criteria:**

This criterion determines the predictive power of the model, and models that have an acceptable structural part fit should be able to predict the characteristics of the model's endogenous structures. Regarding the intensity of predictive power of the model for endogenous structures, three values of 0.02, 0.15 and 0.35 have been determined as weak, medium and large predictive power, respectively. Therefore, considering that the value obtained for the structure of online shopping improvement is higher than 0.35 (0.602), it indicates the high predictive power of the model.

#### **4-6. Redundancy criteria:**

This criterion is obtained by multiplying the common values of the structures by the values of the coefficient of determination related to them and indicates the amount of variability of the characteristics of an endogenous structure that is affected by one or more exogenous structures. There is no numerical value for this criterion, and the higher the number, the better. The values obtained for the advertising structure are 0.301, channel quality is 0.491, satisfaction is 0.626 and online shopping improvement is 0.642.

#### **4-7. Overall fit of the model:**

The GoF criterion is used for the overall fit of the model, which includes both the measurement model and the structural model. The GoF criterion is equal to the square root of the average common values of the structures in the mean coefficient of their determination. For this criterion, three values of 0.01, 0.25 and 0.36 are considered as weak, medium and strong values. The average common values of the structures are equal to 0.5153 and the average coefficient of their determination is equal to 0.5647, so the GoF criterion is equal to 0.5394, which indicates a strong overall fit of the model.

### **5. Conclusion**

A very important advantage of the classic five-step model is that it allows marketers to present their certain marketing tactics according to each step of their customers' decision-making, and then develop their communication tools in each step according to the customer approach if necessary. In this regard, the present study has approached the issue with a step-by-step approach and by determining the effective criteria and indicators at each stage of the user's purchasing process, has given the necessary guidance to managers to prevent return and re-work that leads to loss of time and capital. Provides irreparable damage in attracting and creating customer loyalty. In order to design a model for improving online shopping, the components and components affecting online shopping were identified from the research literature and localized through interviews with experts. The model was formed by interpretive structural modeling technique and by analyzing field data by partial squares method of structural equations, the research goal was achieved. Finally, the factors: channel quality, website quality, product features, advertising, satisfaction, and transaction quality were identified. The results showed that the quality of the website and the quality of the transaction are considered as the underlying factors for improving online shopping. The variables of website quality and transaction quality directly affect the creation of e-customer satisfaction and indirectly affect other research variables. In addition to the e-customer satisfaction variable, the quality of the website also directly affects the perceived quality of the virtual shopping channel. These findings are consistent with the findings of Yu et al., 2001; McKinney et al., 2002; Lee et al., 2005; Parasuraman, 2005; Zoyran et al., 2006; Tsai et al., 2007; Petvardehan et al., 2010; Mikalf et al., 2013; Van et al., 2014; Yu et al., 2015; Lim, 2015 matches. At the second level of the ISM model are the factors of channel quality, e-customer satisfaction, and advertising; Satisfaction is also directly affected by the quality of the transaction and the quality of the website, in addition to the quality of the channel. This finding is consistent with the results of Madberger's research, 2006; Et al., 2008; Kaplan et al., 2010; Van et al., 2011; Yu et al., 2013; Yu et al., 2015; Ian et al., 2016 corresponds. In general, the factors identified in this model explain a total of 75% of the changes related to the online shopping improvement variable and the rest are related to other factors that have not been studied in this study. The values of the path coefficients in the final research model showed that electronic satisfaction 60%, advertising 32% directly explain the changes related to

the purchase improvement variable; And the purchasing channel variable indirectly and through the mediating variables of satisfaction and advertising by 43%; Website variable indirectly and through channel mediator variables, satisfaction and advertising by 42%; The transaction variable indirectly and through the mediating variables of satisfaction and advertising by 33%; And the satisfaction variable indirectly and through the advertising mediator variable has a 23% effect on the online shopping improvement variable. Also, among the identified variables, electronic satisfaction with a total effect of 0.8372 and channel quality with a total effect of 0.4370 and websites with a total effect of 0.4232 have the most impact (directly and indirectly) on improving online shopping, respectively.

## References

- AliAhmadi, A., & Kiarazm, A. (2014). Identifying and Leveling the Factors Affecting the Implementation of Knowledge Management Using the ISM Model. *Modiriyat-e-fard Journal*, 39(1), 5-20.(in persian).
- Abbassi Esfanjani, H. (2017). The design of the commercialization pattern of academic research by method SEM-PLS. *Journal of Commerce*, 1(82), 33-65. (in persian).
- Changchit, C., & Klaus, T. (2015). An exploratory study on small business website creation and usage. *Journal of Electronic Commerce in organizations*, 13(1), 1-14.
- Cheah, I., Phau, I., & Liang, J. (2015). Factors influencing consumers' attitudes and purchase intentions of e-deals. *Marketing Intelligence & Planning*, 33(5), 763-783.
- Chen, Z., & Dubinsky, A. J. (2003). A conceptual model of perceived customer value in e-commerce: A preliminary investigation. *Psychology and Marketing*, 20(4), 323-347.
- Cristobal, E., Flavián, C., & Guinalfú, M. (2007). Perceived e-service quality ( PeSQ ). *Managing Service Qualit*, 17(3), 317-340.
- Darley, W. K., Blankson, C., & Luethge, D. J. (2010). Toward an Integrated Framework for Online Consumer Behavior and Decision Making Process:A Review. *Psychology & Marketing*, 27(2), 94–116.
- Fard, M. T., Nemat, M., & Monfared, M. A. (2012). The Prediction of Customer Repurchasing Behavior (Case: An Internet Service Provider). *Journal of Business Management*, 3(10), 55-74.(in persian).
- Firuzjaeyan, A. A., Firuzjaeyan, M., Hashemi Petroodi, S. H., & Gholamrezazadeh, F. (2013). Applying Techniques of Interpretive Structural Modeling (ISM) in Tourism Studies (A Pathological Approach). *Journal of Tourism Planning and Development*, 2(6), 129-159.(in persian).
- Forozandeh, L., & Kiarazm, A. (2015). Identification and ranking of affecting factors the institutionalization of ethics by using ISM model. *Organizational Resources Management Research*, 5(3), 125-152.(in persian).
- Heidarzadeh, K., & Adelpour, E. (2010). Evaluating the Role of Electronic Service Quality and Customer Satisfaction on Consumers' Purchase Intentions. *JOURNAL OF MARKETING MANAGEMENT*, 5(8), 35-68.(in persian).
- Janda, S., Trocchia, P. J., & Gwinner, K. P. (2002). Perceptions of Internet retail service quality. *International Journal of Service Industry Management*, 13(5), 412-431.
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59-68.
- Kheiri, B., & Fathali, M. (2015). Investigating Effective Factors on Purchase Intention of Luxury Products. *Journal of Marketing Management*, 10(26), 1-24.(in persian).
- Kim, S. J., Wang, R. J.-H., Maslowska, E., & Malthouse, E. C. (2016). Computers in Human Behavior " Understanding a fury in your words " : The effects of posting and viewing electronic negative word-of-mouth on purchase behaviors. *Computers in Human Behavior*, 54(1), 511-521.
- Lee, G.-G., & Lin, H.-F. (2005). Customer perceptions of e-service quality in online shopping. *International Journal of Retail & Distribution Management*, 33(5), 161-176.
- Lim, W. M. (2015). Antecedents and consequences of e-shopping: an integrated model. *Internet Research*, 25(2), 184-217.
- Lim, W. M., & Ting, D. H. (2012). E-shopping : An Analysis of the Uses and Gratifications Theory. *Modern Applied Science*, 6(5), 48-63.
- Longstreet, P. (2010). Evaluating Website Quality : Applying Cue Utilization Theory to WebQual. *Proceedings of the 43rd Hawaii International Conference on System Sciences*, 1-7.

- Madlberger, M. (2006). Exogenous and endogenous antecedents of online shopping in a multichannel environment: evidence from a catalog retailer in the German-speaking world. *Journal of Electronic Commerce in Organizations*, 4(4), 29-51.
- Mikalef, P., Giannakos, M., & Pateli, A. (2013). Shopping and word-of-mouth intentions on social media. *Journal of Theoretical and Applied Electronic Commerce Research*, 8(1), 17-34.
- Montazeri, M., Ebrahimi, A., Ahmadi, P., & Rahnama, A. (2014). Investigation of the Factors Affecting the Intention to Purchase on Electronic Commerce. 6(2), 207-226.(in persian).
- Nazari, M., & Baghdadi, M. (2013). Investigating the Factors that Influence Online Impulsive Buying in Iran - Survey on Group Discount Websites. *Journal of Information Technology Management*, 5(3), 223-239.(in persian).
- Parasuraman, A., Zeithaml, V., & Malhotra, A. (2005). E-S-QUAL: a multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7(3), 213-233.
- Patwardhan, P., & Ramaprasad, J. (2010). Rational Integrative Model of Online Consumer Decision Making. *Journal of Interactive Advertising*, 6(1), 2-13.
- Rahmani-nejad, L., Firoozbakht, Z., & Taghipoor, A. (2014). Service Quality, Relationship Quality and Customer Loyalty ( Case Study : Banking Industry in Iran ). *Open Journal of Social Sciences*, 2(1), 262-268.
- Rahnama Roodposhti, F., & TajmirRiahi, h. (2014). Modeling the impact of behavioral biasn the Capital Market Depression Based on Structural Interpretative Approach. *Journal of Financial Engineering and Management of Securities*, 19(1), 111-130.(in persian).
- Samadi, M., Hoseinzadeh, A. H., & Nurani, M. (2010). Survey Relationship Marketing Tactics on Buying Behaviour on Chain Store. *journal of "Business Management*, 2(4), 93-110. (in persian).
- Santos, J. (2003). E-service quality : a model of virtual service quality dimensions. *Managing Service Quality: An International Journal*, 13(3), 233-246.
- Schaupp, L. C., & Bélanger, F. (2005). A CONJOINT ANALYSIS OF ONLINE CONSUMER SATISFACTION. *Journal of Electronic Commerce Research*, 6(2), 95-111.
- Sharma, G., & Lijuan, W. (2014). Ethical perspectives on e-commerce : an empirical investigation. *Internet Research*, 24(4), 414-435.
- Snoj, B., Korda, A. P., Mumel, D., & Snoj, B. (2004). The relationships among perceived quality , perceived risk and perceived product value The relationships among perceived quality , perceived risk and perceived product value. *Journal of Product & Brand Management*, 13(3), 156-167.
- So, M. W., & Sculli, D. (2007). The role of trust , quality , value and risk in conducting. *Industrial Management & Data Systems*, 102(9), 503-5012.
- Subramanian, N., Gunasekaran, A., Yu, J., Cheng, J., & Ning, K. (2014). Customer satisfaction and competitiveness in the Chinese E-retailing : Structural equation modeling ( SEM ) approach to identify the role of quality factors. *EXPERT SYSTEMS WITH APPLICATIONS*, 41(1), 69-80.
- Tang, T. Y., Fang, E. E., & Wang, F. (2014). Is Neutral Really Neutral ? The Effects of Neutral User-Generated Content on Product Sales. *journal of marketing*, 78(1), 41-58.
- Teas, R. K., & Agarwal, S. (2000). The effects of extrinsic product cues on consumers' perceptions of quality , sacrifice and value. *Journal of the Academy of Marketing Science*, 28(1), 278-290.
- Tsai, H.-T., & Huang, H.-C. (2007). Determinants of e-repurchase intentions: An integrative model of quadruple retention drivers. *Information & Management*, 44(3), 231-239.
- Tsiotsou, R. (2006). The role of perceived product quality and overall satisfaction on purchase intentions. *International Journal of Consumer Studies*, 30(2), 207-217.
- Uлага, W., & Eggert, A. (2006). Value-Based Differentiation in Business Relationships : Gaining and Sustaining Key Supplier Status. *Journal of Marketing*, 70(1), 119-136.
- Wen, C., R. Prybutok, V., Blankson, C., & Fang, J. (2014). The role of E-quality within the consumer decision making process. *International Journal of Operations & Production Management*, 34(12), 1506-1536.
- Yan, Q., Wu, S., Wang, L., Wu, P., Chen, H., Chen, H., et al. (2016). E-WOM from e-commerce websites and social media : Which will consumers adopt ? *ELECTRONIC COMMERCE RESEARCH AND APPLICATIONS*, 17(1), 62-73.

- Yoo, B., & Donthu, N. (2001). Developing a scale to measure the perceived quality of an Internet shopping site (SITEQUAL). *Quarterly Journal of Electronic Commerce*, 2(1), 31-47.
- Yoo, C. W., Sanders, G. L., & Moon, J. (2013). Exploring the effect of e-WOM participation on e-Loyalty in e-commerce. *Decision Support Systems*, 55(3), 669-678.
- Zeithaml, V. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model Synthesis of Evidence. *Journal of Marketing*, 52(3), 2-22.
- Zhou, X., & Lin, Y. (2015). The Study on the Influence Mechanism of Website Features on Consumer Purchase Intention. 8th International Symposium on Computational Intelligence and Design (pp. 104-107). Zhejiang : IEEE.
- Zhu, Y.-q., & Chen, H.-g. (2015). Social media and human need satisfaction : Implications for social media marketing. *Business Horizons*, 58(3), 335-345.

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