

Employees' Intention to Use Web-based Training in South Zagros Oil and Gas Production Company, a Causal Model

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Abstract: The main purpose of this study is presenting a causal model of employees' intention to use web-based training in South Zagros Oil and Gas Production Company. The correlational study was conducted among employees of this company. The correlational study was conducted among employees of this company. The study is based upon survey approach to collect the data from 169 employees selected randomly. Path analysis and LISREL software were used to analyze the data. Results indicate that computer playfulness, Computer anxiety, and learning goal orientation have significant effects on intention directly or indirectly through perceived usefulness, perceived ease of use, perceived enjoyment, and computer self-efficacy variables. As a conclusion, Perceived usefulness had the most significant influence on intention directly, while computer playfulness had the strongest total and indirect effect on intention to use web-based training. Moreover, the final model indicated a good fitness for predicting employees' intention to use web-based training.

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1. Introduction

Twenty-first century society of today had completely changed by the World Wide Web and the internet; in fact these technologies had changed the way of life, way of working, way of recreation and the nature of human communications (Gerg, 1386). Among this, the training had not left the ouster of these technologies. Today traditional understanding of training that is training in a physical space and certain time had changed and a new arena called e-training had been formed.

The use of web-based training as a kind of e-training which promises lower cost for training in everywhere and every time are expanding at a rapid pace around the globe. It is apparent that organizations deem this method of learning not only viable, but also prefer it in many cases to meet various training needs (Rice, 2005:37).

Web-based training can be seen as a vehicle that may increase the speed, decrease the barriers, disperse the geographical range and reduce the costs of knowledge sharing within an organization and accommodate the communication between users. Nevertheless, there are also a few inhibitors that limit its adoption and implementation by organization, such as software and hardware constraints or psychological factors (Chatzoglou et al, 2009: 878).

However, although that makes primary web-based training adoption decisions, it is the individuals within the firm who are the ultimate users and consumers of the technology (Hashim, 2008: 254),

therefore, at first employees should accept this technology for their training and development.

Data about the number of employees in Iran who had actually used web-based training are not available, but it seems that this type of training in Iranian companies are still new and they use the traditional and face to face method of training for their employees. This study tries to predict employees' intention to use web-based training in South Zagros Oil and Gas Production Company by the use of TAM as one of the most common models that is used to predict user behaviour and some other factors which result from other theories and models such as learning goal orientation from Dweck's (1986) learning goal orientation theory, enjoyment from motivation theory that Davis(1992) used it in his model at first, computer self-efficacy and computer anxiety from Bandura's social cognitive theory and computer playfulness which takes its concept from Csikszentmihalyi's flow theory and Moon and Kim (2001) added it to TAM at first. Figure 1 provides the proposed model of this study.

2. Literature Review

Kim & Forsythe (2010) in their own paper, investigated the factors affecting the adoption of product virtualization technology for online shopping small consumer electronics by applying a technology acceptance model and adding two external variables (Innovativeness and Technology anxiety). Their paper results showed that perceived ease of use of PTV had a positive influence on perceived usefulness of PTV and technology anxiety also had a positive

influence on perceived ease of use and perceived usefulness. Ha and stoel (2009) predicted consumers' intention to use e-shopping by integrating e-shopping quality, enjoyment and trust into a technology acceptance model (TAM). Data collected from 208 college students of a large Midwestern university who had experience browsing and/ or purchasing products online.

Results showed that enjoyment had a positive influence on perceived usefulness. Perceived usefulness had a positive direct effect on intention to use e-shopping and perceived ease of use had a positive influence on perceived usefulness.

Aggelidis and chatzoglou (2009) in their own paper under the title of using a modified technology acceptance model in hospitals investigated personnel acceptance of information systems in Greek hospitals by adding some exogenous variables to TAM. Results indicated that perceived usefulness, perceived ease of use and self-efficacy had direct and significant influences on intention. Computer anxiety had a negative significant influence on self-efficacy. Perceived ease of use had a positive significant influence on perceived usefulness and self-efficacy had a positive significant effect on perceived ease of use. Chatzoglou et al (2009) predicted Greek employees' intention to use a web- based training process by extending the technology acceptance model and using some other related factors such as learning goal orientation, management support, enjoyment, self-efficacy, and computer anxiety. Results indicated that learning goal orientation had a significant influence on perceived ease of use, perceived usefulness, perceived enjoyment, and computer self-efficacy. Perceived enjoyment had a direct and significant influence on perceived usefulness, perceived ease of use, computer self-efficacy and intention. Computer self-efficacy had a direct and significant influence on computer anxiety. Computer anxiety had a direct and significant influence on enjoyment. Perceived ease of use and perceived usefulness had direct and significant influences on intention. Computer self- efficacy and computer anxiety had a direct and significant influence on perceived ease of use.

Peker (2010) also investigated acceptance of Hospital Management Systems in hospital in his thesis by extending the TAM. Data were collected from out of 270 Turkish government hospital personnel. The Results indicated that perceived usefulness, perceived ease of use and computer anxiety had significant influences on intention and perceived ease of use had a significant influence on perceived usefulness.

Macharia and Nyakwende (2010) also extended the TAM in his study under the title of "The

Influence of E-mail on Student's learning in Higher Educations". The result from 1092 public and private Kenyan students showed that perceived usefulness had a positive and significant influence on intention. Computer self-efficacy, perceived enjoyment and computer anxiety had positive and significant influences on perceived ease of use.

Thompson (2010) in his doctoral thesis under the title of "Assessing the Determinants of Information Technology Adoption in Jamaica's Public sector using the Technology Acceptance Model" assessed the impact of the individual (computer self- efficacy) and the organizational factors (infra-structure support and technical support) on individual's intention to use IT, mediated through perceived ease of use and perceived usefulness of IT. The Results indicated that computer self- efficacy had a significant influence on perceived ease of use and perceived usefulness. Perceived ease of use had a significant influence on perceived usefulness, and perceived usefulness and perceived ease of use had significant influences on intention to use.

Al- maghrabi and Dennis (2011) identified factors that could predict continuance intentions toward e-shopping. Results indicated that perceived usefulness and enjoyment are determinants of online shopping continuance intention, but the influence of enjoyment on intention was stronger. Shin and Shin (2011) in their paper under the title of "why do people play social network games?" examined the perceived factors which contributed to a SNG user's behaviors.

The findings showed that perceived enjoyment and perceived usefulness had significant influences on intention to use, and perceived playfulness had a significant influence on perceived enjoyment.

Terzis and Economides (2011) in their paper under the title of "The acceptance and use of computer based assessment" investigated the constructs that affected student's behavioral intention to use CBA. Data were collected from 173 participants in an introductory informatics course using a questionnaire. The result showed that perceived playfulness had a positive and significant effect on intention to use. Computer self- efficacy had a positive and significant influence on perceived ease of use and perceived ease of use also had a positive and significant influence one perceived usefulness.

Al-Harbi (2011) investigated factors that were effective on acceptance of e-learning in Saudi higher education. The result showed that Internet self- efficacy had a significant influence on perceived ease of use.

Chang (2010) in his study under the title of "task-technology fit and user acceptance of online auction" also found that perceived ease of use, perceived

usefulness and perceived playfulness had significant and positive influences on intention to use and perceived ease of use also had a significant impact on perceived usefulness.

Roca and Gagne (2008) in their study under the title of "Understanding e-learning continuance intention in the workplace: A self-determination theory perspective" proposed an extended Technology Acceptance Model in the context of e-learning service. In their proposed model, perceived playfulness, perceived usefulness and perceived ease of use had significant impacts on intention to use, furthermore perceived ease of use had a significant impact on perceived usefulness.

Bertta, kristiina and Anssi (2009) in 17th European conference on information systems investigated the role of training in decreasing anxiety among experienced computer users through a longitudinal study. The results suggested that self-efficacy had a significant influence on intention to use and perceived ease of use. Perceived ease of use had a significant influence on perceived ease of use but the negative and significant impact of computer anxiety on perceived ease of use was not supported.

Celik (2008) in his study under the title of "what determiners Turkish customer's acceptance of internet banking?" investigated customers' acceptance of internet banking by extending the TAM and adding perceived risk, computer playfulness, perceived behavioral control variables to it.

Data from 161 Turkish internet users indicated that perceived usefulness had a significant impact on intention. Perceived ease of use had an indirect impact on intention through attitude and perceived usefulness variables. Computer playfulness had a significant impact on perceived ease of use but a positive and significant impact of computer playfulness on perceived usefulness was not supported.

Hackbarth, Grover and Yi (2003) supported the role of computer playfulness and anxiety as positive and negative mediators of the system experience effect on perceived ease of use. Their results indicated that computer anxiety and computer playfulness had significant influences on perceived ease of use.

3. Methodology

This paper is a descriptive correlational one based on applied goal method of data collection and analysis. Statistical group included all employees of South Zagros Oil and Gas Production Company who were familiar with web-based training. It's estimated 300 subjects in executive and engineering departments. Random sampling was conducted and sample volume was equal to 169 subjects by Cochran formula from which 144 subjects was useful in

analysis. Three standard questionnaires were used to measure all variables of the study. Rating of three variables, computer playfulness, perceived usefulness and perceived ease of use were based on the seven-item Likert scale from 1= totally disagree to 7= totally agree and rating of other variables were based on the five-item Likert scale from

1= totally disagree to 5= totally agree. These questionnaires are consisting of:

perceived usefulness and perceived ease of use from Moon and Kim's questionnaire which are respectively included 8 and 9 items and rating of 1,3,5,6 items of ease of use variable are revised.

Computer playfulness from Ahn et al's questionnaire which is included 9 items.

Intention to use, learning goal orientation, computer self-efficacy, enjoyment, and computer anxiety from Chatzoglou et al's questionnaire which are respectively included 5,8,10,3,4 items.

In this study, Cronbach alpha was used to check the reliability of the questionnaire. The values listed in table 1. Path analysis and Lisrel software were used for the analysis of the results. The predicting and the mediating role of variables and direct and indirect influences between them had been calculated by using this method.

4. Results

With due attention to collected data, correlation matrix of variables is calculated. Correlation coefficients are presented in table 2. Since the purpose of this study is to consider predicting roles of variables and measuring their direct and indirect influences by path analysis, so the values of them are reported in table 3. The direct and indirect influences are standardized coefficient or regression (β) and total effect are equal to adding them up.

Computer playfulness ($\beta=0.17$, $T= 2.19$) had a direct and significant impact on intention to use and the research hypothesis is supported. This variable also had indirect effect on intention to use ($\beta= 0.17$) through enjoyment, usefulness and ease of use.

Computer playfulness ($\beta=0.43$, $T=5.94$) had a direct and significant influence on enjoyment and the research hypothesis is supported.

Computer playfulness ($\beta=0.21$, $T=5.94$) had a direct and significant influence on perceived ease of use and the research hypothesis is supported.

Learning goal orientation ($\beta=0.18$, $T=2.36$) had a direct and significant influence on perceived usefulness and the research hypothesis is supported. This variable also had indirect impact on perceived usefulness ($\beta=0.10$) through perceived enjoyment.

Learning goal orientation ($\beta=0.25$, $T=3.25$) had a direct and significant influence on enjoyment and the research hypothesis is supported.

Learning goal orientation ($\beta=0.35$, $T=4.31$) had a direct and significant influence on computer self-efficacy and the research hypothesis is supported.

Computer anxiety ($\beta=-0.28$, $T=2.97$) had a direct and significant influence perceived usefulness and the research hypothesis is supported. This variable also had indirect impact on perceived usefulness ($\beta= -0.13$) through computer self-efficacy and perceived ease of use variables.

Computer anxiety ($\beta=-0.24$, $T=2.94$) had a direct and significant influence on computer self-efficacy and the research hypothesis is supported.

Computer anxiety ($\beta=-0.42$, $T=5.59$) had a direct and significant influence on perceived ease of use and the research hypothesis is supported. This variable also had indirect impact on perceived ease of use ($\beta=-0.04$) through computer self-efficacy variable.

Enjoyment ($\beta=0.43$, $T=5.83$) had a direct and significant influence on perceived usefulness and the research hypothesis is supported.

Enjoyment ($\beta=0.17$, $T=1.99$) had a direct and significant influence on intention to use and the research hypothesis is supported.

Computer self-efficacy ($\beta=0.17$, $T=2.29$) had a direct and significant influence on perceived ease of use and the research hypothesis is supported.

Perceived ease of use ($\beta=0.16$, $T=2.26$) had a direct and significant effect on intention to use and the research hypothesis is supported. This variable also had indirect effect ($\beta=0.09$) on intention through perceived usefulness variable.

Perceived ease of use ($\beta=0.30$, $T=3.77$) had a direct and significant effect on perceived usefulness and the research hypothesis is supported.

Perceived usefulness ($\beta=0.33$, $T=4.18$) had a direct and significant effect on intention to use and the research hypothesis is supported.

The R^2 scores of intention to use by perceived usefulness, perceived ease of use, learning goal orientation, computer anxiety, computer playfulness, enjoyment and computer self-efficacy variables is equal to 0.38.

The R^2 scores of perceived usefulness by perceived ease of use, learning goal orientation, computer anxiety, computer playfulness, enjoyment and computer self-efficacy variables is equal to 0.36.

The R^2 scores of perceived ease of use by learning goal orientation, computer anxiety, computer playfulness, enjoyment and computer self-efficacy is equal to 0.33.

The R^2 scores of computer self-efficacy by learning goal orientation, computer anxiety, computer playfulness and enjoyment is equal to 0.24.

The R^2 score of enjoyment by computer anxiety, computer playfulness, and learning goal orientation is

equal to 0.31. Figure 2 show the measurement model of study.

Model goodness of fit

In this study, chi-square, degree of freedom, Goodness of fit index, Adjusted Goodness of fit index, comparative fit index, root mean square error of approximation (RMSEA) and Normative fit index are used to measure model fit.

The values of χ^2/DF , GFI, AGFI, CFI, RMSEA, NFI are equal to 8, 0.97, 0.99, 0.92, 0.08 and 0.98 respectively. All index values show model good fit.

5. Conclusion

The main purpose of this study is presenting a causal model of employees' intention to use web-based training in South Zagros Oil and Gas Production Company.

In this study, the effective causes of employees' intention to use web-based training are examined by integration of Technology Acceptance Model and other related variables which come from different models and theories. Furthermore, another purpose of this paper is to analyze the roles of computer playfulness, learning goal orientation, computer anxiety, computer self-efficacy, perceived enjoyment, perceived ease of use, and perceived usefulness by path analysis causal method. The results of the path analysis showed that:

Computer playfulness had a direct and significant effect on intention to use web-based training that is consistent with the results of Roca and Gagné (2008), Change (2010) and Terzis and Econmides (2011) researches. Computer playfulness had a direct and significant effect on perceived ease of use which is consistent with the results of Celik (2008) and Hackbarth et al (2003) researches.

Computer playfulness had a direct and significant effect on perceived enjoyment which is consistent with the results of Shin and Shin (2011) and Serenko (2008) researches.

Learning goal orientation had direct and significant effects on perceived usefulness, computer self-efficacy and perceived enjoyment which are consistent with the results of chatzoglou et al (2009) research.

Computer anxiety had a direct and significant effect on perceived usefulness that is consistent with the results of Kim and Forsythe (2010) research.

Computer anxiety had a direct and significant effect on perceived ease of use which is consistent with the results of Macharia and Nyakwende (2010), Kim and Forsythe (2010), Hackbarth et al (2003), chatzoglou et al (2009) researches and is inconsistent with the result of Berta et al (2009) research.

Computer anxiety had a direct and significant effect on computer self-efficacy. It's consistent with

the results of Bertta et al (2009) and Aggelidis and Chatzoglou (2009) researches.

Enjoyment had a direct and significant effect on intention to use. It's consistent with the results of Almaghrabi and Dennis (2011) and Shin and Shin (2011) researches.

Enjoyment had a direct and significant effect on perceived usefulness which is consistent with the results of Chatzoglou et al (2009) and Ha and Stoel (2009) researches.

Computer self-efficacy had a direct and significant effect on perceived ease of use which is consistent with the results of Terzis et al (2011) , Al-Harbi (2011), Bertta et al (2009), Agglidis and Chatzoglou (2009), Chatzoglou et al (2009), Thompson (2010) and Macharia and Nyakwende (2010) researches.

Perceived ease of use had a direct and significant effect on intention to use. It's consistent with the results of Thompson (2010), Peker (2010), Chatzoglou et al (2009), Roca and Gagné (2008) and change (2010) researches.

Perceived ease of use had a direct and significant effect on perceived usefulness. It's consistent with the results of Macharia and Nyakwende (2010), Thompson (2010), Bertta et al (2009), Agglidis and Chatzoglou (2009), Roca and Gagné (2008), Terzis et al (2011) and Peker (2010) researches.

Perceived usefulness had a direct and significant effect on intention to use. It's consistent with the results of Macharia and Nyakwende (2010), Al-Maghrebi and Dennis (2011), Shin and Shin (2011), Celik (2008), Ha and Stoel (2009), Chatzoglou (2010) and Peker (2010) researches.

The R² score of intention (0.38) revealed the role and importance of psychological and motivational variables in predicting employees' intention to use web-based training, moreover the final model showed the good fitness for predicting intention.

On the basis of the results, Perceived usefulness has the strongest direct effect on intention, so for increasing the employees' perception of the web-based training usefulness, it proposes that the

company provides conditions by which employees become familiar with web-based training more and more to perceive advantages and benefits of this training system more and better. Holding seminars and conferences, running training courses for acquaintance with web-based training and its advantages and benefits can create the belief and trust in web-based training methods and enhance employees' perception of this training system usefulness.

Given the significant relation between perceived ease of use and intention, for increasing the employees' perception of this training system ease of use, the company should provide technical infrastructure such as proper bandwidth, hardware and software for connecting to internet and the company's intranet. The required forecasting, making preparation and investing, and top management support can be effective in this way.

Based on significant effects of computer playfulness and enjoyment on intention, the company should design web-based training programs as it will be interesting, amusing, enjoyable, exciting and according to employee's taste so that it can enhance employees' perception of web-based training enjoyment and playfulness.

Given the significant effects of computer self-efficacy and computer anxiety on intention, running training course for learning skills in relation to computer, internet, software and hardware can be effective for increasing employees' computer self-efficacy and reduction of their computer anxiety.

Table 1. Cronbach alpha values of the variables

variable	value
Perceived ease of use	0.83
Perceived usefulness	0.91
Computer playfulness	0.78
Intention to use	0.81
Learning goal orientation	0.84
Computer self-efficacy	0.82
enjoyment	0.87
Computer anxiety	0.84

Table 2. Correlation matrix of model constructs

variables	1	2	3	4	5	6	7	8
Perceived ease of use	1							
Perceived usefulness	0.325**	1						
Computer playfulness	0.307**	0.484**	1					
Intention to use	0.361**	0.549**	0.463**	1				
Learning goal orientation	0.336**	0.329**	0.272**	0.419**	1			
computer self-efficacy	0.368**	0.222**	0.220**	0.243**	0.436**	1		
enjoyment	0.252**	0.508**	0.508**	0.460**	0.363**	0.150	1	
Computer anxiety	0.502**	-0.029	-0.150	-0.113	-0.386**	0.368**	-0.206*	1

P**<0.01 p*<0.05

Table 3. Direct, indirect, and total effects between variables

effects	Direct effect	Indirect effect	Total effect	T value
Computer playfulness	.....	.....	.....	.....
Intention to use	0.17	0.17	0.34	2.19
Perceived ease of use	0.21	.....	0.21	5.94
enjoyment	0.43	....	0.43	5.94
Learning goal orientation	.....	.....	.....	.....
Perceived usefulness	0.18	0.10	0.28	2.36
enjoyment	0.25	....	0.25	3.25
computer self-efficacy	0.35	....	0.35	4.31
Computer anxiety	.....	.....	.....	.....
Perceived usefulness	-0.28	-0.13	-0.41	2.97
Perceived ease of use	-0.42	-0.04	-0.46	5.59
computer self-efficacy	-0.24	.....	-0.24	2.94
enjoyment	.....	.....	.....	.....
Intention to use	0.17	0.14	0.31	1.99
Perceived usefulness	0.43	.....	0.43	5.83
computer self-efficacy	.....	.....	.....	.....
Perceived ease of use	0.17	.....	0.17	2.29
Perceived ease of use	.....	.....	.....	.....
Intention to use	0.16	0.09	0.25	2.26
Perceived usefulness	0.30	.....	0.30	3.77
Perceived usefulness	.....	.....	.....	.....
Intention to use	0.33	....	0.33	4.18

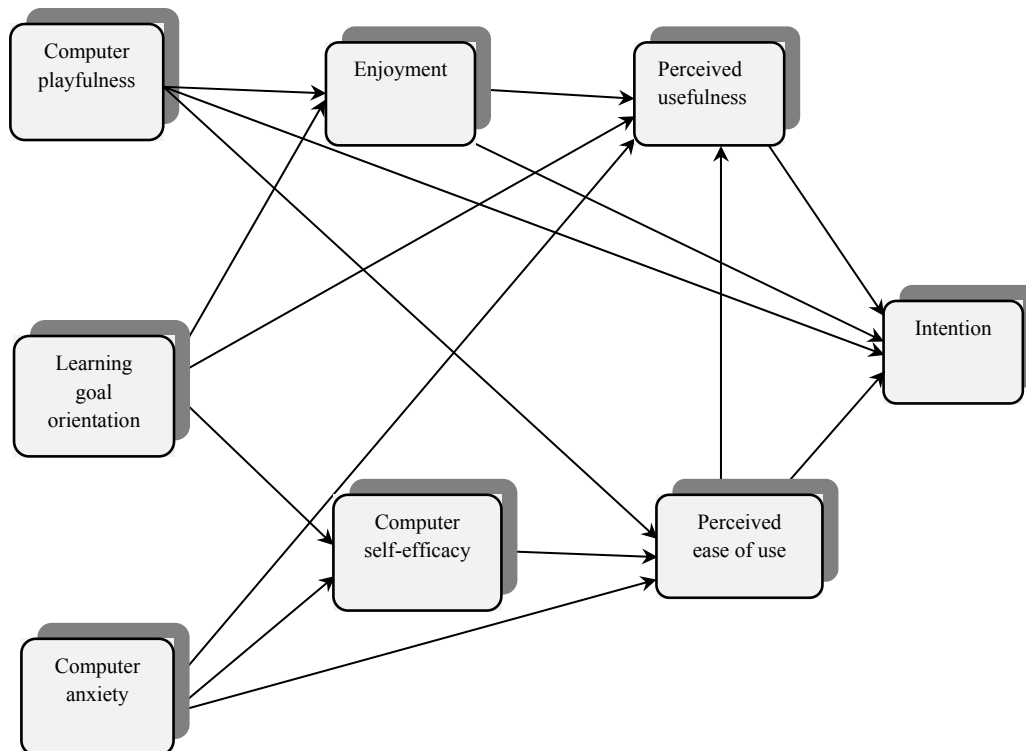


Figure 1: The proposed model of employees' intention to use web-based training

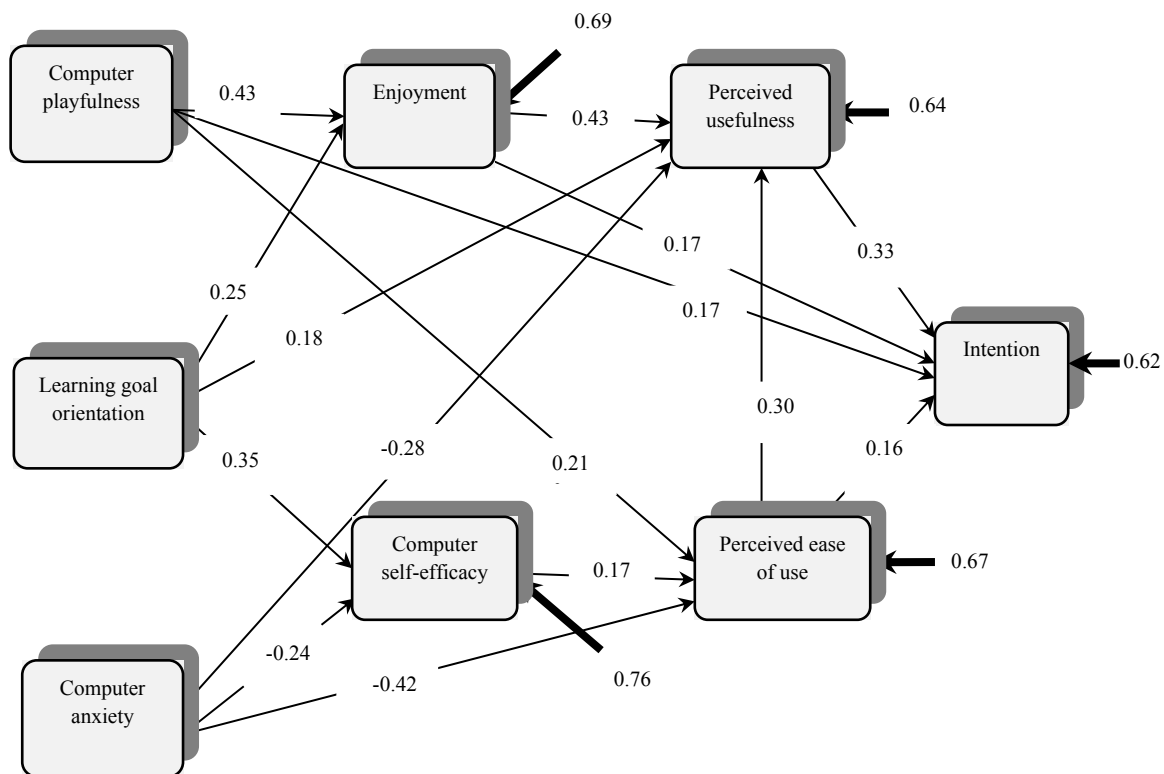


Figure 2: the measurement model of employees' intention to use web-based training

Based on significant effect of learning goal orientation on intention, the company should pay attention to individual differences of employees in order to make this training system more efficient. Finally, we propose that other effective causes of intention will be considered.

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