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An Integrative Model of Influencing Factors for E-Shopping Using Mobile Apps among Young Iranian Users

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Abstract

Purpose: The growth of Smartphone applications has led to the development and transformation of business sector. The present work aimed to assess factors influencing the intention to use shopping applications.

Method: A structural model was formulated for analyzing and testing the existing factors among shopping application users. The statistical population of the research comprised of the users of shopping applications in a public university in Iran. This study employed a questionnaire survey, which consisted of two sections. The first section included general demographic details of the target respondents, while the second section comprised 30 items to measure the constructs of our conceptual model. All items of constructs were adopted from previous literature. A total of 288 questionnaires provided usable data.

Findings: The results revealed that factors such as Convenience, Perceived Ease of Use, Trust, and Perceived usefulness affect the intention to use shopping applications, while factors such as Perceived Innovativeness, Perceived Risk, Perceived Enjoyment, and Social Influence were found to be non-influential.

Conclusion: This research was conducted based on a comprehensive review

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of the research literature and identification of influential constructs with the approach of creating an integrated model of factors affecting the intention to use shopping applications. Based on the research results, focusing on ease of use and creating the experience of perceived usefulness along with the use of tools that lead to the improvement of trust is critical for practitioners.

Introduction

With the increase in the bandwidth, speed, of the internet and the worldwide access to it, businesses faced a shift to electronic envoronmet and tend to provide services through the internet networks (Chen & Hsieh, 2012). Due to technological innovations, the usage of traditional methods by people have encountered problems in making transactions and purchases. Today, consumers and buyers seek simple ways to reach brands and stores. In addition in order to provide the right to choose and receive information, and suggest more purchasing solutions to customers, E-commerce will serve as a tool for selling products, services, and content on the Internet. Owing to such a phenomenon, anything can be bought at any time and place (Grewal et al., 2021; Lakshmi, 2016). In today's competitive world, the most important goals of marketers must be gaining, maintaining, and enhancing their current market share at a higher level, as well as maintaining customer loyalty and continuous use intention to create a sustainable competitive advantage. As such, ensuring customer loyalty and the generation of revenue through increased customer lifetime is significantly important in terms of marketing management. (Lin and Wu, 2012; Omoregie et al., 2019). One recent development achievement that has transformed the communications market is the change in technology and the way it is used in the mobile app market (Sturiale & Scuderi, 2016). Individuals are increasingly relying on mobile technologies in today's world, emphasizing efficiency and mobility (Liu et al., 2009). The global influence and popularity of mobile phones as a communication system, along with the creation of suitable platforms to improve communications, including the third and fourth generation of the Internet, enable business owners to seize the opportunity to present their goods and services. The adoption of this technology has significantly altered consumption patterns, and the habit of online consumption has had a significant and lasting impact on traditional consumption patterns (Shang & Wu, 2017).

Due to the growing availability of smartphones, there is a rising popularity of mobile business applications such as online shopping, mobile payments, travel, health, and transportation services. Moreover, a promising and new approach exists for companies to access their audiences at any time and place and attract various audiences. The extensive growth of smartphones in Asian countries, especially Iran, has led to studies in these countries about purchasing through

applications (Al Amin et al., 2022; Kazancoglu & Demir, 2021; Morosan & Defranco, 2016; Vahdat et al., 2021). However, studies with an integrated model of influential dimensions have received less attention. Therefore, this work aimed to investigate the factors influencing intentions for using shopping applications.

Literature Review

The mobile is recognized as an emerging technology, which plays an important role in business and society. Mobile technology is any hand-held electronic computing device, including cell phones, tablets, mp3 players, and personal computers, that can typically access the Internet through a Wi-Fi connection (Cumming & Draper Rodríguez, 2017). The global influence of the mobile device is growing rapidly. Mobile devices account for a large percentage of the time spent on interacting with online retail stores. Most mobile interactions are established through apps that are designed to meet the users' specific needs for entertainment, shopping, social interaction, and information. According to the global economy and emerging markets, the emerging popularity of smartphones and shopping apps are evident (Hsu & Lin, 2016). Cell phone applications' availability, which is becoming widespread in all mobile platforms, encourages users to spend more time on their phones (Alnawas & Aburub, 2016). Smartphone apps are creative channels that provide a wide range of services for enhancing the daily habits of their users. They could apply in managing their knowledge of operations, marketing efforts, information technology, and human resources (okumus, 2013). The customer experience of a mobile branded application is a new structure in marketing studies that can affect their satisfaction. Online shopping with applications involves user access to the Internet to search, select, purchase, use, and exclude products and services to meet specific desires and needs (Stocchi et al., 2022). The shopping apps could be an optimal channel for service centers, as well as training and communicating with their mobile customers by presenting properties such as access to map routes, direct calls, and online coupons. In the following, we will examine the factors affecting intention to use shopping applications.

Perceived innovativeness

According to Rogers, the pioneer of the diffusion of the innovation theory, innovation is the degree of people's interest in attempting to

produce new technology, services, or products, and the adoption of innovations can vary in individuals (Rogers, 2003). It is further indicated that innovation is an important mechanism through which human and physical capital promotes economic growth, as well as research and development (Agenor and Neanidis, 2015). Many studies of innovation have shown that it affects the intention to use a new technology, product, or service (yi et al,2006, Shoham & gonen, 2008). According to Williams (2018), greater levels of innovativeness result in higher levels of user intention to mobile payment applications. Thus, this study proposes the following hypothesis:

- H1: Perceived innovativeness of shopping applications has a positive impact on use intention.

Perceived risk

This concept refers to the extent of risks associated with using innovation (Ram & Sheth,1989). Researchers such as Chauhan et al., (2016) have emphasized that several customers attempt to dodge negative aspects when dealing with the perceived risk associated with online shopping. Accordingly, the growth of knowledge among e-retailers and marketers can help identify types of risk in online activities and decision-making (Hong & Pavlou, 2017). Security and privacy demonstrate the ability of a website or software related to online shopping regarding the protection of customers' personal information from any unauthorized misuse and exploitation during the online exchanging of the data, as well as the lack of providing this information to third parties (Guo et al., 2012). The perceived risk is a multidimensional structure that constitutes various factors and the overall risk related to decision making for purchasing or using a new service, product, or technology (Pavlou, 2003). The perceived risk was first used by Bauer (1960) by analyzing uncertainty (consumer's uncertainty about the probable results of particular transactions) and the probable negative outcomes of the purchase process (action). He indicated that behaviors are related to certain risks since the consequences of the mentioned behavior cannot be explicitly estimated in advance (Bauer,1960). The perceived risk negatively affects people's confidence in the perceived usefulness of technology and use intention (Im et al, 2008). Therefore, the present study posed the following hypothesis:

- H2: Perceived risk of shopping applications has a negative impact on

use intention.

Convenience

Convenience is considered essential for marketing services and goods, consequently, it has received further attention in studies on consumer behavior and marketing (Williams, 2018). According to Srinivasan et al. (2002), convenience represents the scope at which a customer finds the website simple, user-friendly, and intuitive. The information accessibility and simplicity of transaction processes are essential antecedents to successful transaction completion. As mentioned by Ozturk et al. (2016), the concept of convenience includes distinct dimensions such as time, place, acquisition, use, and execution. Williams (2018) indicated that convenience is an important predictor of the user's intention to adopt m-payments. Accordingly, the current study proposes the following hypothesis:

- H3: Perceived convenience of shopping applications has a positive impact on use intention.

Perceived enjoyment

The perceived enjoyment is the extent to which the consumer receives satisfaction by using a particular product or service instead of the consequence of its performance (Davis, 1992). This enjoyment increases the value of the apps and their acceptance (Kim et al.,2007). Moreover, the perceived enjoyment is expected to positively affect the intention to use such apps. Lunghsu (2016) mentioned that people use apps to obtain specific goals or enhance productivity and task performance, and have fun. Okumus and Bilgihan (2014) proposed that perceived enjoyment has a positive effect on the intention to utilize healthy eating smartphone apps. Thus, this study presents the following hypothesis in this regard:

- H4: Perceived enjoyment of shopping applications has a positive impact on use intention.

Social influence

Social influence reflects the effect of people's viewpoints on individual users (Venkatesh et al., 2003). Most researchers indicate that social impact contributes to the use of personal information technology (Luarn and Lin, 2005; cheung et al, 2011; Ting et al., 2014). Social influence is the effect that consumers receive from their surroundings (e.g.,

friends and family) believing that a particular technology should be used accordingly (Venkatesh et al., 2012). The reference group theory also reveals that consumer performance (e.g., decision to purchase) is influenced by peers' comments (Kotler, 1999; Brown and Reingen, 1987). Individuals such as family members, friends, or other important people to the person can influence his/her beliefs and may persuade him/her to change their traditional shopping behaviors and use new ways to make purchases (boontarig et al,2012). In this respect, the current study provides the following hypothesis:

- H5: Social influence of shopping applications has a positive impact on use intention

Perceived ease of use

The perceived ease of use is another major predictor of the Davis model (1986) implying that people choose technology to perform a job in cases of perceiving the ease of use and minimal effort. Based on the above-mentioned model, ease of use denotes the users' opinion about the manageability or the convenience degree of the operation of a particular system (Davis, 1989). In another definition, ease of use is the degree to which a person believes there is an organizational and technical infrastructure to support system use (Venkatesh et al., 2003). Several researchers attempted to investigate the ease of use as an influential factor in the intention for use. According to Okumus and Bilgihan (2014), the perceived ease of use has a positive impact on the intention to use healthy eating smartphone apps. Additionally, Williams (2018) found a positive relationship between ease of use and intention of applications. As a result, this study proposes the following hypothesis:

- H6: Perceived ease of use of shopping applications has a positive impact on use intention.

Trust

Trust reflects a customer's tendency to rely on a brand or company due to acting on its promises regarding future risks (Chaudhuri and Holbrook, 2001). Previous research has indicated that trust leads to intention to use if trust is a continuous process and maintains a valuable and important relationship that results in loyalty to the brand or company. Trust is considered as a determining factor in stimulating online shopping (Gefen et al., 2003). In this regard, Patwardhan and Balasubramanian (2013) argued that the attachment created is largely

based on trust, dependency, and agreeableness. The highest level of emotion a person can have toward a brand involves a feeling of disgust and low interest to a high level of love observed in the relationships of a person with another individual. Indicators of brand-consumer relationships include factors such as being long-term, deep feelings toward the brand, and predicted distress due to separation (Langner et al., 2015). The consumer cannot be ensured of seller engagement in adverse and opportunistic performances such as privacy violations, unfair pricing or unauthorized transactions, and the unauthorized use of credit card information when there is no trust and guarantee (Reichheld & Schefter, 2000). Therefore, the consumer is affected by a concern for the control and privacy of personal information. Building trust could eliminate this concern regarding privacy and security. According to Harris et al. (2016), trust has a positive effect on the intention of the consumer to install an application. Therefore, the present study provides the following hypothesis:

- H7: Perceived Trust in shopping applications has a positive impact on use intention.

Perceived usefulness

Perceived usefulness was determined as the scope at which users believe that utilizing an application, a particular system, or Web 2.0 technology improves their performance (Heinrichs et al., 2011). According to Sweeney (1999), usefulness refers to four dimensions. The first one is described as the feeling or emotional state through which a product creates pleasure when users accept a product or service (zhou, 2008). The second one is the social value that the service or product generates in social self-image. In addition, the third dimension is the performance value resulting from the expected performance and perceived quality of the product. The last dimension is the price or value of money that provides the usefulness of the service or product owing to its perceived long- and short-term cost savings. All dimensions of the perceived value are strong predictors of behavioral intention to use (Sweeney and Soutar, 2001). When consumers realize the values and benefits of using shopping purchases (e.g., convenience and affordability), they will have a more positive attitude toward the apps and are encouraged to use them (lunghsu, 2016). Accordingly, this study proposes the following hypothesis:

- H8: Perceived usefulness of shopping applications has a positive

impact on use intention.

In the following section, Table 1 presents a summary of studies on the factors, which influence on use intention of applications based on research literature.

Table1. The factors, that influence on use intention of applications based on the literature

	Personal innovative ness	Perceived risk	Convenie	Perceived enjoyment	Social Influence	Perceived ease of use	Trust	Perceived usefulness	Dependen t variable
Shin, & Shin (2011)				**				**	intention to use social network games application
Wang, Park, Chung, & Choi, (2014)	**			**		**		**	Intention to Use healthcare application
Okumus, B., & Bilgihan, A. (2014)				**	**	**		**	intention to use restaurants applications
Agrebi, & Jallais, (2015)				**		**		**	intention to use mobile shopping
Hew, Lee, Ooi, & Wei (2015).					**				mobile apps usage intention
Peng, Zhao & Zhu, (2016)							**		switching intention to a new messaging application
Harris, Brookshire , & Chin (2016)		**					**		intent to install mobile applications

Upadhyay & Jahanyan (2016).						**		**	use intention of mobile based transfer payment
Kim, Hwang, Zo, & Lee (2016)				**				**	intention to Use Augmented Reality Applications
Muñoz-Leiva, Climent-Climent and Liébana-Cabanillas a (2017)		**						**	intention to use the mobile banking apps
Natarajan, Balasubramanian, & Kasilingam, (2017)	**	**		**		**		**	intention to use mobile shopping applications
Williams, (2018)	**	**	**			**	**	**	intention to use mobile payments apps

The conceptual framework of this research is depicted in Figure 1.
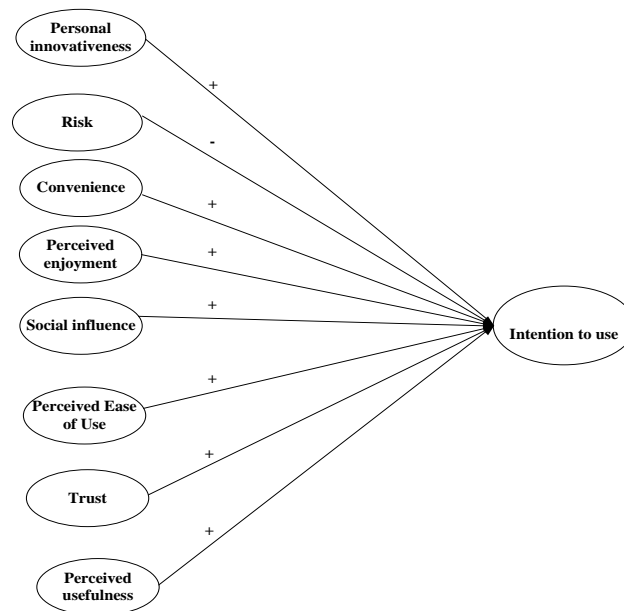
Figure1. Conceptual framework

Method

The data were obtained through a survey conducted among students in a public university in Iran. The questionnaire includes two sections. The first section of the questionnaire included general demographic details of target respondents whereas the second section consisted of 30 items to measure the constructs of our conceptual model. All items of constructs were adopted from previous literature. The research model consisted of nine constructs that include Perceived enjoyment (Thakur, 2018), Perceived Risk (Liébana-Cabanillas et al. 2014), Social Influence (Martin and Herrero, 2012), Convenience (Kim et al., 2010) Perceived innovativeness (Agarwal and Prasad, 1998) Perceived Ease of Use (Schierz et al., 2010), Trust (Zhou, 2013), Usefulness (Williams, 2018), Intention to use (AlGahtani et al. 2007; Venkatesh et al. 2012), Perceived usefulness (Kim et al., 2010). These items were measured using a five-point Likert scale. A total of 288 questionnaires provided usable data. The sample consisted of 150 (52.1 percent) males and 138 (47.9 percent) females and all the respondents were between the age

group of 18-40 years. This sample consists of 185 (64.2%) bachelor students, 69 (24%) master students, and 34 (11.8%) PhD students. Concerning marital status, 45 (15.1%) of the respondents were married and 243 (81.3%) were single. The PLS methodology and a bootstrapping procedure were utilized to estimate the structural model and test the hypotheses. Structural equation modeling (SEM) is a statistical approach that aims to simultaneously test and predict causal relationships between several independent and dependent variables (Urbach & Ahlemann, 2010). Structural equation models allow specifying complex internal relationships between observed and latent variables. Partial least squares, commonly referred to as PLS structural equation modeling (PLS-SEM) or PLS path modeling is a outstanding technique for estimating such models. (Sarstedt & Cheah, 2019). In the following, it is shown the analysis of the Measurement and Structural model.

Findings
Measurement model
The convergent and discriminant validity tests were employed to investigate the measurement model. The indicators of composite reliability (CR), average variance extracted (AVE), and factor loadings are used to assess the convergent validity of measurements. All item factor loadings should be at least 0.4, CR for all constructs should be at least 0.7, and AVE values should be at least 0.5 (Fornell and Larcker, 1981; Hulland, 1999). Firstly, two items (Item 3 and Item 12) were deleted due to the unacceptable low indicators and then the analysis was performed on other items. Results in Table 2 demonstrate that these indicators are satisfactory. In addition, Cronbach's α that is an indication of reliability for all constructs is adequate. According to Fornell and Larcker's (1981), Discriminant validity can be examined by comparing the square root of AVEs and the bivariate correlation between the constructs. The square roots of AVE for each construct should be higher than the correlation between a construct and any other construct. As shown in Table 3, the square roots of the AVEs are higher than the correlation between respective constructs. Thus, each construct is more closely related to its measures compared to those of other constructs. Thus, the results demonstrated that convergent and discriminant validity are appropriate for the evaluation of the structural model.

Structural model and hypotheses testing

The PLS analysis results as reported in Table 4 showed that use intention was significantly influenced by Convenience ($\beta=0.176$, $p<0.05$), Perceived Ease of Use ($\beta=0.172$, $p<0.05$), Trust, ($\beta=0.282$, $p<0.05$), Perceived usefulness, ($\beta=0.146$, $p<0.05$). On the contrary, it was also evident that the constructs of Perceived innovativeness ($\beta=0.036$, $p<0.05$), Perceived Risk ($\beta=-0.121$, $p<0.05$), Perceived enjoyment ($\beta=-0.078$, $p<0.05$), Social Influence ($\beta=0.079$, $p<0.05$) were not significant in influencing Use intention;

Table. 2. Factor loadings, average variance extracted, and composite reliability

Constructs	Items	Loadings	AVE	Cronbach's α	CR
Perceived innovativeness	Q1	0.771	0.641	0.721	0.842
	Q2	0.765			
	Q3	0.862			
Risk	Q5	0.555	0.603	0.760	0.812
	Q6	0.977			
	Q7	0.738			
Convenience	Q8	0.824	0.668	0.752	0.858
	Q9	0.805			
	Q10	0.823			
Perceived enjoyment	Q11	0.833	0.682	0.768	0.865
	Q12	0.877			
	Q13	0.764			
Social Influence	Q14	0.896	0.585	0.786	0.846
	Q15	0.837			
	Q16	0.615			
	Q17	0.676			
Perceived Ease of Use	Q18	0.805	0.694	0.783	0.872
	Q19	0.809			
	Q20	0.883			
Trust	Q21	0.803	0.631	0.708	0.837
	Q22	0.784			
	Q23	0.796			
Usefulness	Q24	0.735	0.638	0.726	0.840
	Q25	0.784			
	Q26	0.871			
Intention to use	Q27	0.774	0.656	0.825	0.884
	Q28	0.782			
	Q29	0.840			
	Q30	0.842			

Table 3. Discriminant validity test

Construct	1	2	3	4	5	6	7	8	9
Convenience	0.817								
Perceived Ease of Use	0.365	0.833							
Intention to use	0.311	0.313	0.810						
Perceived enjoyment	0.110	0.145	0.299	0.826					
Perceived innovativeness	0.347	0.158	0.173	0.136	0.801				
Social influence	0.211	0.006	0.160	0.137	0.240	0.765			
Trust	0.054	0.089	0.390	0.430	0.067	0.091	0.794		
Usefulness	0.295	0.314	0.330	0.216	0.167	0.144	0.164	0.799	
Risk	0.197	0.093	-0.089	-0.070	0.200	0.187	-0.132	0.013	0.776

Table 4.Results of the PLS analysis (path coefficients, t-values)

Dimensions	Path coefficient (β)	t-value	Hypotheses
Perceived innovativeness	0.036	0.717	Not Supported
Risk	-0.121	1.378	Not Supported
Convenience	0.176	2.964	Supported
Perceived enjoyment	0.078	1.236	Not Supported
Social Influence	0.079	1.317	Not Supported
Perceived Ease of Use	0.172	2.581	Supported
Trust	0.282	4.881	Supported
Perceived usefulness	0.146	2.307	Supported
Note: p-value , 0.05			

Conclusion

The start of E-commerce in the 1990s and its ever-increasing spread caused incredible developments in the business environment, forcing companies to plan for entering the e-market and adapting themselves to the situation to survive in the highly competitive environment of the time. Information and communication technologies, especially the e-market, help companies target larger markets and increase their ability to compete in attracting new customers with high efficiency in decreasing costs and saving time. The biggest threat to a company is a failure to use the Internet strategically. The growth of smartphones has led marketers to recognize the potential of applications to be effective tools for shopping. Little research has been done on the intention to use shopping applications. This research aimed to evaluate contributing factors to the use of shopping applications. To this end, eight hypotheses were formulated in this study.

The first hypothesis (H1) was concerned with the role of perceived innovativeness in the use intention of shopping applications. This hypothesis was not supported based on the results of data analysis. The findings of our research contradict those of Williams (2018), demonstrating that higher levels of innovativeness result in higher levels of user intention to adopt m-payments.

The second hypothesis (H2) focuses on the influence of perceived risk on the use intention of shopping applications. However, this hypothesis was not confirmed based on the results. In a similar study, Munoz-Leiva et al. (2017) found no empirical evidence regarding the negative effects of perceived risk on the intention to use m-banking applications. Therefore, risk in the area of the Internet should be managed and controlled by e-retailers to achieve a better competitive advantage. This is in some way a confirmation of the importance of security and privacy in online shopping, in which customers consider their purchasing decisions in such situations in their decisions. Therefore, trusting in the online store and related websites based on the preservation of the expected security can help customers to have more confidence and ultimately create satisfaction in these individuals.

The third hypothesis (H3) addresses the positive role of convenience in use intention. This hypothesis was supported based on data analysis results. Likewise, Williams (2019) concluded that perceived convenience positively affects the user intention to adopt m-payments.

Conversely, the fourth hypothesis (H4) concerning the positive role of perceived enjoyment in the use intention of shopping applications was not supported based on the results. In their study, Okumus and Bilgihan (2014) represented that perceived enjoyment positively influences the intention to use healthy eating smartphone apps. Contrarily, Kim et al. (2014) found that perceived enjoyment was not a significant antecedent continuance intention toward smartphone applications, which is in line with the result of the current study.

Another hypothesis (H5) refers to the positive influence of social influence on the use intention of shopping applications, Similarly, this hypothesis was not confirmed according to the results. The findings of our study are in accordance with the results of Boontarig et al. (2012), showing that social influence is not a significant factor in an intention for use. However, the results contradict those of Lai and Shi (2015), representing that social influence positively affects the continuance intention toward mobile instant messaging.

Another hypothesis (H6) refers to the positive influence of the perceived ease of use on the continuance use intention of shopping applications. This hypothesis was supported according to the obtained outcomes. Similarly, Okumus and Bilgihan (2014) reported that perceived ease of use plays a positive role in the intention to use healthy eating smartphone apps.

The seventh hypothesis (H7) regarding the influence of trust on the use intention of shopping applications was confirmed based on the results. Trust is the determining factor for deciding whether to re-purchase or not. In this respect, trust is based on believing in the credibility, reliability, and honesty of one side of the deal towards the other. Trusting a brand reflects the consumer's belief that the brand will be able to meet specific demands(Bramantyo et al., 2022) Furthermore, Harris et al. (2016) found that trust positively contributes to the consumer's intention to install an application.

The last hypothesis (H8) was concerned with the positive effect of perceived usefulness on use intention. The findings represented that the perceived usefulness of shopping applications is positively associated with use intention. In addition, many studies (e.g., Kim et al., 2016; Ayeh et al., 2013; Okumus & Bilgihan, 2014) emphasized that perceived usefulness is highly important as a predictor of use intention. Thus, the findings of this study revealed that convenience, perceived ease of use, trust, and perceived usefulness influence the use intention

of shopping applications. However, perceived innovativeness, perceived risk, perceived enjoyment, and social influence exerted no significant effect on use intention.

Studies on the intention to use shopping apps in different countries are evolving. The main question of this research also addressed the issue of what factors affect the intention to use shopping apps. This research was conducted according to a comprehensive review of the research literature and identification of influential constructs with the approach of creating an integrated model of factors affecting the intention to use shopping applications. One of the practical models that was previously considered in this field was the TAM model. Two important constructs of this model, which are widely used in research, are ease of use and perceived usefulness (Okumus & Bilgihan, 2014; Williams, 2018; Zhou, 2008).

In this research, these two variables were determined as effective factors. In using any technology, including shopping apps, users pay attention to the features of ease of use. The factor of perceived usefulness also shows that these applications can lead to better performance and, accordingly, the intention to use them increases. The trust is another influential variable that has always been one of the requirements for using e-services (Kaushik, Mohan & Kumar, 2020). Trust in shopping apps directly or indirectly affects attitude and intention to use. Based on the results of the research, focusing on ease of use and creating the experience of perceived usefulness along with the use of tools that lead to the improvement of trust is critical for practitioners, and these factors should be taken into account to prioritize and allocate resources.

CONFLICT OF INTEREST: The authors declare that they have no conflicts of interest regarding the publication of this manuscript.

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