

INFLUENCE OF QUALITY ON BEHAVIOURAL INTENTION AMONG EMPLOYEES TOWARDS AN E-LEARNING SYSTEM

Thiruchelvi Arunachalam*

Abstract *The widespread proliferation of Internet technologies and applications provides incredible opportunities for the delivery of training to the corporate world, which has resulted in a wider use of e-learning system. E-learning has now become a portable and flexible new method for organisations to impart essential knowledge to its employees. Though, e-learning programmes implemented in a corporate setting have increased exponentially over the last few years, there is a reluctance among the users to use them continuously. This study has analysed the influence of information quality and system quality on the behavioural intention of employees to undergo more courses through the e-learning systems. The mediating effect of e-learner satisfaction on the above-mentioned relation is also studied. A questionnaire was developed for this study. The participants were employees of various IT companies, who had undergone at least one e-learning course through their organisation's e-learning system. 250 responses were taken for analysis. The results showed that both system quality and information quality had an impact on e-learner satisfaction, which in turn determined the behavioural intention to continuously use the e-learning system. E-learner satisfaction has partially mediated the effect of information quality on behavioural intention and the effect of system quality on behavioural intention.*

Keywords: *System Quality, Information Quality, Satisfaction, E-Learning, Behavioural Intention*

INTRODUCTION

There is an ever-increasing demand for knowledge workers who are capable of higher-order thinking and reasoning to solve intricate problems in the workplace. This again results in a need to build more cost-effective and efficient workplace learning environments to meet both individual and organisational objectives, requiring organisations to educate and train employees at multiple sites and times (Ong & Lai, 2006). The widespread proliferation of Internet technologies and applications provides incredible opportunities for the delivery of training to the corporate world. With rapidly increasing Internet usage, e-learning has now become a portable and flexible new method for organisations to impart essential knowledge to its employees (Ramayah, Ahamad & Lo, 2010).

E-learning refers to any kinds of the use of electronic devices for learning purpose. The benefits of e-learning are numerous: the participants can access the courses at their convenient time, at the place they feel comfortable, with asynchronous interactions discussion can stay more on-track, and people can get a chance to craft their responses,

there are new opportunities for groups to work together by creating shared electronic conversations and discussions, etc. (Liaw & Huang, 2013).

The number of e-learning programmes implemented in a corporate setting has increased exponentially over the last few years and e-learning has become a major form of training and development within organisations (Ho & Kuo, 2010). Companies invest huge resources to develop and implement an e-learning system for their employees. Though initial acceptance of e-learning is an important first step towards achieving e-learning success, actual success still needs continued usage. Continuance intention is the intention of employees to use the e-learning system continuously after initial usage.

Previous literature has dealt with various dimensions of understanding the behavioural intention of employees to continually use the e-learning systems. This paper specifically deals with the quality dimension of an e-learning system. This dimension indicates system quality and information quality. E-learners will expect quality assurance of the e-learning system as the quality is an important determinant of the success of e-learning systems (Lee, 2010). Through

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the e-learning systems, employees learn and get trained on their own. Since the learning process is independent of other persons, system quality and information quality are vital to users. Good system quality facilitates learning by reducing resistance to the systems; good information quality allows for a greater understanding of course content. (Chen, 2010). Research has proved that the impact of information quality and system quality on behavioural intention are mediated by e-learner satisfaction (Roca, Chiu & Martinez, 2006)

Majority of the studies have tested technology acceptance in educational settings (Van Raaij & Schepers 2008; Selim 2007; Sun, Tsai, Finger, Chen & Yeh 2008) and only a few studies have tested in work setup (Roca, Chiu & Martinez 2006; Ong, Lai & Wang 2004). Hence, a study to understand the application of technology acceptance in a working setup is warranted. Technology acceptance model is proved to work well in western (Ong, Lai & Wang 2004; Pituch & Lee 2006) and Asian settings (Van Raaij & Schepers 2008; Selim 2007; Sun, Tsai, Finger, Chen & Yeh 2008). Research in Asian settings is focused on China (Van Raaij and Schepers, 2008), Taiwan (Sun, Tsai, Finger, Chen & Yeh 2008; Ong, Lai, & Wang 2004) and United Arab Emirates (Selim, 2007). Research on the application of technology acceptance model (TAM) in India is still an unexplored area.

The rest of the paper is organised as follows: the subsequent section reviews the relevant literature to provide the theoretical basis for this study. It provides an outlook on the various aspects of motivation and how it affects user satisfaction and intention to use an e-learning system continuously. While discussing the work on all the variables considered, the hypotheses are stated with justifications. This section ends with the proposed model. Next, the methodology guiding this research is discussed which includes the sample description, questionnaire used and validity issues. Results of the study are presented subsequently, which includes the testing of hypotheses and model fit. The last section deals with a discussion of findings, contributions of the study and suggestions for future research.

THEORETICAL DEVELOPMENT

Technology Acceptance Model (TAM)

Based on the research on expectancy models, Ajzen and Fishbein (1980) formulated the theory of reasoned action (TRA). The TRA explains the relationship between attitude and behaviour. Later on, they had realised that the behaviour is not completely under an individual's control, and they proposed the theory of planned behaviour (TPB), which is an enhanced model of TRA with the inclusion of perceived behavioural control as a construct in determining behaviour. There are very few theoretical models that attempt to explain the satisfaction and intention to use a new technology

and one such model is the technology acceptance model (TAM) of Davis, Bagozzi and Warshaw (1989), which is based on the TPB. The TAM identifies the characteristics of the learner in determining the acceptance of a particular technology. It comprises two beliefs, the perceived utilities and the perceived ease of application, which determine the attitudes towards adopting new technologies. The attitude towards adoption, in turn, decides the behaviour concerning new technology. The TAM has identified the important role being played by system and information quality in deciding the intention to use a new technology. The TAM is the most widely used theory for studying users' system acceptance behaviour.

Further, Seddon and Kiew (1996) tested this model with one more variable 'user involvement'. Though Fraser and Salter (1995) supported D&M's model, Seddon (1997) extended the D&M model by demarcating behavioural and success aspects. Delone and McLean (2003) had accepted the findings of Seddon (1997) and the suggestions of Pitt, Watson and Kavan (1995) and proposed an upgraded model. Application and adaptation of D&M model to a specific domain are suggested by Urbach and Müller (2011).

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When learners have a positive attitude towards e-learning system, they will have a greater intention to use it. To understand their behaviour, we must identify the determinants of intentions (Ajzen, 2010). When learners have a positive attitude towards e-learning system, they will have greater intention to use it (Liaw, Huang & Chen, 2007).

DeLone and McLean (1992) proposed a framework for conceptualising and operationalising IS success by including six main dimensions of IS success namely – system quality, information quality, perceived use, user satisfaction, individual characteristics and organisational characteristics. They proposed that system quality and information quality

affect user satisfaction. Information quality and system quality are concerned with the quality attributes of an e-learning system and they play a major role in determining user satisfaction and continuous usage (McGill, Hobbs & Klobas, 2003; Bharatia & Chaudhury, 2004). These are the major antecedents of decision-making satisfaction which results in continuance intention to undergo courses in e-learning system (Roca et al., 2006).

Information Quality

The quality of information, derived from an information system, is a very important factor in leading people to develop a good attitude towards that information system. Roca et al. (2006) have defined information quality as the quality of the output, such as timeliness, scope and relevance, and accuracy of the information generated by an information system. When people feel that information in a system is of good quality then the chances that they will utilise that system will be higher. If the information provided an information system is unclear, flawed or imperfect, it will arise uncertainties in the user's mind about the reliability of that particular information system and possible harmful opportunistic behaviours and thus, reducing intention to use. On the contrary, an information system that provides high content quality will increase the behavioural intention of users to use the system continuously (Ramayah et al., 2010). Hence, the following hypothesis is postulated:

H1: Information quality influences behavioural intention.

System Quality

Hassanzadeh, Kanaani and Elahi (2012) have defined system quality as the performance of the system in term of reliability, ease of use, and the features and capabilities that facilitate and improve learning. Systems quality measures adaptability, availability, reliability, response time and usability. The quality of the information system is considered important in affecting the user's intention to continually use it. If employees perceive that the e-learning system is of high quality, they are likely to have high trusting beliefs about the system's proficiency, veracity and benevolence, and will develop a willingness to undergo more courses through the e-learning system (Ramayah et al., 2010). The way in which the content is presented, navigations and directions and personalisation of pages are all said to influence the satisfaction of the e-learning system (Ozkan & Koseler, 2009). Therefore, it is hypothesised that:

H2: System quality influences behavioural intention.

Mediating Effect of E-Learner Satisfaction

This relation between quality factors and behavioural intention is said to be mediated by e-learner satisfaction

because of two facts. First, the quality factors, information quality and system quality have a positive effect on e-learner satisfaction (Wang & Chiu, 2011; Ozkan & Koseler, 2009). Based on Ifinedo (2006), this may be due to certain technological characteristics that influence users' perceived behaviour and hence affect their usage and continuation intention towards e-learning systems.

Second, the e-learner satisfaction is a highly influential determinant of the behavioural intention of employees to continually use the e-learning systems. (Roca et al., 2006; Lee, 2010). Lee (2010) noted that the intention to continue using e-learning systems remains very low, particularly after initial acceptance of the system, and that satisfaction was found to be the strongest predictor for driving users' continuance intention. Many studies have examined users' e-learning continuance intentions and found that they were strongly dependent on the satisfaction users felt regarding the use of an e-learning system (Hung, Chang & Hwang 2011; Lin & Wang 2012; Roca et al., 2006; Zhang, Pablos & Zhang, 2012).

Hence, the following hypotheses are postulated:

H3: The relation between information quality and behavioural intention is mediated by e-learner satisfaction.

H4: The relation between information quality and behavioural intention is mediated by e-learner satisfaction.

METHODOLOGY

Instrument

A questionnaire was developed for this study. Information quality was measured using a five-item scale adapted from Chen (2010) and Wang, Wang and Shee (2007). The sample items include 'e-learning platform provides correct and accurate information', 'e-learning platform provides complete and sufficient information' and 'e-learning platform provides precise and clear information'. System quality was measured using a seven-item scale adapted from Ozkan and Koseler (2009). Sample items include 'In e-Learning platform I can easily navigate where ever I want', 'e-Learning platform is easily accessible' and 'I am informed about new courses through e-learning platform'. E-learner satisfaction was measured using a five-item scale adapted from Sun, Tsai, Finger, Chen and Yeh (2008). Sample items include 'I am satisfied with my decision to take the e-learning course', 'I would be glad to take another course through e-learning platform' and 'I feel that e-learning platform serves my needs well'. The behavioural intention was measured using a five-item scale adapted from Liaw (2008) and Lee and Lee (2008). Sample items include 'I will take as many courses through e-learning platform', 'I can intend to use e-Learning platform in near future also' and 'I will recommend other people to use e-learning platform'. All items were measured

using the five-point Likert Scale, with 5 being 'Strongly Agree' and 1 being 'Strongly Disagree'.

Data Collection

The participants were employees of various IT companies, who had undergone at least one e-learning course through their organisation's e-learning system. The survey questionnaire along with a consent letter was sent to 600 employees of various IT companies in Chennai. 268 responses were received resulting in a response rate of 45%. Of the received 268 responses, only 250 were usable.

DATA ANALYSIS

Participants

The details of the participants are given in Table 1.

Table 1: Participants

Number of Respondents		%
Gender		
Male	107	43.33
Female	143	56.66
Experience		
till 5 years	80	32
5-10 years	80	32
more than 10 years	90	36
Education		
Under Graduate	193	77.2
Post Graduate	67	22.8

Majority of the respondents were undergraduates. More female participants took part in this study.

Reliability and Descriptive Statistics

Inter-rater reliability of the items used to measure the study variables was calculated using the Cronbach's alpha. The descriptive statistics of the study variables are given in Table 2.

Table 2: Descriptive Statistics

Variable	Mean	Standard Deviation	Cronbach's Alpha	Number of Items
System Quality	3.1809	1.0371	0.8753	7
Information Quality	2.8952	1.0651	0.8952	5
e-Learner Satisfaction	3.0128	1.0713	0.9130	5
Behavioural Intention	3.0712	1.0781	0.9062	5

All the variables were measured using a five-point scale. The mean value for information quality is less than the midpoint value of 3. Hence, the e-learning system's information quality needs to be improved. The mean values of satisfaction and continuous usage intention or behavioural intention are slightly above the midpoint value of 3. Hence, there is a need to improve the satisfaction level of employees towards the e-learning system for making it successful.

Inter Correlation

The Pearson correlation coefficient between information quality and system quality is found to be .641, indicating that the degree of inter-correlation between information quality and system quality is less.

Multiple Regression on Behavioural Intention

Multiple regression analysis is carried out to test the hypotheses that comprise the direct effects of information quality and system quality on behavioural intention to use. The analysis has revealed that information quality and system quality are found to have significant impacts on behavioural intention to use e-learning system, explaining about 64% of the variability.

Table 3: Result of Multiple Regression on Behavioural Intention

Variables	Standard Beta	t-Value
Information quality	0.515*	10.359
System quality	0.366*	7.364
R ²	0.640	
Adjusted R ²	0.638	

* p < 0.001

Mediation Analysis

The mediation effect of e-learner satisfaction on the relationship between the independent variable and behavioural intention is measured using the Baron and Kenny (1986) and bootstrapping was done using INDIRECT macro designed by Preacher and Hayes (2008). Hypothesis 3 (H3) and hypothesis 4 (H4) are tested and the results are given in Table 4. Diagrammatic representation of H3 is given in Fig. 1 and of H4 is given in Fig. 2.

H3: The relation between Information quality (IQ) and Behavioural intention (BI) is mediated by e-learner satisfaction (S).

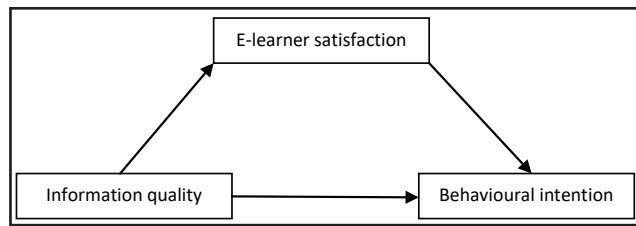


Fig. 1: Mediating Effect on the Relation Between Information Quality and Behavioural Intention

H4: The relation between System quality (SQ) and Behavioural intention (BI) is mediated by e-learner satisfaction (S).

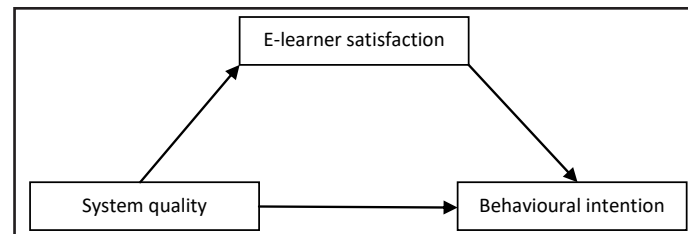


Fig. 2: Mediating Effect on the Relation Between System Quality and Behavioural Intention

Regression coefficients for each mediated path are reported in Table 4.

Table 4: Mediated Paths

Model Tested	Path a	Path b	Path c	Path c'	Lower Limit	Upper Limit
IQ – S – BI	0.7351*	0.8594*	0.7587*	0.1269*	0.5771	0.6928
SQ – S – BI	0.6787*	0.8647*	0.7235*	0.1366*	0.5671	0.6966

* $p < 0.001$

The first hypothesised pathway from information quality to e-learner satisfaction and then to behavioural intention is supported. E-learner satisfaction has partially mediated the effect of information quality on behavioural intention. There is 83.27% reduction in strength of the relationship between information quality and behavioural intention when e-learner satisfaction is taken into account. The second hypothesised pathway from system quality to e-learner satisfaction and then to behavioural intention is also supported. E-learner satisfaction has partially mediated the effect of system quality on behavioural intention. There is 81.11% reduction in strength of the relationship between system quality and behavioural intention when e-learner satisfaction is taken into account.

DISCUSSION

Quality plays a lead role in the success of e-learning system. From the research, it is clear that information quality and system quality of e-learning system are having a great influence on the behavioural intention of employees to continuously take up more courses through the system. It is also obvious that the influence of quality factors on the intention is partially but strongly mediated by e-learner satisfaction. Therefore, organisations should concentrate on developing e-learning systems with enhanced information quality and system quality, which would satisfy employees after using the system. Organisations need to understand the extent and the quality of information required by the employees and should enhance the e-learning system, to make it more interesting and valuable, which would result in satisfaction towards the e-learning system. This satisfaction would result in greater behavioural intention among employees to continuously

use the e-learning system, which makes its implementation meaningful. To improve system quality, interactiveness and doubt clarification system can be enhanced. To get the doubts clarified immediately, there can be a feature in the system, which highlights the communication link to the concerned person who can clarify the doubts, rather than waiting for a response. Quality of the e-learning platform can be improved to enhance the number of e-learning platform users. To improve information quality, e-learning platform should provide complete and sufficient information. The information should be colourful, catchy, precise and clear. The information should also be presented in such a way that employees can extract the solutions for their problems.

An examination of the cause-effect relationship between system quality, information quality and satisfaction, and continuance usage intention regarding e-learning platform brings a new understanding to the field of instructional technology in Indian companies. The findings can be used to enhance the system and information quality of an e-learning system to achieve continuous usage and success of the e-learning platform. However, the study has limitations. The sample was limited to IT companies; hence, the study results may not be effectively applicable for other work settings such as manufacturing organisations. Further studies can attempt to test the applicability of the results in other industries.

CONCLUSIONS

E-learning has been widely adopted by many companies to expand their training to employees who were working in different parts of the world. The number of e-learning programmes implemented in a corporate setting has increased

exponentially over the last few decades and e-learning has become a major form of training and development within organisations. Though the e-learning market is growing, the usage of e-learning aids is limited. Little is known about why employees are reserved in using it, and why some users stop the usage after initial experience. This study has thrown some light on the continuous e-learning system usage intention of employees from the perspective of system and information quality. Results of this study highlight the importance of satisfaction with the system and information quality in determining the usage of the e-learning system.

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