Attitude toward using technology and investigating the effective factors

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Abstract: Various obstacles in the way of promoting information technology in developing countries and industrialized countries cause slow growth in development of information technologies. One of these factors is the negative attitude towards technology adoption; therefore, the main objective of this study is to evaluate factors associated with attitude toward the use of information and communication technology (ICT).Students of virtual learning are used as the sample in the present study. Standardized questionnaires are used as the instrument in this research and the data is analyzed by path analysis and AMOS software. Results of path analysis show that perceived ease of use, perceived usefulness and computer self-efficacy has direct and significant effect on attitude, also computer self-efficacy has significant effect on perceived ease of use and perceived usefulness. In this study, like pervious studies in this field a significant relationship between perceived ease of use and perceived usefulness is reported. It should be noted that computer anxiety is the only variable in this study which has the inverse relationship with computer self-efficacy and perceived ease of use. Finally, computer anxiety indirectly affects the attitude toward technology.

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Introduction

Identifying the factors that create a positive attitude toward the acceptance and use of technology are the most important issues in research related to information technology. Determining the factors that influence attitude toward the use of information technology enables us to predict the extent of its usage, and on the other hand, the causes of failure in the use of technology is cleared. The first introduction of attitude is done by Znaniecki and Thomas (1918, cited in Alrafy, 2009) to explain social behavior. According to Ajzen and Fishbein (1980 cited in Gallion, 2000) attitude expresses the general feeling favorableness and un favorableness of a concept. Pervious researches show that positive attitude in the use of ICT is not the effect of one factor but several factors are influencing this variable.

As Tselios and colleagues (2011) in a research titled “assessing the acceptance of a blended learning university course” find that perceived usefulness and perceived ease of use are the effective factors influencing attitudes among university students in Greece. They also believe that there is a strong relationship between perceived usefulness and perceived ease of use. In addition other researchers like Shiue 2007, Pan 2003, Yousoff 2009 introduce self-efficacy as an effective variable in attitude toward using information technology. Computer self-efficacy adds to technology acceptance model by Igbaria and Iivari (1995). In extended technology acceptance model with the addition of computer self-efficacy, and besides variables of Technology Acceptance Model (perceived usefulness, perceived ease of use and the use of the system), other variables like computer anxiety, computer experience and organizational support are also examined.

Researchers such as Kulviwat (2006) and Yang (2007) argue that individuals with higher level of computer self-efficacy probably have more positive attitude towards using information technology. They also find a significant relationship between perceived ease of use and perceived usefulness.

In addition, the relationship between these two variables with attitude is reported to be significant. Shiue (2007) in a study which is performed on 242 Taiwanese high school teachers indicates that teachers' attitudes towards the use of technology is predicted by perceived usefulness and perceived ease of use. In addition, teachers who have a higher level of self-efficacy perceive easy of using technology to further extent. Findings from the path analysis of Pan (2003) shows that there is a significant relationship between perceived ease of use and perceived usefulness, Moreover, in this research the relationship between computer self-efficacy with perceived ease of use, but the relationship between computer self-efficacy and perceived usefulness is

not significant. Results of a survey which is done by Yusoff and colleagues (2009) in the State University of Malaysia show that there is a meaningful relationship between perceived ease of use and perceived usefulness, also computer self-efficacy has a significant effect on perceived ease of use.

Although the study of Agarwal et al (2000) focuses more on cognitive absorption, but they find in their research that there is significant relationship between perceived ease of use and computer self-efficacy, but there is no significant relationship between computer self-efficacy and perceived usefulness. Also, in this study, the relationship between perceived ease of use and perceived usefulness is significant.

The above mentioned studies show that computer self-efficacy, perceived ease of use and perceived usefulness have direct and meaningful effects on attitude toward using technology. Results also indicate that there is a significant relationship between computer self-efficacy and perceived ease of use with perceived usefulness.

In another research Igbaria and Iivari (1995) show that there is a significant relationship between computer anxiety with perceived ease of use and perceived usefulness.

One of the research results of Igbaria and Iivari (1995) which is performed on 450 computer users in over 120 companies in Finland is that computer anxiety has a direct effect on perceived ease of use and perceived usefulness of the technology. But in a study by Saade et al (2009) as "computer anxiety in E-learning: the effect of computer self-efficacy" and a study by Sokura (2009) entitled "the role of training in decreasing anxiety among experienced computer users" only the relationship between computer anxiety and perceived ease of use is reported to be meaningful.

This study aims to investigate the psychological variables such as computer anxiety, computer self-efficacy, perceived ease of use and perceived usefulness which are influential in forming attitude toward using technology.

2. Research Methodology

Research method of this study is correlation and 436 students of virtual university in Iran are selected by stratified sampling. Measurement tool in this research standardized questionnaires of computer self efficacy (Wolters and Daugherty, 2007) attitude, ease of use and perceived ease of use with Teo et al (2007) questionnaire, computer anxiety (Ball, 2008), and data analysis software that is used is AMOS 18.

To evaluate the construct validity of questionnaire confirmatory factor analysis is used which is indicated in Table 1.

Table 1 shows the Reliability Coefficients of Variables and Cronbach Alpha. The fit indices which are used in this study (GFI, AGFI, CFI, and NFI) are greater than 0.90 and the RMSEA value close to zero; indicate a good fit of the model.

Results

Correlation between variable is significant is significant in at 0.05 levels. Direct, indirect and total effects of variables are presented in Table 2.

Table 2 shows the Direct, Indirect and Total Effect of Variables. According to Table 2, perceived ease of use (β=0.219, t=4.035, P=0.0001), perceived usefulness (β=0.138, t=2.492, P=0.013), and computer self efficacy (β=0.182, t=3.284, P=0.001) have significant and direct effect on Attitude. Perceived ease of use (β=0.131, t=2.439, P=0.015), and computer self efficacy (β=0.245, t=4.571, P=0.0001) have significant and direct effect on perceived usefulness. And Computer anxiety (β=-0.066, t=-1.227, P=0.220), have not significant and direct effect on perceived usefulness. Computer anxiety (β=-0.112, t=-2.028, P=0.043), and computer self efficacy (β=0.168, t=3.055, P=0.002) have significant and direct effect on perceived ease of use. Computer anxiety (β=-0.140, t=-2.544, P=0.011) have significant and direct effect on computer self efficacy.

In this study the value of X^2 equals to 4.438 with the degree of freedom 2 and the value of p equals to 0.109 which is grater than 0.05. The value of x^2 / df equals to 2.291. According to Markland (2006) these values indicate a good fitness. In this research the adjusted goodness of fit index (AGFI) is 0.960, the goodness of fit index (GFI) is 0.955, and the norm fit index (NFI) is 0.976. All of them are greater than 0.9 which is indicated the data fit the model. Comparative fit index (CFI) equals to 0.966 and this value according to Knight et al (1994) indicates a good fitness. To evaluate the value of RMSEA different researchers suggest different thresholds. For example MacCallum et al (1996) suggest values less then 0.08, Steiger (2007) suggests less than 0.07, and Hu and Bentler (1999) suggest less than 0.06 (Cited in Hooper et al, 2008). The value of RMSEA equals to 0.061, therefore according to MacCallum et al (1996), Steiger (2007), Hu and Bentler (1999) the model has good fitness with the data.

Discussion

Perceived ease of use and perceived usefulness in technology acceptance models are considered as key variables. And generally these two behavioral beliefs; i.e. perceived usefulness and perceived ease of use establish the base of technology acceptance model. In all studies in the field of technology

acceptance such as Agrawal et al(2000), Shieu (2007), Yusoff (2009), Yang (2007), Pan (2003), Reid (2008), Kulviwat (2006), Sokura (2009), and Tesilios (2011) the relationship between perceived ease of use and perceived usefulness has been supported. In this study also the relationship between perceived ease of use and perceived usefulness is meaningful and significant.

Moreover some researchers like Shieu (2007), Yang (2007), Reid (2008), Kulviwat (2006), and Tesilios (2011) find that there is a significant relationship between perceived usefulness and perceived ease of use with attitude toward using technology.

Of the other results of this study is the significant relationship between computer self-efficacy and perceived usefulness. The results of path analysis show that computer self-efficacy has a significant and direct effect on perceived usefulness which is in agreement with the findings of Reid 2008, Kulviwat 2006, and Agarwal et al 2000, and is inconsistent with Pan 2003, and Agarwal et al 2000. It should be noted that researches of Kulviwat 2006, Yang (2007) report that there is a meaningful relationship between computer self-efficacy and attitude and the result of the present study is supported this relationship. This study also shows that computer self-efficacy has a direct effect on perceived ease of use. This is consistent with the result researche of Shieu (2007), Yang (2007), Agarwal et al (2000), Kulviwat (2006), Pan(2003), Yusoff (2009), Sokura (2009), Saade et al (2009), and is inconsistent with the findings of Reid (2008).There is an inverse relationship between computer anxiety and computer self-efficacy, this result is consistent with findings of Saade and colleagues (2009) and Sokura (2009).Computer anxiety not only causes low level of computer self-efficacy, but also indirectly causes negative attitudes towards the use of technology.

Saade and colleagues (2009) and Sakura (2009) also find that there is a significant relationship between computer anxiety and perceived ease of use.

And one of the hypotheses in this study confirms the relationship between computer anxiety and perceived ease of use. Finally, in this study the relationship between computer anxiety and perceived usefulness is not supported. This finding is inconsistent with the findings of Igbaria and Iivari (1995). Because of the direct effect of computer anxiety on perceived ease of use, it is suggested that training courses to enhance students' ability to use ICT are held. It should be noted that computer anxiety is the only variable in this study which has inverse relationship with other variables. It is also proposed that university publishes monthly educational magazines in different fields of technology to create a more positive attitude in students. And ultimately it is recommended In future studies in addition to computer self-efficacy and computer anxiety in technology acceptance model other variables also examine.

Table 1: Reliability Coefficients of Variables and Cronbach Alpha

Variables	X^2	df	GFI	AGFI	RMSEA	p	Cronbach Alpha
Attitude	2.858	5	0.992	0.977	0.000	0.722	0.812
Ease of use	0.729	2	0.997	0.986	0.000	0.694	0.790
Perceive ease of use	2.097	2	0.992	0.960	0.019	0.350	0.793
Computer Anxiety	16.465	14	0.953	0.906	0.041	0.286	0.871
Computer self efficacy	25.463	20	0.954	0.918	0.046	0.184	0.824

Table 2: Direct, Indirect and Total Effect of Variables

Effect	**Direct effect**	**Indirect effect**	**Total effect**	**T-Value**	P
Criterion: Attitude	-------	-------	-------	-------	-------
Predictors: Computer self efficacy	0.182	0.072	0.254	3.284	0.001
perceived ease of use	0.219	0.018	0.237	4.035	0.0001
perceived usefulness	0.138	-------	0.138	2.492	0.013
Criterion: perceived usefulness	-------	-------	-------	-------	-------
Predictors: perceived ease of use	0.131	-------	0.131	2.439	0.015
Computer anxiety	-0.066	-0.049	-0.115	-1.227	0.220
Computer self efficacy	0.245	0.022	0.247	4.571	0.0001
Criterion: perceived ease of use	-------	-------	-------	-------	-------

Predictors: Computer anxiety	-0.112	-0.023	-0.135	-2.028	0.043
Computer self efficacy	0.168	-------	0.168	3.055	0.002
Criterion: Computer self efficacy	-------	-------	-------	-------	-------
Predictors :Computer anxiety	-0.140	-------	-0.140	-2.544	0.011

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