

# The Analysis of the Factors Affecting the Acceptance of E-learning in Higher Education

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## Abstract

**Background:** As the main step to implement and develop electronic learning (e-learning), it is very important to understand how learners accept it. The current study aimed at examining the main factors of e-learning acceptance by the students of Garmsar branch of Payam Noor University, Garmsar, Iran.

**Methods:** The descriptive methodology was used in the current study. The statistical population included 184 postgraduate e-students in Garmsar Payam Noor University in the academic year of 2014 - 15, out of which 124 persons participated in the study. The data collection instrument was a researcher-made questionnaire developed by the relevant research tools; the judgmental method was applied to reach the validity and Cronbach's alpha value was 0.73. Collected data were analyzed by SPSS version 22.0 to conduct a basic analysis of the means and standard deviations and regression.

**Results:** The findings of the current study indicated that behavioral intention was under the influence of 3 factors including perceived ease of use ( $\beta = 0.62$ , Sig = 0.000), perceived usefulness ( $\beta = 0.63$ , Sig = 0.017), and attitude ( $\beta = 0.85$ , Sig = 0.000).

**Conclusions:** According to the findings, by increasing the students' awareness about e-learning systems, their tendency toward using such systems increases.

**Keywords:** Distance Education, Acceptance Process, E-Learning, Telecommunication

## 1. Background

During the past 2 decades, by expanding the use of the world wide web, universities and educational institutions are more interested in the use of information systems (such as modules, smart boards, and learning management systems) to support face to face education and present distance education. Although internet is considered as a global technology, its effectiveness should be evaluated at the local level, because users usually use it in the local or ultimately, national context (1). Especially, it is more important to develop the educational system of countries, universities, and educational institutions that are still supporting the traditional verbal style of education. The success in the implementation of electronic learning (e-learning) systems and its tools is directly related to the users' understanding, and their knowledge and skills to understand and use computers and cyberspace. Many studies showed that these factors affected people's willingness to accept educational technology and their behavior to use web-based learning (2). E-learning, as a new approach in distance education includes education through electronic media, internet, intranet, extranet, audio and videotapes, satellite broadcasts, television, and compact disks (CDs). Clark and Mayer used

content presentation method to define e-learning through digital ways such as computers and mobile method to improve learning (3). Masrom defined e-learning as "learning facilitated and supported by the information and communication technology" (4). As Wentling, Waight, Gallaher, Fleur, Wang and Kanfer argued, e-learning is the acquisition and use of the knowledge already distributed and its reception is facilitated through electronic means (5). To examine the definitions of e-learning, Liu and Wang discussed the characteristics of learning process, mainly internet-based, as information distributed and knowledge flow in the form of educational networks. They also share learning resources in a global level and reflect the learning flow (not to impose it) as a virtual learning environment dominated by geographical and time constraints. Such learning environments based on electronic networks enable learners to get special individual learning support and schedule a learning plan individually, which is suited to people's conditions and is different from those of other people (6). Such an environment provides a high level of interaction and collaboration between teachers and colleagues, which is very different from traditional learning environments. Hung and Cho (7) stated that: "Interaction is a fundamental condition in the process of e-learning that enables learners to communicate with their teach-

ers anytime needed, even outside the normal office time and normal time of educational classes". Liaw et al. (8) claimed that e-learning, implemented at the higher educational level and characterized by the use of multimedia infrastructure, is the learning process which is more active, enjoyable, and profitable. According to Hammer and Champy, the 4 features of cost reduction, service expansion, quality improvement, and speed acceleration are the ones which cause the educational technology to develop (9). Lee et al. (10) believed that e-learning can enable students to remain on the path to their college education, while they can pursue their personal and vocational goals without having to be present in the classroom. This form of education is used in different forms including a complement to verbal education, and in combination with traditional learning (face-to-face), called blended learning.

Saade et al. (11) mentioned that, in systems that the foundation of their works is based on having users' information; learners' acceptance and to the level of using e-learning are of great importance to assess the success of systems. The recognition of students' tendencies and the analysis of the factors influencing their beliefs about e-learning can help managers create new methods and attract a large number of students who are willing to use e-learning systems. Therefore, addressing issues related to adoption, desire, and attitude of students, which are in line with e-learning systems, seems essential.

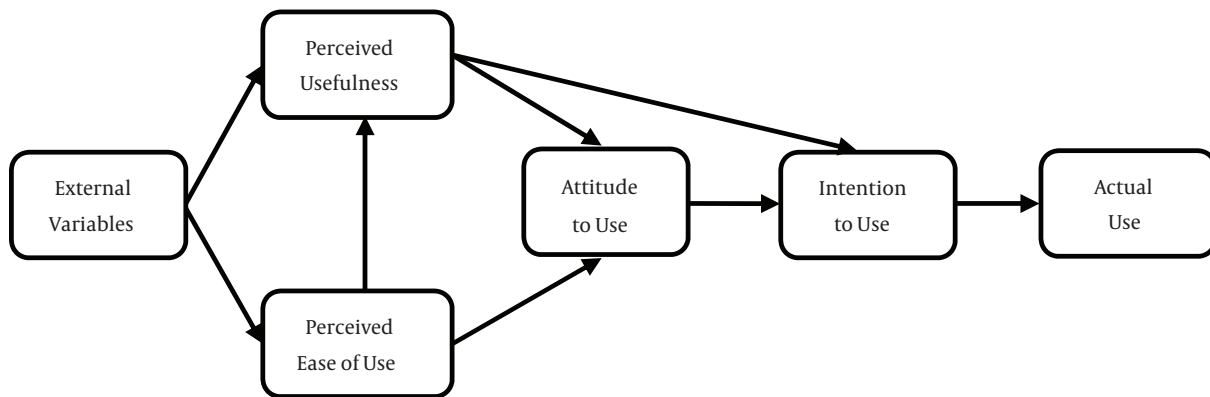
In this regard, Borstorff and Lowe (12) introduced technology acceptance model (TAM) as an adaptation of the theory of reasoned action (TRA) to model the acceptance of users with respect to the information systems. TAM, a well-known model regarding the information technology adoption and its use, has a high potential to explain and predict the behavior of users against information technology (13). Davis introduced TAM in his doctorate dissertation in 1986. Three years later, he used it to explain why information technology was accepted or rejected (derived from the theory of reasoned action). Since then, a lot of researchers put this model as the basis of their research. For example, Lopez-Fernandez and Rodriguez-Illera (14) applied this model to evaluate the students' adaptation to the digital fields, as shown in Figure 1 and used in their research.

In their study, TAM was considered as a theoretical framework to analyze factors associated with the adoption of e-learning. In this model, external variables, as the basis for tracking the impact of external factors, suggest that influence the 2 main internal beliefs of perceived ease of use (PEOU) and perceived usefulness (PU) in using technology. In addition, to the behavioral tendency to use technology, the effect of perceived ease and usefulness on the dependent variable, or the actual usage of technology was me-

diated. Park (15) believed that TAM was an extended form of TRA. Ajzen and Fishbein (16) explained the relationship between tendency and behavior through the connection between beliefs, attitudes, tendencies, and behavior. According to the TRA, the behavior is influenced by behavioral tendencies driven by individual attitudes and internal norms. Fishbein and Ajzen (17) stated that the attitude is "To have positive and negative feelings towards the desired behavior" and individual norm is considered as "A person's perception towards what he should or should not do, according to most people who are important to him". On the other hand, TRA suggests that tendency tends to be the most important determinant of the individual behavior, influenced by people's norms and attitudes toward their behavior and perception.

TAM is widely used in various areas of users' acceptance of information technology including electronic and mobile banking (18), multimedia (19), and technologies related to health care (20). According to Huang (21), the research conducted on information-based systems indicates that cultural differences cause the employment of different technologies in different societies. At the same time, determining factors of different patterns to understand and accept different cultures are still unclear. Therefore, it is essential to comply with the various cultures of technology adoption factors and research development (4). As Figure 1 shows, the perceived benefits and ease of use can jointly impress attitudes in the direction of the use of technology. Also, the perceived benefits can influence the users' behavioral tendency to use technology. This, in turn, is a factor in the actual use of technology by users.

With regard to the relationship between the 2 variables, perceived benefits and behavioral tendency, Borstorff and Lowe (12) found that "In the organizational environment, people form their tendencies in the direction of the behavior they believe in, and through the behavior their career performance will increase". This model also states that the perceived ease of use is likely to affect the use of technology; therefore, an increase in the ease of use results in better performance. As a result, the perceived ease has a direct impact on the use of technology. According to Borstorff and Lowe (12) the perceived ease of use refers to a level of users' feelings based on the fact that they can improve and increase their career performance through the use of a particular technology. Given the importance of virtual learning, several models are taken from technology acceptance model to identify the factors influencing the adoption and use of e-learning. For example, it is shown that many technological characteristics such as perceived flexibility, convenience, and availability influence the consequences of e-learning. But compared to these factors, there is less recognition in



**Figure 1.** The Technology Acceptance Model (14)

respect to the internal factors of learners. Zivic-Butorac et al. (13) pointed out that internal and psychological factors affecting learning outcomes include initial experience of computers, computer self-efficacy ratio, motivation, concerns about the use of computer communications in electronic, and fears about electronic communication.

Accordingly, due to the need to identify the factors influencing the adoption of e-learning technology by students and the fact that few studies examined them, the current study aimed at analyzing the factors affecting the adoption of e-learning from the perspective of MA/MSc students and non-verbal students (e-students) of Garmsar PNU. Later, the theoretical framework associated with the research hypotheses was offered.

The impacts or social norms are among the components taken into consideration in the TAM (1989). Social impact is defined as the perception of most people who are important to him and think he should or should not show certain behavior (13). Sanayei and Salimian (22) said: “Social impacts are considered as important factors affecting the behavior prediction technology in the use of technology and the intention to use it. Social impacts are looking into making a change in people’s attitude by foreign inputs such as information gains while communicating and affecting people’s view”. According to Borstorff and Lowe (12), the social impacts could directly affect behavioral intention. Gu et al. (23) stated that: “A lot of researches showed that the positive attitude in virtual learning and friends’ advice, colleagues or family members, can affect the willingness of people to it, resulting in looking more useful”. Thus, the 1st hypothesis would be set as social impacts have an influence on students’ attitude toward the use of e-learning.

Quality system is considered as a determinant of the developed model of technology adoption in the empirical

research (24). The environment was not their intended educational context, though. In the current study, the quality of the education system as a function of the whole educational system was intended to be measured by the perception of students. Tarhini et al. (2) noted that: “the role of technology is to make it possible for the business processes to improve and speed up students’ work processes, including providing communication with their teachers or other students”. In e-learning, system quality refers to the network speed and quality of the learning management system (LMS) capabilities to meet the needs of students in receiving educational content, and communicating with the teacher and other students. If e-learning services are presented with high accuracy and speed, and can provide proper interaction between teachers and students, the users can understand it better and discover its benefits (22). Therefore, the 2nd hypothesis was set as system quality affects students’ perception in relation to the advantages of e-learning.

The system management tries to overcome the available obstacles in the use of information technology and provide facilities to the users of the system. The support can also facilitate the access to both resources and technology (22). Management support develops the belief in the users of the system that corporate resources and technology facilitate using the system (25). Venkatesh and Bala (26) claimed that when users believe that organizational and technological resources can support them, their tendency in using the system increases. Accordingly, the 3rd hypothesis was set as “The facilitating conditions (facility terms) influence the students’ understanding of the benefits of e-learning”.

Efficacy is defined as an individual’s ability to perform a particular behavior using information technology and computers. Preliminary studies showed that efficacy has

a positive impact on the perceived ease of use. If users believe they have a high level of efficacy, then using e-learning is made easier in their view (22). Accordingly, the 4th research hypothesis was set as “Students’ self-efficacy influences the ease of use of e-learning”.

Venkatesh and Davis (27) suggested that by increasing the ease of using technology, people’s performance and understanding would be better, based on the usefulness of technology. Perceived ease of use is one of the variables of the technology adoption model indicating the amount of the technology, by which a person easily understands how to work with a technology. Services provided by information technology (IT), which are easier and less complicated for the users, are more likely to be accepted and later be used by potential users (28). As Davis proposed in the technology acceptance model, the ease of use is a reference to the perceived benefits, rather than being directly effective in the use of technology. It expresses the ease of use, with an indirect effect on the willingness of consumers, and this impact is through the perceived benefits (22). Therefore, the 5th hypothesis was set as “The ease of use affects the perceptions of the advantages of e-learning”.

Many researchers, who used the technology acceptance model to measure students’ adoption towards web-used learning, announced that the ease of use of technology directly affects people’s willingness to use the system (29). Chesney (30) concluded that a direct and meaningful impact of the ease of technology use was not observed on people’s willingness to use it. Accordingly, the 6th hypothesis was predicted as “the ease of use affects their behavioral tendency to use e-learning”.

People evaluate their behavior consequences as perceived benefits and the obtained utility (31). Employed people need to invest time out of the workplace for professional development, with which their employer may not agree. However, today this is made possible by virtual learning courses, because there is no need to spend time attending classes; therefore, the staff can easily fit lessons with work within a business day. By providing a learning environment and with less cost, e-learning puts an end to the spatial and temporal limitations (22). In this regard, Tung and Chang (32) suggested that the perceived benefits and ease related to e-learning system have a significant effect on the willingness of people to use the system. Therefore, the 7th hypothesis of the research was set as “Students’ perception towards the advantages of using e-learning affects their behavioral tendency to use e-learning”.

Attitude is defined as “To have positive and negative emotions toward doing a particular act” (33). Many investigations announced people’s attitude as 1 of the important variables in the success of e-learning. Aixia and

Wang (34) announced that e-learning students’ attitude is affected by factors such as quality and ease of use of electronic disciplines and students’ positive attitudes to accept e-learning. The 8th hypothesis of this research was set as “students’ attitude affects their behavioral tendency toward using e-learning”.

Behavioral tendency was defined as a quick preference in doing a specific behavior and a person’s willingness to do it. It can be a factor in the possibility of the person’s use of a program in the future. Ajzen and Fishbein (16) in their offered model entitled TRA showed that the actual use of the system is directly affected by the desire to use it; therefore, the 9th hypothesis of the research was predicted as “behavioral tendency of students is affected by their actual use of e-learning”.

## 2. Methods

The current descriptive study aimed at identifying factors affecting the adoption of e-learning. The study was conducted by e-students of Garmsar Payam Noor University. The 184 participants of the study were e-learning post graduate students in the academic year of 2014 - 2015, studying at the Garmsar branch of Payam Noor University. In Table 1, details about the population, sample size, and response rate are shown.

**Table 1.** Population, Sample and Response Rate

Course Name	Academic Era	Statistical Population	Sample Size
Executive management	Master's degree	184	124

According to the current study, population and the use of formulas to calculate the number of samples, including Krejcie and Morgan, an equal number of 127 people were identified as the research sample. However, with the aim of increasing the external validity of the research, which increases the generalizability of the results, the research questionnaire was sent via email to all students studying virtually and included in this research. Finally, by sending the questionnaires through email and following them up by phone, 124 students responded to the questionnaires. It should be noted that Schillewaert et al. (35) announced the rate of their research responses conducted by e-mail, about 36% for the 3 times of sending the questionnaire.

To identify and analyze the factors affecting the adoption of e-learning with an emphasis on internal factors, the research was carried out cross sectionally. The instrument used to collect data was a questionnaire developed by the

researcher (Table 2). Apart from the demographic information section, the questionnaire contained 27 questions. The responses were valued based on a 5-option Likert scale (completely disagree = 1, disagree = 2, neither agree nor disagree = 3, agree = 4, completely agree = 5). Validity index was an interesting indicator to the researcher. The current study applied judgmental method to reach the validity. For this purpose, after the initial development of the research questionnaire, a sample of it was handed in to 19 experts and academics of the area who were active in teaching and presenting e-learning and their opinion was applied in reforming and preparing the final questionnaire. After eliminating or changing some of the questions and adding the alternative questions, the final questionnaire was approved by them. To determine the validity or reliability of research instruments, the Cronbach's alpha coefficient was calculated, which evaluates the internal consistency of the measurement instrument. The results assessed by SPSS version 22, analyzed details of the questionnaire and it was divided into 9 sections, as presented in Table 2. As it is clear, the coefficient of Cronbach's alpha for 27 questions was 0.73, which indicates the proper reliability of the research instrument.

**Table 2.** The Reliability of the Study Instruments

Variable	Number of Statements	Reference	Cronbach's Alpha
Social impact	3	Venkatesh et al. (26)	0.78
Quality of system	3	Gu. (23)	0.68
		Aixia and Wang. (34)	
Facility conditions	3	Venkatesh et al. (27)	0.71
self-efficacy	3	Gu. (23)	0.45
		Liaw et al. (8)	
Attitude	3	Rhema and Miliszewska (36)	0.83
perceived usefulness	3	Lee et al. (10)	0.77
Perceived ease of use	3	Gu (23)	0.83
Intention to use	3	Pervious application of TAM	0.96
Actual use	3	Pervious application of TAM	0.64
Total	27	-	0.73

Abbreviation: TAM, technology acceptance model.

### 3. Results

As Table 3 shows, more than 75% of the participants (94 people) were male and 15% female. In terms of age distribution, 5.53% (46 people) aged 31 to 40 years and 37.2% aged 20 to 30 years. Marital status also showed that about 63% of them (78 people) were married and 37% (n = 46) single. Also, in response to the question, "How many years have you used the internet?", all the respondents announced that they had more than 3 years experiences in working with internet. In addition, in response to the question, "To keep track of your course, from what location do you connect to the internet?", 5.64% of respondents (80 people) selected home and 30.6% (38 people) selected workplace as a place for doing a lesson on internet.

**Table 3.** Demographic Characteristics of the Respondents

Variable	Categories	No. (%)	Mode
Gender	Male	94 (75.8)	Male
	Female	30 (24.4)	
Age	20 to 30	32 (37.2)	31 to 40
	31 to 40	46 (53.5)	
	41 to 50	4 (4.73)	
	More than 50	4 (4.75)	
Marital status	Single	46 (37.1)	Married
	Married	78 (62.9)	
How many years have you used the internet?	Less than 1	-	More than 3
	1 to 3	-	
	More than 3	124 (100)	
Which location do you use to connect to the internet?	Home	80 (64.5)	Home
	Workplace	38 (30.6)	
	Coffee net	6 (4.82)	
	Others	-	

The results of analyses presented in Table 4 showed that the variable social impact, with mean  $\pm$  standard deviation (SD) of  $3.18 \pm 0.897$ , had the highest mean value, and the variable self-efficacy, with mean  $\pm$  SD of  $2.10 \pm 0.640$  had the lowest value.

To test each of the research hypotheses, regression analysis test was applied. Table 5 indicates the results of regression analysis for all the research hypotheses.

Based on Table 5, social impacts affected students' attitude toward using e-learning with the significant amount of 0.000. Since the significance level of this test was less than 0.001, the confidence interval (CI) could be set more than 99%, which indicating the social factors affected students' attitude toward the use of e-learning. Moreover, the

**Table 4.** Mean and Standard Deviation of the Research Variables

Variable	Amount	Min	Max	Mean $\pm$ SD
Social impact	124	2	5	3.18 $\pm$ 0.89
Facility conditions	124	1	4	2.62 $\pm$ 0.59
Self-efficacy	124	1	3	2.10 $\pm$ 0.64
perceived usefulness	124	2	5	2.77 $\pm$ 0.87
Perceived ease of use	124	1	5	2.44 $\pm$ 0.92
Intention to use	124	1	5	2.31 $\pm$ 1.09
Quality of the system	124	2	4	2.72 $\pm$ 0.59
Attitude	124	1	4	2.31 $\pm$ 0.84
Actual use	124	2	5	3.15 $\pm$ 0.89

standardized effect size (beta) of +0.61 affected students' attitude toward using e-learning, which had a relatively high coefficient.

According to Table 5, system quality affected students' perception toward the advantages of e-learning with the significant amount of 0.000. Since the significant amount of the test was less than 0.001, the CI could be set to 99%, which indicating the system quality affected students' perception toward the benefits of e-learning. Moreover, the standardized effect size (beta) of 0.63 indicated that the influence of students' understanding on the benefits of e-learning was relatively high. Also, the facilitating conditions (facility terms) affected the students' understanding toward the benefits of e-learning with the significant amount of 0.622. Since the significant amount of the test was more than 0.05, the CI could be set to 95%, which indicating the facilitating conditions (facility terms) did not affect students' understanding toward the benefits of e-learning. Moreover, the standardized effect size (beta) of +0.06, indicated the students' understanding slightly affected the benefits of e-learning. Students' self-efficacy influenced the use of e-learning with the significant amount of 0.021. Since the significant amount of this test was less than 0.05, the CI could be set to 95%, which indicating students' self-efficacy of e-learning influenced the use of e-learning. Moreover, the standardized effect size (beta) of +0.49 affected students' e-learning with a relatively high coefficient.

According to Table 5, using e-learning affected the perceptions toward the advantages of e-learning, with a significant amount of 0.000. Since the significant amount of this test was less than 0.001, the CI could be set more than 99%, which indicating the use of e-learning affected the perception toward the advantages of this system. Moreover, the standardized effect size (beta) of 0.74 affected the perception of students toward the advantages of this system

with a relatively high coefficient.

Accordingly, the ease of using e-learning affected the behavioral tendency toward e-learning with the significant amount of 0.000. Since the significant amount of this test was less than 0.001, the CI could be set more than 99%, which indicating students' use of e-learning influenced the behavioral willingness toward using this system. Moreover, the standardized effect size (beta) of +0.62 affected the behavioral tendency toward e-learning with a relatively high coefficient.

As Table 5 shows, students' perception towards the advantages of e-learning affected the behavioral tendency toward the use of e-learning with the significant amount of 0.017. Since a significant amount of this test was less than 0.05, the CI could be set to 95%, which indicating the students' perception toward the benefits of e-learning influenced the behavioral willingness to the system. Moreover, the standardized effect size (beta) of +0.63 affected the behavioral tendency toward e-learning with a relatively high coefficient. Students' attitude affected the behavioral tendency toward e-learning with the significant amount of 0.000. Since the significant amount of this test was less than 0.001, the CI could be set more than 99%, which indicating the students' attitude affected the behavioral tendency toward e-learning. Moreover, the standardized effect size (beta) of +0.85 affected the willingness of students toward e-learning behavior with a relatively high coefficient.

According to Table 5, behavioral tendency of students was affected by the actual use of e-learning with the significant amount of 0.000. Since the significant amount of this test was less than 0.001, the CI could be set more than 99%, which indicating the behavioral tendency of students influenced the real use of e-learning. Moreover, the standardized effect size (beta) of +0.72 affected the students' real use of e-learning with a relatively high coefficient.

**Table 5.** Regression Results of the Study Hypotheses

Row	Hypothesis	$\alpha$	$\beta$	Standard Error of $\beta$	t	P Value	R <sup>2</sup>
1	Social impact → attitude	0.65	0.61	0.10	5.93	< 0.001	0.37
2	Quality of the system → perceived usefulness	0.70	0.63	0.10	6.31	< 0.001	0.39
3	Facility conditions → perceived usefulness	0.007	0.06	0.12	0.49	> 0.05	0.00
4	Self-efficacy → perceived ease of use	0.42	0.49	0.11	4.32	< 0.05	0.23
5	Perceived ease of use → perceived usefulness	0.98	0.74	0.08	8.63	< 0.001	0.55
6	Perceived ease of use → intention to use	0.68	0.62	0.10	6.15	< 0.001	0.38
7	Perceived usefulness → intention to use	0.69	0.63	0.10	6.25	< 0.05	0.39
8	Attitude → intention to use	1.28	0.85	0.06	12.50	< 0.001	0.72
9	Intention to use → actual use	0.925	0.72	0.08	8.10	< 0.001	0.52

#### 4. Discussion and Conclusions

Since the presentation of TAM, it was frequently used in IT. For example, the studies of Rhema and Miliszewska (36), Lim, Hong and Tan (37), Al-alak, and Alnawas (6), Selim (38) considered the effectiveness of this model in e-learning.

Based on the results of the current study, social impacts (99% CI) affected the students' attitudes toward e-learning. Social impacts are the basis of behavioral norms formation, which are institutionalized within individuals and affect the decisions of individuals to present a specific behavior. Borstorff and Lowe (12) introduced the internal norm as 1 of the main factors shaping people's inclinations. Also, Yiong et al. (37), in a sample of 681 Singaporean females, found that social norms had a significant impact on behavioral tendencies and the perceived benefits toward the technology.

It was also observed that the system quality (99% CI) affected the students' perception toward the benefits of e-learning. In this regard, Yiong et al. (37) proposed that the system quality played an important role in the adoption of e-learning by the students. The current study findings were confirmed by other researchers such as Selim (38).

Findings of the current study showed (99% CI) that facility terms influenced students' perceptions about the advantages of e-learning. Many references can be found in the regarding the facilitate learning in the classroom. Also, Salari, Yaghmaei, Mehdizade, Vafadar, and Afzali (39) argued that facility terms with the help of teaching aids the students to play an important role in the success of the learning process and cooperation of people with each other in e-learning. As mentioned in previous articles, the facility terms are the supports of the system management to overcome the available barriers of technology in using technology and have a facilitating role for the users of the system. The support can also facilitate both the access to

resources and technology, and management services (22). Venkatesh and Bala (26) proposed that when users develop strong beliefs that their access to corporate resources are made easier and they would be supported technically and managerially, their acceptance of the new technology increases. Also, Al-Adwan et al. (40) showed a significant relationship between management support and willingness of people to accept a specific technology. In this regard, Salari et al. (39) showed that the available facilities had a significant relationship with the variable perception of the usefulness" of e-learning. Park (15) reported that the availability of facilities, as an organizational variable, did not influence the perception of the usefulness of e-learning.

According to the results of the current study, students' self-efficacy (95% CI) influenced the use of e-learning. Selim (38) defined self-efficacy as the extent of the ability of users to use technology in learning. In this regard, Venkatesh and Davis (27) reported that the users' self-efficacy can affect the use of technology. Also, Woodrow (41) proposed that self-efficacy was an important factor in the self-awareness of attitudes and the behavior of students in e-learning and a major criterion to assess students' readiness to accept e-learning. In this regard, Salari et al. (39) concluded that self-efficacy, as a prediction variable, was significantly associated with the perception of using e-learning. Also, Sanayei and Salimian (22) approved the impact of students' self-efficacy on the use of virtual learning. It was also observed that the students' use of e-learning affected their perception towards the benefits of e-learning (99% CI). In this regard, Al-Adwan et al. (40), in a study entitled "Determination of the level of students' acceptance of e-learning, using technology acceptance model", concluded that students' perception toward the ease of using e-learning influences the perceived benefits, with 99% CI. Their research findings were confirmed by Borstorff and Lowe (12) that the perceived ease of using technology had

a significant impact on the perceived benefits by users.

Based on the results of the current study, the ease of students' use of e-learning influenced the behavioral tendency toward using e-learning. In the research literature, many cases examined the users' behavioral tendencies in utilizing the technology in organizational matters. For example, Sweeney, Geer, and Paris noted that the level of access to technology and the ability to use it influenced the students' willingness to use information technologies and the communication to support learning (40). In addition, in their study, Sanayei and Salimian (22) showed that the perceived ease of use of technology had an effect on the students' willingness to use e-learning.

The research results showed that, students' perception toward the advantages of e-learning influenced their behavioral tendency toward e-learning (95% CI). Many researches, such as that of Saade and Galloway, showed that students' use of web-based technologies was affected by the 2 factors of the perceived ease of use of technology and the perceived benefits toward technology. Also, Lee et al. (42) showed a significant relationship between the perceived benefits by employees and their willingness to use e-learning systems. Salari et al. (39) also confirmed the relationship between the perceived usefulness and the willingness to use the e-learning system. It was also found that the students' attitude influenced their behavioral tendency toward e-learning (99% CI). There are some researches such as those of van Schalk and Teo (43) and Al-Adwan et al. (40) that did not contradict the presence of a significant effect between the attitude toward the use of technology and the willingness to use it. However, the research literature indicated some findings such as those of Salari et al. (39) and Lee et al. (42) in which using e-learning can predict the willingness to the use of e-learning system.

Based on the results of the current study, students' behavioral tendency influenced the real use of e-learning (99% CI). Consistent with the findings of the current study, Tarhini et al. (2) observed a positive and significant effect between people's behavioral tendency and their real use of e-learning. Moreover, Sanayei and Salimian confirmed the effect of students' behavioral tendency on the real use of virtual education (22).

## Footnote

**Conflict of Interest:** Authors declared no conflict of interests.

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