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## RESEARCH ARTICLE

# Exploring Persian as a Second Language Teachers' Acceptance of Web-based E-Learning Technology: An Extended Technology Acceptance Model

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**Abstract:** Since the outbreak of the COVID-19 pandemic in 2020 up to at least the beginning of 2022, e-learning has largely replaced the face-to-face teaching method in Iran. Accepting web-based learning could be effective in the continuity of this method, at least in a hybrid one, even in normal circumstances. As such, the role of teachers' perspectives in this regard should not be neglected. Due to the importance of this kind of technology in teaching a second language and the effect of teacher acceptance on the decision to use it, in this study, we examine 63 Persian as a Second language (PSL) teachers' acceptance of Web-based e-learning technology to explore the various factors that impact their intentions to use it. This study uses the Technology Acceptance Model (TAM) as the theoretical foundation. The survey data obtained from 63 PSL teachers through previously tested and validated questionnaires are analyzed using Structural Equation Modeling with AMOS. The results suggest that the perceived usefulness (PU) directly impacts behavioral intention (BI). Then, there is the motivation to use (MU) construct and the perceived ease of use (PEU), which could indirectly affect BI. The Internet self-efficacy (ISE) construct directly affects BI. Finally, the factor of computer anxiety has a negative effect on behavioral intentions to use web-based E-learning technologies through the factor of perceived ease of use. The research results show that perceived usefulness is the most influential factor in PSL teachers' intention to use technology. It implies that PSL teachers would be more likely to continue to use Web-based E-learning technologies if they consider them useful.

**Keywords:** Teaching Persian as Second Language (PSL); Technology Acceptance Model (TAM); Web-based E-learning; Behavioral intention (BI); Structural Equation Modeling (SEM)

## Introduction

With the increasing development of Information Technology (IT), in the 1990s, Computer-Assisted Language Learning (CALL) entered a new technology field, including multimedia, the Internet, and Web-based instruments. Thus, the central platform for the latest teaching methods, i.e., Technology-Enhanced Language Learning (TELL) and Web-Enhanced Language Learning (WELL), were provided (Warschauer & Healey, 1998; Warschauer, 2004). Computer-Assisted Language Learning (CALL) programs offer multimedia networks that incorporate images, sounds, graphics, and text, providing learners with an immersive experience of the second language and its culture. The development of new information and communication technology, especially the Internet Technology, has revolutionized language learning and made it easier for more language learners to access this type of education. E-learning is a new trend in education that can overcome many limitations of face-to-face teaching. One of the key changes in e-learning is replacing the teacher-centered method with a learner-based one. Using e-learning tools, students can expand their activities and play a more active role in education.

Moreover, e-learning has overcome many limitations of traditional education, including being restricted by place and time. In addition, it has some other benefits, including offering numerous learning resources appropriate to pedagogical demands and needs of students, adapting the learning pace to the student's talent and ability (not the teacher), the possibility of reviewing the lesson as many times as one desires, promoting active and independent learning, having access to new and up-to-date resources, reducing the number of intercity trips and consequently the reduction of traffic and air pollution, designing a single mechanism for holding the test, asking questions, correcting and presenting the results and the possibility of discovery and inference by students (Aithal & Shubhrajyotsna, 2016; Anderson, 2008; Jamieson-Procter et al., 2013; Tang, 2008; Westberry, 2009; Young, 2003).

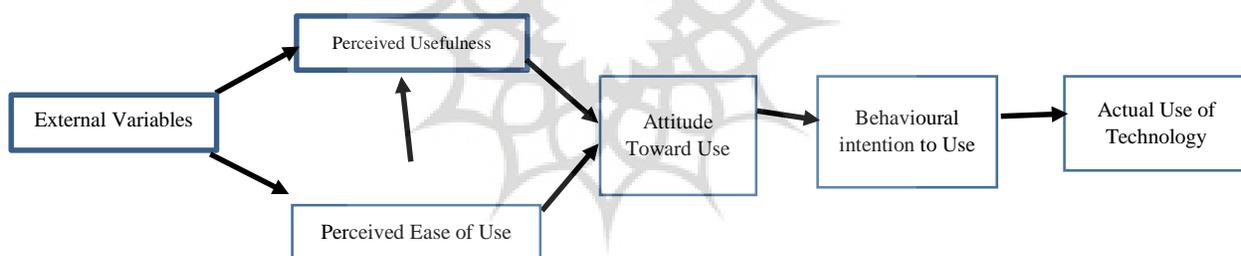
However, despite its advantages, e-learning has also some disadvantages. For example, the success of teaching in this method depends on the skills and abilities of learners in using technology and related tools. In addition, it could be said that not all students have sufficient access to the Internet and computers. The low speed of the Internet and its relatively high cost also make it difficult for some learners to use it. Moreover, full communication and interaction which are essential in teaching could be said to be in some ways absent in online learning (Almosa, 2002; Nambiar, 2020; Orhan & Beyhan, 2020).

During the COVID-19 pandemic in Iran since March 2020 up to at least the beginning of 2022, all educational centers, including centers for Teaching Persian to non-Persian speakers, have been forced to stop their face-to-face activities and replace them with e-learning. Replacing face-to-face learning with e-learning during the COVID-19 pandemic led us to employ Extended TAM and use Structural Equation Modelling (SEM) to analyze factors affecting teachers' Behavioral Intention to use e-learning in teaching Persian to non-Persian speakers in Iran. Following Chen and Tseng (2012), the present research adds the external factors of motivation to use (MU), computer anxiety (CA), and Internet self-efficacy (ISE) to the Basic TAM model including behavioral intention (BI), perceived usefulness (PU) and perceived ease of use (PEU). It uses the extended TAM as a framework to investigate PSL teacher acceptance of e-learning technology. Survey data were collected from 63 PSL teachers teaching Persian to non-Persian speakers in Iran.

### **Technology Acceptance Model (TAM)**

Given the widespread use of technology, its acceptance is an essential point. Understanding the importance of accepting new technologies by users could lead to their expansion and use as much as possible. However, the process of adopting technology is not easy. Many factors affect the desire to use technology. There are various theories about technology acceptance, one of the most important of which is the Technology Acceptance Model (TAM), introduced by Fred Davis in 1986. This model is based on the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980). This

theory explains how beliefs influencing attitudes could lead to intentions and generally guide one's behavior. Based on TAM, users' beliefs, including a) perceived usefulness (PU) and (b) perceived ease of use (PEU) influenced by external variables are considered as independent variables. The technology acceptance model arises from two mental perceptions which create an attitude towards the use of technology and affect the intentions of use, and ultimately determine the level of actual use. The perceived usefulness is the perception referring to the degree of usefulness of technology. The perceived ease of use is the degree to which a person believes that using a particular system would be free from effort and easy to use (Davis et al., 1989). Based on this model, the more a system improves one's performance, and the less effort the application of technology requires to learn and use, the more it is used and therefore the more likely it is to be accepted. According to TAM, the decision to use technology is determined based on the individual's attitude towards the use of technology which is influenced by the perceived usefulness and perceived ease of use. Figure 1 shows the Technology Acceptance Model.



**Fig. 1** Technology Acceptance Model (TAM) (Davis et al., 1989)

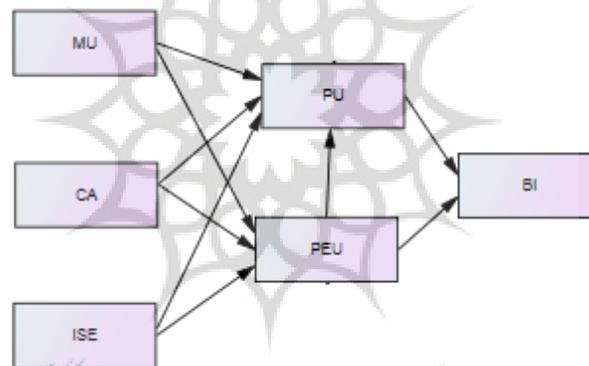
## Literature Review

The Technology Acceptance Model (TAM) (Davis, 1986) has been widely used in studies investigating students and teachers' acceptance of technologies (Abbad et al., 2009; Alshurafat et al., 2021; Chen & Huang, 2010; Chen & Tseng, 2012; Cigdem & Topcu, 2015; Heijden, 2003; Lee et al., 2003; Motaghiyan et al., 2013; Revyathi & Tselios, 2019; Wang & Wang, 2009; Yuen & Ma, 2008).

Several studies have shown that the successful use of technology and the intention to use it depend on teachers' acceptance of technology (Chen & Tseng, 2012; Wang & Wang, 2009; Yuen & Ma, 2008). So far, many types of research have focused on exploring teacher acceptance of e-learning across the globe (Chen & Tseng, 2012; Motaghiyan et al., 2013; Wang & Wang, 2009; Yuen & Ma, 2008). For instance, Chen and Tseng (2012) conducted a study on the acceptance of e-learning technology among Taiwanese teachers using the TAM. The study employed a quantitative approach, with data collected from 188 teachers through structured questionnaires. The findings indicated that perceived usefulness and ease of use significantly influenced the teachers' intention to use e-learning technology. The study suggested that teacher training programs that enhance teachers' perceived usefulness and ease of use of e-learning technology could increase their intention to use it. This study is relevant to the current study in that it demonstrates the importance of perceived usefulness and ease of use in determining teachers' acceptance of e-learning technology. In Iran, although various studies have been conducted based on the technology acceptance model in other areas (Rendi et al., 2015; Valizadeh et al., 2020; Zarafshani et al., 2020), there is a paucity of research in the field of e-learning (Karimzadegan Moghadam et al., 2021; Khorasani et al., 2012; Mohammadi, 2015; Motaghiyan et al., 2013), particularly regarding the acceptance of technology by Persian as a Second Language (PSL) teachers. Among these studies, Motaghiyan et al. (2013) is particularly relevant to the current study as it demonstrates the applicability of the Technology Acceptance Model (TAM) for investigating teachers' acceptance of technology. Motaghiyan et al. (2013) conducted a study on the acceptance of mobile learning technology among Iranian EFL (English as a Foreign Language) teachers using the TAM. The study employed a quantitative approach, with data collected from 90 EFL teachers through a structured questionnaire. The findings indicated that perceived usefulness, perceived ease of use, and attitude towards mobile learning significantly influenced the teachers' intention to use it. The study suggested that mobile learning technology could provide a more flexible and convenient learning environment for EFL teachers and their students.

## Hypotheses Development

The present research adopted Chen and Tseng's (2012) model. They studied the factors influencing the acceptance of web-based e-learning systems for the in-service education of junior high school teachers in Taiwan. Based on previous studies (Chen, 2004; Hong, 2008; Ong et al., 2004), they extended TAM by additional factors: motivation to use, Internet self-efficacy, and computer anxiety (Fig. 2). Motivation to use is “measured by learning interest, perceived convenience, perceived scheduling flexibility, and importance placed on autonomous learning” (Chen & Tseng, 2012: 401). The Internet self-efficacy is “teachers’ evaluation of the extent to which they can use the Internet to engage in relevant learning activities” (Chen & Tseng, 2012: 401). Computer anxiety is the “anxiety of teachers regarding computer learning and the information age” (Chen & Tseng, 2012: 401).



**Fig. 2** Model 1-The model of acceptance of web-based e-learning systems proposed by Chen and Tseng (2012)

The model of acceptance of web-based e-learning systems proposed by Chen & Tseng (2012) is shown in Fig. 2. This model is used in the present research as the theoretical model. In this model, perceived usefulness (PU) and perceived ease of use (PEU) are directly related to users' behavioral intention (BI) to use technology. The model suggests that users are more likely to adopt a new technology if they perceive it as useful and easy to use. Additionally, computer anxiety, Internet self-efficacy, and motivation to use are each associated with PU and PEU. These factors indirectly

impact BI by influencing users' perceptions of the technology's ease of use and usefulness. Finally, PEU has a direct effect on PU, suggesting that users' perceptions of the technology's ease of use can impact their perception of its usefulness.

Regarding the factors influencing PSL teachers' acceptance of web-based e-learning technology, the following hypotheses (1-9) are suggested based on previous studies (Chen, 2004; Chen & Tseng, 2012; Hong, 2008; Motaghian et al., 2013; Muhaqiqin & Budi, 2019; Ong et al., 2004; Sanchez-Prieto et al. 2017; Venkatesh & Davis 1996):

H1. Perceived ease of use has a positive influence on the behavioral intention.

H2. Perceived ease of use has a positive effect on the perceived usefulness.

H3. Perceived ease of use has a positive influence on the behavioral intention.

H4. The motivation to use has a positive effect on the perceived ease of use.

H5. The motivation to use has a positive influence on the perceived usefulness.

H6. Internet self-efficacy has a positive effect on the perceived usefulness.

H7. Internet self-efficacy has a positive effect on the perceived ease of use.

H8. Computer anxiety has a negative effect on the perceived usefulness.

H9. Computer anxiety has a negative influence on the perceived ease of use.

## Methodology

### *Setting and participants*

Table 1 shows descriptive statistics including gender, e-learning experience, teaching experience, and age of the participants.

**Table1.** Demographic characteristics of the participants

Characteristic	Number	Percent
Gender		

Female teachers	48	76.2%
Male teachers	15	23.8%
<b>Academic Qualification</b>		
B.A.	3	4.8%
M.A.	28	44.4%
Ph.D.	32	50.8%
<b>E-learning experience</b>		
1 year	18	28.6%
2 years	18	28.6%
>2years	27	42.9%
<b>Teaching Experience</b>		
<6years	34	54.0%
6-12 years	18	28.6%
>12 years	10	15.9%
<b>Age</b>		
<30	13	21.6%
30-40	33	52.4%
40-50	14	22.2%
>50	3	4.8%

As shown, female teachers (76.2%) outnumbered the male teachers (23.8%). 42.9% of teachers had more than two years of experience in e-teaching, 28.6% had one year, and the same amount had two years of experience. 50.8% of teachers had a doctorate, 44.4% had a master's degree, and 4.8% had a bachelor's degree. The rate of teaching experience in 54% of teachers was less than 6 years and 28.6% of teachers had 6-12 years of experience. 15.9% of them had experience of more than 12 years. Most teachers (52.4%) were between the ages of 30 and 40. 21.6% were less than 30 years old, 22.2% were between 40 and 50 years old, and only 4.8% were more than 50 years old. In general, the participants had at least one year of e-learning experience. They used LMS for teaching Persian to non-Persian speakers.

### **Research Tools**

The present study utilized a questionnaire as an instrument to collect data from Persian language teaching centers in Iran. The questionnaire consisted of 37 items that were adopted from previous

studies to examine six factors related to the acceptance and use of web-based e-learning systems: perceived usefulness (PU), perceived ease of use (PEU), motivation to use (MU), Internet self-efficacy (ISE), computer anxiety (CA), and behavioral intention (BI). All items were measured on a 7-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree").

### ***Data Collection and Analysis***

Data for this study were collected using an online questionnaire to survey various Persian language teaching centers in Iran. Due to the situation (prevalence of COVID-19), the questionnaires were distributed electronically among PSL teachers, using e-mail, google form and PSL teachers' telegram groups. In total, 63 completed questionnaires were returned to us. The data were analyzed through several steps: reviewing reliability and validity of the questionnaire, using the extended TAM and SEM to find a possibly better model, interpreting data analysis and stating the conclusion.

## **Research Results**

### ***Analysis of Model Measurement***

The purpose of reviewing reliability and validity was to examine the factors affecting behavioral intention (BI) including motivation to use (MU), computer anxiety (CA), Internet self-efficacy (ISE), perceived ease of use (PEU) and perceived usefulness (PU). In this study, convergent validity (the extent to which indicators of a specific construct converge) was measured by factor loadings, the composite reliability (CR) and Average Variance Extracted (AVE) (Fornell & Larcker, 1981). The present research used the HTMT correlation ratio to check discriminant validity. Values related to validity and reliability are shown in Tables 2 and 3.

**Table 2.** Construct reliability

<b>Factor</b>	<b>Item</b>	<b>Factor Loading</b>	<b>CR &gt;0.7</b>	<b>AVE &gt;0.5</b>	<b>Cronbach's Alpha &gt;0.7</b>
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MU	MU1	0.81	0.849	0.68	0.95
	MU2	0.80			
	MU3	0.91			
	MU4	0.71			
	MU5	0.89			
	MU6	0.91			
	MU7	0.74			
	MU8	0.86			
	MU9	0.79			
CA	CA1	0.69	0.740	0.60	0.90
	CA2	0.78			
	CA3	0.70			
	CA4	0.67			
	CA5	0.86			
	CA6	0.91			
ISE	ISE1	0.78	0.744	0.68	0.86
	ISE2	0.91			
	ISE3	0.79			
PU	PU1	0.81	0.742	0.51	0.88
	PU2	0.82			
	PU3	0.67			
	PU4	0.60			
	PU5	0.69			
	PU6	0.72			
	PU7	0.65			
PEU	PEU1	0.59	0.752	0.44	0.88
	PEU2	0.68			
	PEU3	0.60			
	PEU4	0.68			
	PEU5	0.63			
	PEU6	0.76			
	PEU7	0.72			
	PEU8	0.56			
	PEU9	0.73			
	PEU1	0.64			
	0				
BI	BI1	0.68	0.540	0.53	0.68
	BI2	0.77			

As shown in Table 2, all the factor loading values are above the significance level of 0.5 and reach the significance level of  $p = 0.001$ . All factor loading values are more than 0.5, and their relationship with each construct is significant at the level of 0.001. In all cases, the composite reliability value is more than 0.7, and only for the BI construct is less than 0.7 but still acceptable, i.e., more than 0.5. The average variance extracted in all cases except PEU is more than 0.5, and in PEU, it is equal to 0.44, and the difference with 0.5 can be negligible. Cronbach's alpha value is more than 0.7 in all cases and can confirm the reliability of the constructs. The only exception is for the BI construct, which equals 0.68 and its slight difference with 0.7 is negligible.

The discriminate validity (the extent to which a construct is actually distinct from others) was also measured using the criteria proposed by Fornell and Lacker (1981). The square root of each construct's AVE between dimensions should be greater than the correlation coefficient. The results of discriminant validity between the two constructs are shown in Table 3, where all values are less than 0.9. Table 3 shows that this study conforms to the measurement of discriminate validity.

**Table 3.** Discriminant validity

	MU	CA	ISE	PU	PEU	BI
MU						
CA	-0.135					
ISE	0.299	0.071				
PU	0.851	-0.356	0.345			
PEU	0.835	-0.420	0.356	0.860		
BI	0.635	-0.424	0.586	0.770	0.696	

### **Structural Model and the Final Research Model**

The crucial question was whether the data collected in the present study supported the theoretically developed model. Modification of this model was based on the indicators. Paths that did not have a significant relationship between the two constructs were removed, and the paths by which the goodness of fit indices was improved were added. Model 2 was obtained, which was more desirable

than the underlying theoretical model regarding the goodness of fit indices. Therefore, the final model was modified as Model 2, which had a good improvement in different constructs and more accurately identified the relations between them.

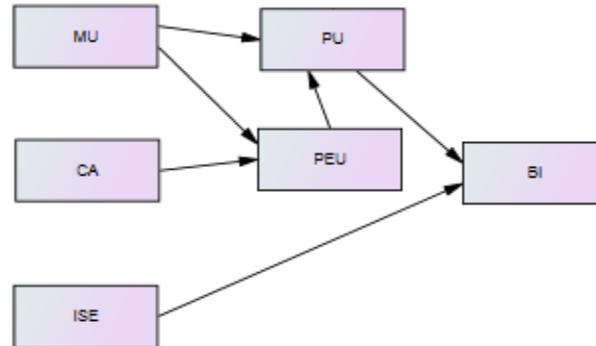


Fig. 3 Model 2- results of structural model examination

**The Goodness of Fit Indices**

In this section, some of the most critical Goodness of Fit Indices (GOF) are presented in such a way that the model can be evaluated from different dimensions, including CMIN, P, GFI, and AGFI indices from Absolute Fit Indices, CFI, and NFI indices from Comparative Fit Indices and CMIN / DF, PCFI, RMSEA and PCLOSE indices from Parsimonious Fit Indices. The mentioned optimal limit indices and the indices value for each of the two models 1 and 2 are presented in Table 4.

**Table 4** A Comparison of Goodness of Fit Indices (GOF) between Model 1 & 2

Indices	Good fit	Model 1	Model2
(CMIN/DF)	1-3	2.58	2.09
GFI	>90%	0.93	0.92
AGFI	>80%	0.76	0.82
CFI	>90%	0.95	0.95
NFI	>90%	0.92	0.90
TLI	>95%	0.87	0.91
PCFI	>0/6	0.38	0.57
RMSEA	<0/08	0.16	0.13
(PCLOSE)	>0/05	0.04	0.06

An optimal range of indices is observed in all indices except for PCFI and RMSEA. The value of PCFI is 0.57, which was rounded up to 0.6 and may be considered acceptable. Nevertheless, in the case of RMSEA, it is recommended to pay attention to the amount of PCLOSE as well. Its value is desirable, and with a bit of negligence, the RMSEA indices can also be interpreted appropriately.

### ***Standardized Coefficient of Predictive Paths***

In the modified model, standardized correlation coefficients indicate the relationships between the constructs. Positive values reflect a direct relationship, while negative values indicate an inverse relationship. According to Table 5, the coefficient value between computer anxiety (CA) and perceived ease of use (PEU) is negative (-0.204), which implies that an increase in computer anxiety reduces perceived ease of use. The closer the coefficient values are to +1 or -1, the stronger the relationship between the two constructs.

Although the significance level (P) value is less than 0.05 and the relationships are significant, the strength of the relationship between the constructs can be compared through standardized coefficients. For instance, both perceived usefulness (PU) and Internet self-efficacy (ISE) constructs have an effect on behavioral intention (BI) with coefficient values of 0.606 and 0.239, respectively. Both values are statistically significant, indicating a positive relationship between the constructs and BI. However, the coefficient value for perceived usefulness (PU) is higher, suggesting a stronger relationship with behavioral intention (BI) compared to Internet self-efficacy (ISE).

**Table 5** standardized coefficient of predictive paths

	Estimate	P
M → PEU U	.767	***
C → PEU A	-.204	.009

M	→	PU	.445	***
U				
PE	→	PU	.440	***
U				
P	→	BI	.606	***
U				
IS	→	BI	.239	.016
E				

As shown in Figure3, the motivation to use, computer anxiety, and perceived ease of use do not directly influence the behavioral intention of PSL teachers but affect it indirectly through other constructs. For example, the motivation to use affects the perceived ease of use (with a standard coefficient value of 0.767). The perceived ease of use has a positive influence on the perceived usefulness (with a value of 0.440). Finally, the perceived usefulness directly affects the behavioral intention of PSL teachers (with a value of 0.606). As a result, the motivation to use indirectly affects the behavioral intention of PSL teachers. According to the mentioned path, the resulting value is obtained by multiplying these three values and is equal to:  $0.767 \times 0.440 \times 0.606 = 0.204$ . Of course, based on Figure 3, the motivation to use also affects the behavioral intention from another direction, so that the motivation to use affects the perceived usefulness (with a coefficient of 0.445), and the perceived usefulness directly influences the behavioral intention (with a coefficient of 0.606). The value of the effect of motivation to use on the behavioral intention of PSL teachers according to this path is equal to  $0.445 \times 0.606 = 0.270$ . So the total effect that the motivation to use has on the behavioral intention is equal to  $0.204 + 0.270 = 0.474$ .

The computer anxiety affects the perceived ease of use (with a standard coefficient value of -0.204). The perceived ease of use has a positive influence on the perceived usefulness (with a value of 0.440). Finally, the perceived usefulness has a direct positive effect on the behavioral intention of PSL teachers (with a value of 0.606). As a result, the computer anxiety and the perceived ease of use also have indirect effect on the behavioral intention of PSL teachers.

### Results of General Effects of Constructs

Table 6 shows the direct and indirect effects and the overall impact of constructs on the behavioral intention construct. The results show that the perceived usefulness construct has the most significant direct effect on behavioral intention, with a value of 0.606. The motivation to use and perceived ease of use constructs indirectly affect the behavioral intention, with values of 0.474 and 0.267, respectively. The Internet self-efficacy construct has a direct effect on the behavioral intention, with a value of 0.239. Finally, the computer anxiety construct negatively and indirectly affects the behavioral intention of PSL teachers, with a value of -0.055. Overall, these results suggest that the perceived usefulness construct has the strongest impact on the behavioral intention of PSL teachers, while computer anxiety has a weaker negative impact.

**Table 6** The direct, indirect, and total effect of dominants on behavioral intention

			Direct effect	Indirect effect	Total effect
MU	→	BI	0	0.474	0.474
CA	→	BI	0	-0.055	-0.055
ISE	→	BI	0.239	0	0.239
PU	→	BI	0.606	0	0.606
PEU	→	BI	0	0.267	0.267

### Discussion

The finding of the present study showed that the motivation of PSL teachers to use web-based e-learning technologies positively influenced the perceived usefulness and the perceived ease of use of these technologies. This finding was consistent with those reported by Chen and Tseng (2012) indicating that the motivation of junior high school teachers to use web-based e-learning systems for continuing education had a positive influence on the perceived usefulness and the perceived ease of use of these systems. Yang (2002), in a study regarding the electronic learning market gained the same result, too.

The computer anxiety of PSL teachers had no significant influence on the perceived usefulness of web-based e-learning technology, but this variable did have a significant negative influence on perceived ease of use. Chen and Tseng (2012) obtained the same results in their investigation of the factors that influence acceptance of web-based e-learning systems for the in-service education of junior high school teachers in Taiwan. Furthermore, Lo (2004) in a study on mobile learning-assisted tools indicated no significant effect of computer anxiety on perceived usefulness.

The finding of this article indicated that the Internet self-efficacy of PSL teachers had no significant influence on the perceived usefulness and the perceived ease of use of web-based e-learning technologies. This was in contrast with the findings by Chen and Tseng (2012) indicating the Internet self-efficacy of junior high school teachers had a significant positive influence on continuing education through the factor of the perceived usefulness and perceived ease of using web-based e-learning systems. However, consistent with the findings of Chen and Tseng (2012), Wang and Wang (2009) and Yuen and Ma (2008), the present study showed that the Internet self-efficacy had a significant positive influence on the behavioral intention of PSL teachers. Yet, incompatible with these studies and compatible with Park's study (2009), the influence was direct.

The perceived ease of using web-based e-learning systems for teaching Persian to the speakers of other languages positively influenced the perceived usefulness of these systems. Our finding was consistent with most previous studies, (e.g. Davis et al. 1989, Venkatesh & Davis 1996, Cho, et al. 2009, Lee 2010, Ma et al., 2005, Park 2009, Wang & Wang 2009, Yuen & Ma 2008, Chen & Tseng 2012), yet inconsistent with Motaghian et al.'s study (2013). The study further found that perceived usefulness had a direct influence on the behavioral intention of PSL teachers, which is consistent with previous studies by Motaghian et al. (2013), Chen and Tseng (2012), Lee (2010), Wang and Wang (2009), Cho et al. (2009), and Ma et al. (2005).

According to our findings, although perceived usefulness, motivation to use, perceived ease of use, Internet self-efficacy, computer anxiety all had influence on PSL teachers' intension to use web-based e-learning technologies, consistent with Motaghian et al. (2013), Chen and Tseng (2012), Wang and Wang (2009), PSL teachers' perceived usefulness of web-based learning systems

was the most influential factor for determining intention to use the systems. As such, it could be said that PSL teachers would be more likely to continue to use web-based e-learning technologies if they feel that using web-based e-learning enhances the effectiveness of their teaching and students' learning. One of the critical factors in making web-based e-learning more effective is enhancing interaction between the learner and teacher, the learner and other learners, and the learner and content. If teachers are competent to provide interesting materials, proper assessment and meaningful feedback and know how to keep the students active in online learning, then they would be more likely to continue to use web-based e-learning.

Overall, the findings of the study suggest that it is essential to enhance the perceived usefulness and perceived ease of use of web-based e-learning technologies to increase PSL teachers' intention to use them effectively. Additionally, providing appropriate training and support to PSL teachers to improve their motivation, reduce computer anxiety, and enhance their Internet self-efficacy can also positively impact their intention to use web-based e-learning technologies.

## **Conclusion**

This study built upon the work of Chen and Tseng (2012) and utilized the extended Technology Acceptance Model (TAM) as its framework, which included three additional constructs (motivation to use, computer anxiety, and Internet self-efficacy). The study employed a Structural Equation Model (SEM) to analyze the factors influencing PSL teachers' intentions to use web-based e-learning systems for teaching Persian to non-Persian speakers. The present study partially supported the underlying model (Chen & Tseng, 2012) since based on the obtained model, the mentioned constructs influenced PSL teachers' behavioral intention in the following order: perceived usefulness > motivation to use > perceived ease of use > Internet self-efficacy > computer anxiety. Except for the perceived usefulness and Internet self-efficacy, which directly affected behavioral intention, the rest indirectly affected this construct. Except for computer anxiety, which

had a negative effect on behavioral intention, all positively impacted behavioral intention in this construct.

The findings could have implications for decision-makers and managers of Persian language teaching centers in Iran to pay special attention to factors that have a vital role in teachers' intentions to continue to use web-based e-learning. In addition, policymakers are expected to provide teachers with more training to increase their digital skills in creating the effectiveness of online learning.

As with all empirical research, the current research faces some limitations. First of all, it is limited to the specific Technology Acceptance Model; therefore, future researchers are encouraged to use other models as well. Due to lack of access, the present research is also limited to Persian as a Second language teachers' (PSL) acceptance of web-based e-learning technology; thus, further research investigating Persian as Foreign Language teachers' (PFL) and even learners' acceptance of e-learning is required to further validate and refine the proposed theoretical model.

#### Appendix A. Survey items used in the study

##### **Motivation to Use (MU)** (Chen & Tseng, 2012; self-developed)

MU1: Web-based e-learning is suitable for people with different capacities and abilities.

MU2: Web-based e-learning promotes flexibility and creativity in the classroom.

MU3: Web-based e-learning is less constrained by spatial limitations.

MU4: Web-based e-learning enables language learners to participate in language learning.

MU5: My students can review the lesson as many times as they want.

MU6: Web-based e-learning is not constrained by time.

MU7: Web-based e-learning makes my students more interested in learning.

MU8: I can fully control web-based e-learning progress.

MU9: E-learning reduces the number of intercity trips.

**Computer Anxiety (CA)** (Chen &Tseng, 2012; self-developed)

CA1: I am worried that I do not know how to make the computer finish the things I want to do.

CA2: Internet-based e-learning can be stressful.

CA3: E-learning changes my strategy and teaching method, and this change makes me anxious.

CA4: When I face error messages on the computer, I do not know what to do.

CA5: I feel scared in terms of operating products related to computer and technology.

CA6: I feel troubled regarding some work that can only be completed by using a computer.

**Internet Self-Efficacy (ISE)** (Compeau and Higgins 1999)

ISE1: If I have a software guide, I can use computers and Internet-based technologies in my teaching methods.

ISE2: If I see other personal performance in connection with teaching with the help of Internet-based technology and computers, I can use technology in my teaching method.

ISE3: If someone teaches me how to work with Internet-based technologies, I can use Internet-based technology in my teaching methods.

**Perceived Usefulness (PU)** (Davis et al.,1989; Wang & Wang, 2009 ; self-developed)

PU1: Overall, I find web-based e-learning useful in my study.

PU2: Using web-based e-learning improves my teaching performance.

PU3: Using web-based e-learning enhances my interactions with the students.

PU4: E-learning also increases students' media literacy.

PU5: Using web-based e-learning can help students enhance their learning effectiveness.

PU6: Using web-based e-learning enhances the effectiveness of my teaching.

PU7: Students are more likely to ask questions during online learning to clear up their doubts.

**Perceived Ease of Use (PEU)** (Davis et al.,1989; Wang & Wang, 2009 ; self-developed)

PEU1: Using technology and the Internet in education is easy for me.

PEU2: In general, e-learning systems are easy to use.

PEU3: My home environment is suitable for providing e-learning.

PEU4: Students are comfortable using e-learning tools.

PEU5: I do not get tired of teaching e-learning for a long time.

PEU6: It is easy for me to integrate the functions of Web-based e-learning with my teaching plan.

PEU7: I can easily do what I want with new technologies.

PEU8: Internet access is easy for me.

PEU9: It is easy for me to become skilled at using web-based e-learning.

PEU10: E-learning is easier than face-to-face training.

### **Behavioral Intention (BI)** (Chen & Tseng, 2012 )

BI1: In the future, I intend to use web-based e-learning in my teaching method.

BI2: Considering all the conditions, using web-based technologies in education is a good idea for me.

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### **Declarations**

**Conflicts of interest** No conflicts of interest or competing interests exist.

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## بررسی پذیرش فناوری یادگیری الکترونیکی مبتنی بر وب در معلمان آموزش زبان فارسی به عنوان زبان دوم: مدل گسترده پذیرش فناوری

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### چکیده

از زمان شیوع ویروس کووید-۱۹ در سال ۲۰۲۰ تا حداقل آغاز سال ۲۰۲۲، آموزش الکترونیکی به طور گسترده در ایران جایگزین روش تدریس حضوری شد. پذیرش یادگیری الکترونیکی مبتنی بر وب حتی در شرایط عادی می‌تواند در تداوم استفاده از این روش، حداقل به صورت ترکیبی موثر باشد. بنابراین، نقش دیدگاه معلمان نسبت به این موضوع نباید نادیده گرفته شود. به دلیل اهمیت این نوع فناوری در آموزش زبان دوم و تأثیر پذیرش آن از جانب معلمان بر تصمیم بر استفاده از آن، در مطالعه حاضر، پذیرش فناوری آموزش الکترونیکی مبتنی بر وب در ۶۳ معلم آموزش زبان فارسی به عنوان زبان دوم (PSL) مورد بررسی قرار می‌گیرد تا بدینوسیله عوامل مختلف مؤثر بر قصد استفاده از این فناوری مشخص گردد. بدین منظور در این مطالعه از مدل پذیرش فناوری (TAM) به عنوان مبنای نظری استفاده شده است و داده‌های به دست آمده از ۶۳ معلم آموزش زبان فارسی به عنوان زبان دوم که از طریق پرسشنامه‌های اعتبارسنجی شده جمع‌آوری شده، با استفاده از مدل معادلات ساختاری و با نرم‌افزار AMOS تحلیل شده است. نتایج نشان می‌دهد که درک سودمندی (PU) به طور مستقیم بر تصمیم بر استفاده (BI) تأثیر می‌گذارد. سپس، سازه‌های نگرش کاربرد (MU) و درک آسانی (PEU) به طور غیرمستقیم و سازه درک خودکارآمدی (ISE) مستقیماً بر (BI) تأثیر می‌گذارد. در نهایت، عامل اضطراب رایانه‌ای از طریق عامل درک آسانی تأثیر منفی بر تصمیم بر استفاده از فناوری مبتنی بر وب دارد. نتایج تحقیق نشان می‌دهد درک سودمندی بیشترین تأثیر را بر تصمیم این معلمان در به کارگیری فناوری مبتنی بر وب دارد و این بدان معناست که اگر این معلمان فناوریهای آموزش الکترونیکی مبتنی بر وب را مفید بدانند احتمالاً بکارگیری این فناوری را ادامه خواهند داد.

**واژه‌های کلیدی:** آموزش زبان فارسی به عنوان زبان دوم (PSL)؛ مدل پذیرش فناوری (TAM)؛  
یادگیری مبتنی بر وب؛ تصمیم بر استفاده (BI)؛ مدل معادلات ساختاری (SEM)