

THE IMPACTS OF SOCIAL INFLUENCE ON E-LEARNING USERS SATISFACTION: AN EMPIRICAL INVESTIGATION

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ABSTRACT

E-learning is a new training tool to reduce time and cost. Despite the e-learning successes have been widely studied, the critical factors affect employees' satisfaction toward e-learning still remained unclear. This study suggests qualities, facilitating conditions, and technology acceptances are three major dimensions associate users' satisfaction. We also argue that the social influence moderates the influences. A survey from two largest companies in Taiwan of different industries was performed to investigate the validation of the proposed model. The results not only confirm the effects of critical dimensions, but also verify social influence moderating some of the factors to users' satisfaction. To establish an effective e-learning system, higher levels of perceived qualities, facilitating conditions, technology acceptances, and social influence are required to achieve a higher level of satisfaction. The theoretical and practical implications of this study demonstrate the effects of research constructs with regard to satisfaction with e-learning systems.

Keywords: User Satisfaction, Perceived Qualities, Technology Acceptances, Facilitating Conditions, Social Influence, and E-learning

1. Introduction

The dramatically development of information technologies has led to the increased use of information system in learning and instruction [2]. E-learning systems are perceived as useful and satisfying by employees [3]. Offering not only lower cost but also flexibilities for users, e-learning is emerging as the paradigm of education and on-job training. Employees' e-learning systems use is significantly associated with overall job outcomes [3], that are important and desirable to explore their acceptance with understanding of their perceptions and satisfactions.

In an e-Learning environment, several factors account for users' satisfaction. Those factors can be categorized into four dimensions: Perceived Qualities, Facilitating

Conditions, Technology Acceptances, and Social Influence. This study suggests qualities, facilitating conditions, and technology acceptances are three major dimensions associate users' satisfaction. We also argue that the social influence moderates the influences. A survey from two largest companies in Taiwan of different industries was performed to investigate the validation of the proposed model. The proposed model will be useful to researchers in further developing and testing e-learning, as well as to organizations in implementing successful e-learning.

2. THEORETICAL BACKGROUND

2.1 User satisfaction

Satisfaction is defined as the consumer's judgment which a product or service's feature [15]. For IS, end-user satisfaction was defined as the overall affective attitude and cognitive evaluation of the pleasurable level towards IS application by someone who interacts with the application directly [1, 7]. As previous works, e-learning user satisfaction is referred to an affective attitude of user who interacts with the application directly. User satisfaction toward e-learning causes the continuous intention to use [18], net benefits and the effectiveness [6]. Increasing the satisfaction of employees indicates a route to the success of e-learning.

2.2 Perceived qualities

IS qualities, including information quality and system quality, play as independent variables to cause the system use and user' satisfaction, then cause the individual and organizational impacts [5, 6]. System quality was categorized in technical level during the production of information and referred to the supporting functions and processing characteristics of system. System quality can be measured by user perceived degrees of user friendliness at an IS [5]. On the other hand, information quality of IS was categorized in semantic level and indicated to the information product for desired characteristics of IS. Service quality refers to the assurance, reliability, responsiveness, empathy, and tangibility [6, 16]. For the e-learning qualities were suggested to influence the perceived satisfaction [6, 11, 13, 17, 18, 22], the first three hypotheses are the direct effects from e-learning qualities to the perceived satisfaction.

Hypothesis 1: The higher the level of perceived information quality, the higher the level of perceived satisfaction toward the e-learning.

Hypothesis 2: The higher the level of perceived system quality, the higher the level of perceived satisfaction toward the e-learning.

Hypothesis 3: The higher the level of perceived service quality, the higher the level of perceived satisfaction toward the e-learning.

2.3 Technology Acceptances

Technology Acceptance Model (TAM) performs the acceptance of information systems and information technology (IS/IT) by individuals [4, 9, 12]. TAM predicts user acceptance based on perceived usefulness (PU) and perceived ease of use (PEOU). PU is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” [4]. PEOU is defined as “the degree to which a person believes that using a particular system would be free of effort” [4]. For PEOU and PU both affect user’s attitude as satisfaction toward the system use. Thus, the following two hypotheses are suggested.

Hypothesis 4: The higher the level of perceived usefulness, the higher the level of perceived satisfaction toward the e-learning.

Hypothesis 5: The higher the level of perceived ease of use, the higher the level of perceived satisfaction toward the e-learning.

2.4 Facilitating Conditions

Additionally, to include aspects of the technological and/or organizational environment that are designed to remove barriers to use, facilitating conditions is significant role as direct determinants of user acceptance [20]. Facilitating conditions is defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system [20]. For facilitating conditions removes barriers to use that will affect user’s affective attitude as satisfaction toward the system use [20]. Thus, this study suggested:

Hypothesis 6: The higher the level of facilitating conditions, the higher the level of perceived satisfaction toward the e-learning.

2.5 Social Influence

Finally, social influence was defined as the degree to which an individual perceives that important others believe he or she should use the system [20]. Social influence contains notions that the individual's usage of technology is influenced by the way in which they believe others will view them [20]. Therefore, the influences of user satisfaction from previous variables will be moderated by others in the organization. Thus, six hypotheses of moderation were proposed.

Hypothesis 1'~ 6': The relationship between perceived qualities, perceived usefulness, perceived ease of use, and facilitating conditions to perceived satisfaction toward the e-learning will be positively moderated by the level of social influence.

3. Research Design

3.1 Measures

The measuring items relevant to research constructs were adopted from existing literature [4, 6, 13, 17, 19, 20, 21, 23] and refined based on the topic of this study. All items were measured using a seven-point Likert scales with anchors from “Strongly disagree” to “Strongly agree”. Additional nominal questionnaire is used to collect basic information about respondent characteristics as gender, age, education, and experience in e-learning. A pilot test was conducted by thirty experienced employees of e-learning to assess the semantic content and readability of the questionnaire. Final questionnaire were considered highly reliable since individual Cronbach’s alpha coefficients of the constructs were all greater than 0.7 [14].

3.2 Data collection

The data were collected from anonymous e-learning users of the two famous Taiwan firms where e-learning system was established in 2003. Both e-learning systems compound excess five hundred courses for different specializations. Around 300 employees is taken in each firm. The sum, a net response ratio is 68 %. The respondents were in age 24.6% below 40 years, 34.43% between 40 and 50, and 41% older than 50 years. Almost 60.3% had completed one college or university degree, and 23.2% had completed postgraduate degrees.

4. Analysis Result

4.1 The measurement validation

The content validities are relatively acceptable since the items of questionnaire are all adopted from the literature and have been reviewed carefully by practitioners. As Table 1, the factor analysis is used to analyze construct validities. The construct reliability are not less than 0.8, and average variance extracted (AVE) for constructs are larger than 0.5. Then, the square-root AVE of each construct is larger than correlations with other constructs [8]. Therefore, the measurement indicated a high degree of reliability as well as convergent and discriminant validities.

Table 1. Descriptive statistics and correlations of latent variables.

Construct	Mean	Std. dev.	Construct Reliability	INQ	SYQ	SVQ	PU	PE	FC	SI	PSA
Information Quality	4.84	0.99	0.93	0.91							
System Quality	4.21	1.15	0.87	0.58	0.85						
Service Quality	4.51	0.99	0.94	0.66	0.59	0.90					
Perceived Usefulness	4.91	1.00	0.91	0.62	0.38	0.44	0.87				
Perceived Ease of Use	5.12	1.00	0.92	0.49	0.48	0.45	0.45	0.89			
Facilitating Conditions	4.93	0.96	0.82	0.57	0.56	0.61	0.37	0.62	0.81		
Social Influence	4.67	1.05	0.92	0.55	0.46	0.51	0.59	0.59	0.46	0.87	
User Satisfaction	4.84	1.10	0.90	0.66	0.53	0.62	0.69	0.55	0.57	0.61	0.91

Note: Values on the diagonal are the square-root of the average variance extracted for each construct (AVE).

4.2 The Hypotheses Testing

According to Hair et al [10], the impact of moderator can be assessed via hierarchical regression analysis (HRA). The independent and moderator variables are entered into the regression and simultaneously regressed on the dependent variable with the goal of improving the fit of the regression model. Table 2 shows results of the regression: while model 1 is without moderator and Model 2 is with moderator. Model 1 in Table 2 shows that all of the independent variables were significant with p-value = 0.01, but for information quality with p-value= 0.018 and system quality with p-value=0.058. Therefore, hypotheses H3 and H4 were strongly accepted, while H1, H5, and H6 were moderately accepted. The most important construct which explains user satisfaction was perceived usefulness. Model 2 in Table 2 showed that the moderating effects were statistically significant at perceived ease of use and system quality. That is, user's social influence had a moderating effect on user satisfaction through perceived ease of use and system quality. Therefore, hypotheses H2' and H5' were accepted, while H1', H3', H4', and H6' were not supported. The reason for no moderating effect could be attributed to the characteristics of respondents. That is 88% of the sample belongs to a higher class in education status and is considered to have a positive attitude to technology adoption. Based on the results, we developed an e-learning user satisfaction model in Figure 1. Perceived usefulness exerts a stronger direct effect than perceived ease of use, facilitating conditions, and qualities on perceived satisfaction.

Table 2. Hierarchical Regression Results

Model	Dimensions (Hypotheses)	<i>B</i>	<i>B̄</i>	t-value	p-value
1	INQ (H1)	0.126	0.113	2.367	0.018
	SYQ(H2)	0.073	0.076	1.900	0.058
	SVQ (H3)	0.209	0.187	4.293	0.000
	PU(H4)	0.453	0.410	10.575	0.000
	PE(H5)	0.125	0.114	2.848	0.005
	FC(H6)	0.141	0.126	2.860	0.004
2	INQ	-0.042	-0.038	-0.179	0.858
	SYQ	0.507	0.531	2.930	0.004
	SVQ	0.395	0.354	1.993	0.047
	PU	0.509	0.461	2.753	0.006
	PE	-0.291	-0.265	-1.715	0.087
	FC	0.010	0.009	0.046	0.963
	INQ x SI (H1')	0.036	0.280	0.727	0.468
	SYQ x SI (H2')	-0.095	-0.734	-2.568	0.011
	SVQ x SI (H3')	-0.043	-0.314	-1.002	0.317
	PU x SI (H4')	-0.021	-0.166	-0.529	0.597
	PE x SI (H5')	0.094	0.716	2.519	0.012
	FC x SI (H6')	0.026	0.192	0.547	0.585

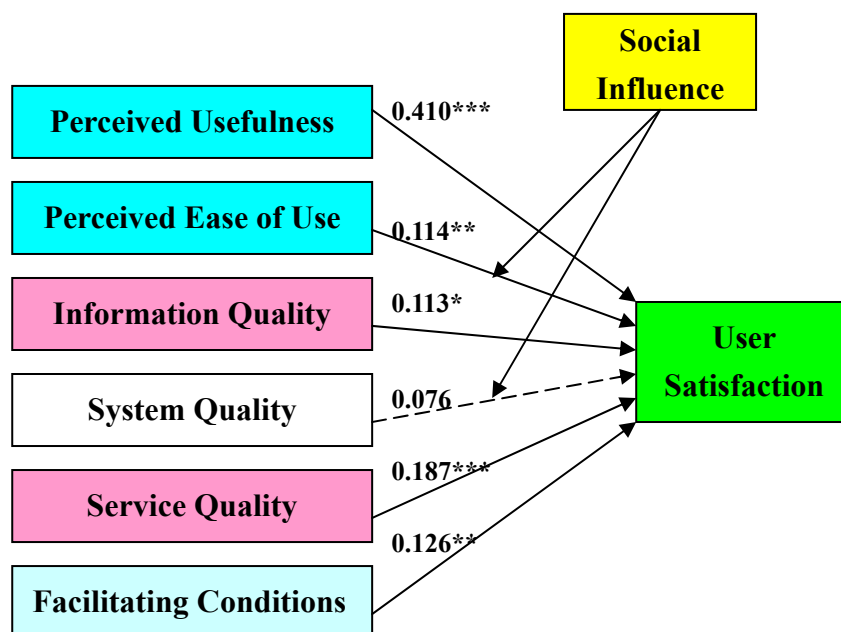


Figure 1. E-learning User Satisfaction Model

Number on path: standardized coefficient, *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

5. Conclusions

As different IT/IS environment may require the different criteria for quality measures, the previous research on IT/IS effectiveness performed in the system characteristics cannot be used directly in the employees' e-learning adoption. Built upon previous concepts on IT/IS qualities and acceptances, this study developed e-learning user satisfaction model. This model includes the following factors that influence user satisfaction: Perceived Usefulness, Perceived Ease of Use, Information Quality, System Quality, Service Quality, Facilitating Conditions and Social Influence. This finding offers several contributions to the vendors and potential customers. The employees will adopt the e-learning which can provide as many e-learning success factors as possible. Furthermore, the perceived usefulness acts the strongest direct effect than perceived ease of use, facilitating conditions, and qualities on perceived satisfaction. The proposed model will indicate e-learning vendors to make decisions as to which aspect of e-learning system needs to be focused to better satisfy their users. This study also helps the organization in the construction of an e-learning.

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