

## Attitude towards e-learning in Relation to Computer Self-Efficacy of University Students

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**Abstract:** Higher education institutions in developing countries often have problems keeping up-to-date with advances in international science and technology. Considering student's attitude toward e-learning is important in successful development of e-learning in higher education. Attitudes towards computer knowledge associated with a concept known as computer self – efficacy. Thus the main objective of current study was to examine the effect of computer self-efficacy on university students' attitude towards e-learning. This study also performed to examine the effect of country type and faculty type on university students' attitude towards e-learning. The population of this study consisted of all the postgraduate students who were studying in Panjab University, Chandigarh as well as University of Tehran in India and Iran respectively. The results of this study showed that the means of both Indian and Iranian student's attitude scores with regard to high computer self-efficacy were more than student's attitude scores under moderate and low computer self-efficacy scores. In addition, there were no significant differences on means of both countries and different faculties on students attitude scores .

**Keywords:** e-learning, Computer, Self-Efficacy.

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### INTRODUCTION

#### e-learning

It is widely accepted that advances in information technology and new developments in learning science provide opportunities to create well – designed, learner–centered, interactive, affordable, efficient, flexible e-learning environments [1] (Khan, 2005). E-learning, as a positive reaction by universities to the challenge introduced by IT, is characterized by: (1) Separation in time or space between the teacher and students, among the students themselves, and between the students and educational resources; 2) interaction between the teacher and students, among the students, and between the students and educational resources by means of one or more media, especially through the internet; and (3) a process of teaching and learning not limited to the immediate time and or place [2].

There are several cogent reasons for adapting and implementing e-learning into an educational system:

- The growth of information technology: e-learning has become an ideal delivery vehicle for education and learning.
- It is information rich: e-learning offers both teachers and learners access to anywhere, anytime “information rich” resources.
- Alternative learning strategy: e-learning can reach those previously denied access (eg, students with physical disabilities).
- Blended learning: e-learning can augment traditional classroom offerings, thereby freeing

up valuable resources and expanding the offering to greater numbers of campus – based students [3].

However, higher education institutions in developing countries often have problems keeping up-to-date with advances in international science and technology factors [4, 5, 6, 7]. Considering student's attitude toward e-learning is important in successful development of e-learning in higher education, since attitude of user towards application of information technology is one of the most effective factors.

#### Attitude towards e-learning

Attitude is defined as an individual's positive or negative feelings (evaluative effect) about performing the target behavior [8, 9, 10]. This means that learners' positive or negative feelings of participating in e-learning activities through computer use will directly influence their behavior to use online learning to study. Different students have different insights on online learning. Understanding students' attitudes towards e-learning can help to determine the extent to which students utilize the e-learning system [11]. Ellis, Ginns and Piggott [12] discovered significant strong positive correlations between the deep approaches, the e-learning variables, perceptions of the quality of e-learning and achievement. Attitudes towards computer knowledge associated with a concept known as computer self-efficacy [13], which, in turn, has proven to be a factor in understanding the frequency

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and success with which individuals use computers [14, 15].

### Computer self- efficacy

Computer self- efficacy examines users' beliefs regarding their ability to perform specific tasks using a software package [16]. Compeau and Higgins [15] defined computer self-efficacy as "a judgment of one's capability to use a computer". It is not concerned with what one has done in the past, but rather with one's judgments of what could be done in the future. Moreover, it does not refer to simple component sub skills, like formatting diskettes or entering formulas in a spreadsheet. Rather, it incorporates judgments of the ability to apply those skills to broader tasks. Computer self-efficacy has a major impact on individuals expectations of the outcomes of using computers, their emotional reactions to computers (affect and anxiety), as well as their actual computer use. Miura [17] has suggested that self-efficacy may be an important factor related to the acquisition of computing skills. Computer self-efficacy is a specific type of self-efficacy which is defined as belief in one's ability to "mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" [18]. Thus, computer self-efficacy is a belief of one's capability to use computer [15] and participants with little confidence in their ability to use computers might perform more poorly on computer -based tasks. It provides an important psychological construct that is specially related to computer usage. A substantial studies of computer self-efficacy have been conducted on students in e-learning settings [19, 20, 21, 22, 23].

### Need of the study

There is a general belief among people in developed countries that students in developing countries have negative attitude toward computers [24]. Studies have also advocated that failing to acknowledge the importance of understanding e-learning was an important issue [25, 26, 27]. Yet colleges and universities continue to invest large sums of money in automation and electronic communication facilities. For this reason, Martinze [28] suggests that the study of student's attitude towards e-learning can in many ways help managers better prepare in light of e-learning for the future . On the other hand computer attitude have been found as factor in computer self-efficacy. The review of the studies reveals that Students with higher computer self-efficacy had positive computer attitudes [29, 30], positive attitude towards internet [31], greater achievement of computer competency[19,20, 22] and computer usage [23, 32]. A few researches also by [30, 31, 33] found computer self-efficacy as predictor of university students' attitude towards e-learning. Further, Undergraduates from the Faculty of Computer Science and Information Technology (FCSIT) had significantly better computer self-efficacy than undergraduates from Faculty of Applied and Creative Arts (FACA) [31]. Likewise, *having majors related to Technology education* was described as one of the factors affecting

student's attitude towards e-learning [34, 35]. It means that Technology Education majors indicated their acceptance of this mode of information access in greater degrees than their classmates in other majors. It thus becomes reasonable to expect that positive interaction effect will exist between faculty type and different levels of computer self-efficacy (high, moderate and low) on students' attitude towards e-learning . Therefore this study performed to study followed hypotheses.

### Hypotheses

2x2x3 ANOVA was employed for analyzing students attitude scores with respect to different levels of computer self-efficacy. Following null hypotheses were tested through this analysis:

H1: There is no significant difference in scores of attitude towards e-learning of Indian and Iranian students.

H2: There is no significant difference in scores of students on attitude towards e-learning belonging to different faculties.

H3: There is no significant effect of different levels of computer self-efficacy with regard to students' attitude towards e-learning.

H4: There is no significant interaction between country type and different levels of computer self-efficacy with regard to students' attitude scores towards e-learning.

H5: There is no significant interaction between faculty type and different levels of computer self-efficacy with regard to students' attitude scores towards e-learning.

H6: There is no significant interaction between country type and faculty type on students' attitude scores towards e-learning.

H7: There is no significant interaction among country type, faculty type and different levels of computer self- efficacy with regard to students' attitude scores towards e-learning.

## METHODOLOGY

### Tools Used

The following tools were used in the present study:

- Attitude scale towards e-learning (developed by investigators).
- Computer self-efficacy scale by Embi [36]

### Scale of attitude towards e-learning

In order to assess the students attitude towards e-learning, 92 items of attitude towards e-learning through consultation with the experts in the filed of educational technology in Panjab University of India was developed on a five point scale. For positive items,

score of 5 was given for strongly agree, 4 for agree, 3 for undecided, 2 for disagree and 1 for strongly disagree. On the contrary for negative items, score of 1 was given for strongly agree, 2 for agree, 3 for undecided 4 for disagree and 5 for strongly disagree. Six domains as perceived usefulness, Intention to adopt e-learning, Ease of e-learning use, Technical and pedagogical support, E-learning stressors and Pressure to use e-learning.

The scale was also administered to 200 University students from two countries (India and Iran) for the Try – out of the scale .

The total scores for the 100 students from India and 100 students from Iran were arranged in a descending order. 27% of the high scores and 27% of

the low scores were identified. Then, for each of the 92 items, a t-ratio was computed for the higher and the lower groups to find out the discriminating power of each item. On the basis of the value of t-ratio, 9 items were rejected as they did not discriminate even at 0.05 level of confidence.

The reliability of the attitude scale was computed by the method of internal consistency and Cronbach's alpha for both Indian students (N=50) and Iranian students (N=50) of sample separately.

The reliability of the total test was .834 which is considered very well [38] (Hair et al. 1998). In addition, Table 1 shows the reliability of the measurement scale for each subscale.

**Table 1: Cronbach's alpha reliability for different domains of Attitude towards e-learning**

Country	Domain	Cronbach's alpha	Total (Reliability between domain and total )
<b>India</b>	Perceived usefulness of e-learning	0.70	0.61
	Intention to adopt e-learning	0.65	0.60
	Ease of e-learning use	0.65	0.59
	Technological and pedagogical support	0.60	0.55
	E-learning stressors	0.84	0.70
	Pressure to use e-learning	0.65	0.56
<b>Iran</b>	Perceived usefulness of e-learning	0.80	0.81
	Intention to adopt e-learning	0.60	0.55
	Ease of e-learning use	0.68	0.57
	Technological and pedagogical support	0.60	0.55
	E-learning stressors	0.68	0.57
	Pressure to use e-learning	0.77	0.55
<b>Total</b>	Perceived usefulness of e-learning	0.75	0.69
	Intention to adopt e-learning	0.74	0.68
	Ease of e-learning use	0.70	0.65
	Technological and pedagogical support	0.61	0.56
	E-learning stressors	0.79	0.66
	Pressure to use e-learning	0.71	0.57

Face validity and content validity of the scale was ensured through consultation with faculty members from different departments of Panjab university, Computer Science, Mass Communication, Correspondence Education, Education, English from the first draft till the last draft of the scale of attitude towards e-learning.

#### **Computer self-efficacy scale**

Computer self-efficacy scale by Embi [36] was used in this study which was based on Durdell, Haag, and Laithwaite's (2000) scale with slight modifications. In the pilot test, questionnaire was distributed among 20 faculty members at UITM in Malaysia. The overall reliability coefficient of the scale was .94.

The instrument is comprised of 29 items consisting of three domains as Beginning skills, File and software skills and advanced skills. All the 29 items

of the scale are positively worded items and are given a score of “1”, “2”, “3”, “4” for strongly disagree, moderately disagree, moderately agree and strongly agree. The sum of these values gives the student’s computer self-efficacy score for the subject. The total score varies from 29 to 116, showing least computer self-efficacy to highest computer self-efficacy. High

scores indicate respondents ‘high level of computer self-efficacy in using computers and vice-versa.

The reliability of the overall scale and it’s different domains has been derived by employing Cronbach’s alpha for both Indian students (N=50) and Iranian students (N=50 ) of sample separately by researcher as demonstrated in Table 2.

**Table 2: Cronbach’s alpha reliability for different domains of computer self- efficacy**

Country	Domain	Cronbach’s alpha
<b>India</b>	Beginning skills	.93
	File and software skills	.92
	Advanced skills	.87
	Total computer self-efficacy scale	.90
<b>Iran</b>	Beginning skills	.92
	File and software skills	.93
	Advanced skills	.87
	Total computer self-efficacy scale	.90
<b>Total</b>	Beginning skills	.92
	File and software skills	.90
	Advanced skills	.89
	Total computer self-efficacy scale	.91

### Sample

The population of this study consisted of all the postgraduate students who were studying in Panjab University, Chandigarh as well as University of Tehran in India and Iran respectively. 800 post-graduate students of different faculties and departments of Panjab University (PU) and University of Tehran (UT), were the sample of the present study. Therefore, the sampling technique at this level was purposive-cum random.

Stratified sampling technique was also employed in the present study. Firstly, two faculties from Panjab University and two faculties from University of Tehran (UT) namely, arts, science were randomly selected respectively. Secondly, From each selected faculty, five departments were randomly selected. 40 students questionnaire were distributed in each department randomly. Care was taken that female and male students were equally selected to answer questionnaires.

### Data Collection

Data was collected in the year 2009. It took about six months to collect data from 800 Indian and

Iranian students. Before collection of the data selection of faculties and departments was done on the basis of randomization technique. It was necessary to take permission in some departments from the chairperson. Then, students of different sections of class in a particular department were selected randomly. It was also taken care to select both female and male students equally in each department. Rapport was established with them and standardized instructions were read out for each tool. Students were encouraged to give correct information and were assured that these are to be used only for research purpose and will remain confidential. Participants took between 15 and 25 minutes to complete the questionnaires. It was checked that they have answered all the statements.

### Data Analyses

The levels of attitude towards e-learning of Indian and Iranian students

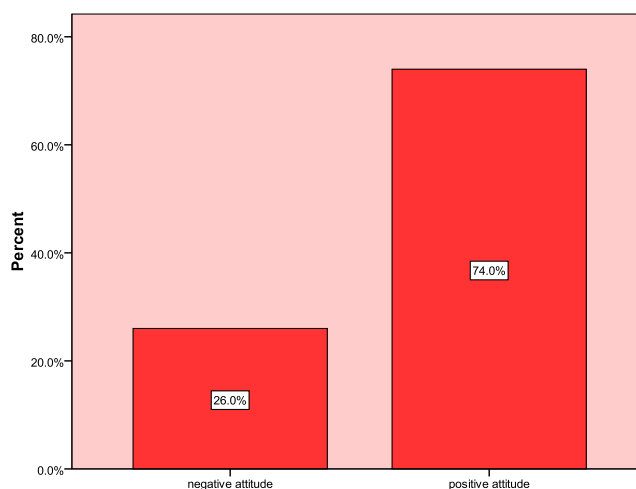
The computed total attitude scores were categorized as negative and positive. As Table 3 displays students in both countries had almost similar attitude towards e-learning. They were significantly positive towards e-learning. However, 24 per cent of

Indian and 28 per cent Iranian students had negative attitude towards e-learning. Further, Indian students had

more positive attitude towards e-learning than the Iranian university students.

**Table 3: The levels of attitude towards e-learning of Indian and Iranian students**

Iran + India		Frequency	Percent	Valid Percent	Cumulative Percent	
India	Valid	Negative attitude	96	24.0	24.0	24.0
		positive attitude	304	76.0	76.0	100.0
		Total	400	100.0	100.0	
Iran	Valid	Negative attitude	112	28.0	28.0	28.0
		positive attitude	288	72.0	72.0	100.0
		Total	400	100.0	100.0	



**Figure1: Bar diagram showing the total student's attitude towards e-learning for Indian and Iranian students**

## RESULTS

**Table 4: Means and S.D'S of sub-samples of attitude towards e-learning scores at different levels of computer self-efficacy**

Country	Faculty	Levels of computer self-efficacy	Mean	Std. Deviation	N
India	Science	Moderate	170.6053	32.57364	76
		High	199.7016	33.91932	124
		Total	188.6450	36.21431	200
	Arts	Low	171.1733	28.19042	5
		Moderate	200.7583	35.69820	75
		High	246.8000	34.88878	120
		Total	190.8150	38.74943	200
	Total	Low	170.8874	28.19042	5
		Moderate	200.2213	34.04831	151
		High	246.8000	34.33268	244
		Total	189.7300	37.47202	400
			Low	168.0000	5.65685
		Moderate	176.8276	37.26124	87

<b>Iran</b>	<b>Science</b>	High	204.5315	35.79559	111
		Total	192.1150	38.76150	200
	<b>Arts</b>	Moderate	178.6967	32.61012	122
		High	204.7436	37.96288	78
		Total	188.8550	36.96561	200
	<b>Total</b>	Low	168.0000	5.65685	2
		Moderate	177.9187	34.54746	209
		High	204.6190	36.60591	189
Total		190.4850	37.86190	400	
<b>Total</b>	<b>Science</b>	Low	168.0000	5.65685	2
		Moderate	173.9264	35.18480	163
		High	201.9830	34.82716	235
		Total	190.3800	37.50276	400
	<b>Arts</b>	Low	175.8325	28.19042	5
		Moderate	202.3283	33.92710	197
		High	246.8000	36.08870	198
		Total	189.8350	37.83327	400
	<b>Total</b>	Low	174.9694	44.87284	7
		Moderate	202.1409	34.46692	360
		High	224.2857	35.36877	433
		Total	190.1075	37.64578	800

**Table 5: Summary of 2x2x3 ANOVA for students' attitude scores towards e-learning at different levels of computer self-efficacy**

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Country	2372.643	1	2372.643	1.948	.163 NS
Faculty	2142.743	1	2142.743	1.759	.185 NS
Different levels of computer self-efficacy	154495.625	2	77247.812	63.411	0.01 S*
Country * Different levels of computer self-efficacy	6375.900	2	3187.950	2.617	.074 NS
Faculty * Different levels of computer self-efficacy	1843.881	2	921.940	.757	.47 NS
Country * faculty	75.679	1	2387.950	1.617	.56 NS
Country * faculty * Different levels of computer self-efficacy	100.636	2	5214.588	3.763	.61 NS
Error	959954.499	788	1218.216		
Total	30045036.000	800			
Corrected Total	1132346.755	799			

S - The mean difference is significant at the 0. 01 level  
NS – The mean difference is not significant at the 0.05 level

## Main effects

### Country

Table 5 shows that the F-ratio for the differences in the means of attitude scores of Indian and Iranian students scores was found not to be significant even at the level 0.05 confidence .It may be inferred that the means of both countries on students attitude scores may be considered equal .The null hypothesis of equality (H1) was therefore retained.

### Faculty

Table 5 shows that the F-ratio for the difference in the means of attitude scores of Indian and Iranian students who belonged to different faculties was not found to be significant even at the level 0.05 of confidence. It may be inferred that the means of different faculties on students attitude scores may be considered equal .The null hypothesis (H2) of equality was therefore retained.

### Computer self-efficacy

The F-ratio (Table5) for the differences among the means of attitude scores of students with low, moderate and high computer self-efficacy scores was found to be significant at the level 0.01 confidence. This suggested that the students were significantly different beyond chance, on their attitude towards e-learning when they had low, moderate and high computer self-efficacy scores. Therefore, H3 was rejected at the specified level. An examination of the means of both Indian and Iranian student's attitude scores (Table 4 ) clearly indicated that the means of Indian student's attitude scores with regard to high computer self-efficacy (mean =246.8000) were more than student's attitude scores under moderate (mean =200.2213) and low (mean = 170.8874) computer self-

efficacy scores. Similarly, Iranian student's attitude scores with regard to high computer self-efficacy (mean =204.6190) were more than student's attitude scores under moderate (mean = 177.9187) and low (mean =168.0000) computer self-efficacy (mean=296.6297). Fig 3 confirms the results.

## Interaction effects

### Country type x Levels of computer self-efficacy

F-ratio for the interaction between the two variables viz., country type and low, moderate and high computer self-efficacy (Table 5 ) was not found to be significant even at 0.05 level of confidence .Hence H 4 was retained.

### Faculty type x levels of computer self-efficacy

F-ratio for the interaction between the two variables viz., faculty type and different levels of computer self-efficacy (Table 5 ) was not found to be significant even at 0.05 level of confidence .Hence H 5 was retained.

### Country type x faculty type

F-ratio for the interaction between the two variables viz., country type and faculty type (Table 5 ) was not found to be significant even at 0.05 level of confidence .Hence H 6 was retained.

### Country type x faculty type x levels of computer self-efficacy

F- ratio for the interaction between country type, faculty type and gender was not found to be significant even at the 0.05 level of confidence. Thus, H 7 was retained as the three variables were independent of one another with regard to attitude towards e-learning.

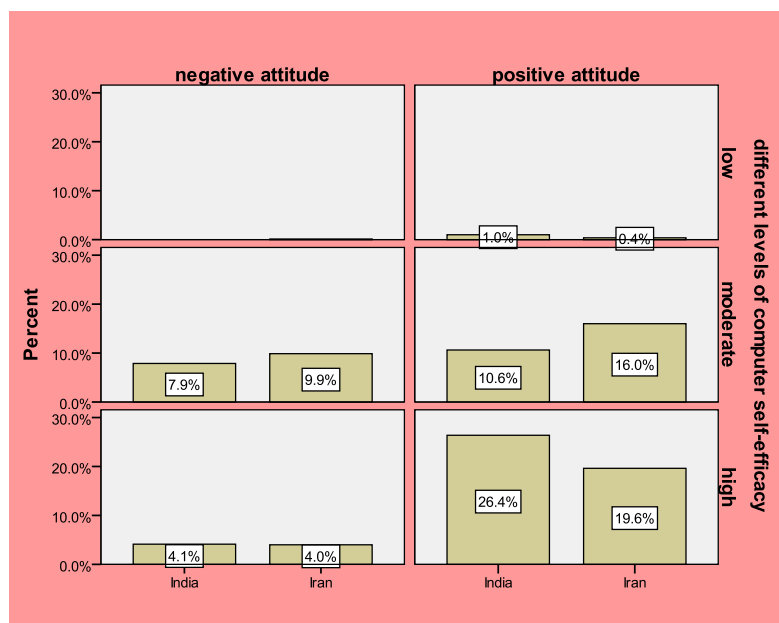


Figure 2 : Bar diagram showing the means scores of Indian and Iranian students on attitude towards e-learning under different levels of computer self-efficacy

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## Conclusion

There is a general belief among people in developed countries that students in developing countries have negative attitude toward computers [24]. However, the results of this study showed that many Indian and Iranian university students were positive towards e-learning. Moreover, the means of both Indian and Iranian student's attitude scores with regard to high computer self-efficacy were more than student's attitude scores under moderate and low computer self-efficacy scores. This finding was consistent with Munro & Conrad [39] and Noiwan, Piyawat & Norcio [30] who found that students with higher computer self-efficacy had positive computer attitude. The study suggests the need for improvements in computer-related curricula used for postgraduate students at universities.

## Suggestions for further research

This study only focus on the postgraduate students at universities, but not the faculty members. Further research could be conducted to study faculty member's attitude towards e-learning in relation to their computer self-efficacy in comparison with the results of the current study.

According to the results of this study, as students become more confident in using computers, their attitudes may change. In other words, students with high computer self-efficacy have less negative attitudes towards e-learning. Further research should be conducted to determine the reasons for this and to suggest possible solutions.

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