FACTORS INFLUENCING THE ADOPTION OF E-LEARNING IN EDUCATIONAL AND CORPORATE SECTORS

S.S. Jabeen

Birla Institute of Technology and Science, Pilani, Dubai Campus  
(UNITED ARAB EMIRATES)

Abstract

Global market for e-learning has witnessed rapid growth due to the growing need for flexible type of education systems. Advances in technology and increased need for diversified and easily accessible systems of learning have led to the rise of e-learning systems. E-learning to quite an extent has replaced conventional classroom teaching methods in educational institutions and training methods used in organizations. It has brought about a significant change in the process of learning by providing new opportunities and ensuring accessibility to learners. Although e-learning system has assumed greater importance in the recent years in the United Arab Emirates, there is not much evidence of empirical study of factors governing student adoption of this system. A clear understanding and investigation of the factors that influence the learner adoption and acceptance process are required for an effective implementation of e-learning system. Therefore, the study aimed at identifying the factors that encourage or limit the learner to adopt an e-learning system. A model for behavioral intention to use e-learning has been designed based on the previous researches and the findings of the study.

Keywords: E-learning, technology, adoption, acceptance.

1 INTRODUCTION

Information and communication technology (ICT) usage in the educational and corporate sector has grown massively due to the increasing pace of globalization in the 21st century. This can be attributed to the increasing demand of e-learning which in turn has completely revolutionized the teaching and learning processes. To be more precise, e-learning combined with new educational techniques, strategies and technology has changed the way one educates and trains.

Although for centuries teachers have been delivering lectures in a given classroom setting through face-to-face interaction with the learners and offering immediate instruction and feedback, the general belief that traditional lecture-based instruction in schools and universities will give rise to effective learning and desired outcome is gradually declining. In the fiercely competitive global market of present day, and so much of advancement in information and communication technology (ICT), learning through the use of electronic media is bound to replace the traditional method of providing instruction and become widespread in both the education as well as the corporate sector.

E-learning, though growing at a fast pace, is a relatively new experience involving a complex integration of teaching strategies, instructional design and computer technologies. It is a pioneering approach for providing a learner centered, interactive, well designed, and facilitated learning environment to any learner at any place and time by employing the resources and attributes of different digital technologies together with other types of learning materials appropriate for open flexible and distributed learning environment [1].

Earlier, the type of students enrolled in universities was different from what it is today. In earlier times, students attending undergraduate programmes were usually dedicated full time to learning environment and in the range of 18-23 years old, but now this has changed. With internet services making educational instruction easily accessible, a large number of working professionals are opting for online courses compatible with their needs and lifestyle.

The United Arab Emirates' e-Government programme launched as part of the UAE Government Strategy 2011-2013 is a major initiative that is responsible for developing, implementing and maintaining the e-Government programme at the federal level in the UAE [2]. The aim of the electronic-government is not only to ease government works and make government services effective, but also to facilitate various e-learning projects such as Hamdan Bin Mohammed Smart University. This has also led to the demand for leaders with required skills, knowledge, confidence and qualities. To cater to this demand, the educational institutions are encouraged to launch flexible and diverse e-learning programs in the country.
Inadequate number of faculty and staff members, need to continue education, and cultural background of male and female students has accelerated the pace of e-learning in the UAE [3]. Although e-learning system has assumed greater importance in the recent years in the United Arab Emirates [4], there is not much evidence of empirical study of factors governing student adoption of this system [5]. A clear understanding of learner adoption and acceptance process is required for an effective implementation of a system [6]. To create an effective, interactive, easily accessible, and distributed e-learning system, institutions need to understand and investigate the factors that influence the adoption and acceptance of e-learning system [7].

Therefore, the main objectives of this research were to:

- Identify the factors considered by the learner while selecting an e-learning course.
- Examine the influence of identified factors on the acceptance of an e-learning system.
- Develop a model for the adoption of e-learning.

2 THEORETICAL BACKGROUND

The advances in technology and growth in economy has increased the demands of the end-users to expand and diversify the education systems. The changing global trends have made it essential for the learners to constantly grow their knowledge and skill and develop their critical thinking. They need a teaching-learning process that helps them acquire the necessary knowledge and skills. According to Cruthers [8], e-learning's significance lies in its wide recognition as a means of enhancing accessibility and quality of teaching-learning process. It is a technology allowing access to education in remote areas if internet is available. According to researchers, e-learning develops communication and critical thinking skills, promotes autonomous learning and problem solving, and supports flexibility in time management [9], [10], [11].

Sharpe and Benfield [12] in their research focused on the experience of e-learners in higher education in UK. Their research compared blended and distance learning and highlighted the inconsistency in the experience of the e-learners. It also showed how e-learning impacts learners and institutions. The following factors were pointed out by Sharpe and Benfield [12]:

- Inconsistent perceptions of students
- Need for elucidation by the instructor of the objectives of online tasks
- Significant change in the instructor's role
- Significant change in the efforts made by groups online
- Need to access course materials and key contacts online by the learners
- Need for induction of learners into e-learning environment
- Learners' concern about time

2.1 Factors Influencing Learner’s Acceptance

During the past two decades, researchers in IT and allied areas have been using intention-based Technology Acceptance Model (TAM) to identify the factors that determine computer usage. Technology Acceptance Model (Fig.1), which is an adaptation of the Theory of Reasoned Action, has been the most widely used model [13] developed to investigate and understand the factors affecting the acceptance of computer technology. Although there are several other theories such as the Theory of Planned Behaviour (TPB) [14], the Unified Theory of Acceptance and Use of Technology (UTAUT) ([15], [16]), Van Slyke, Belanger and Haynes have stated that 'the TAM has probably generated more empirical evidence in explaining technology acceptance than any other approach' (as cited in [17], p. 4), and according to Dishaw and Strong 'previous research has suggested it could be an appropriate model to examine a student’s acceptance of e-learning applications over a period of time' (as cited in [17], p. 4). However, the application of TAM in the domain of e-learning has been quite recent [18], [19]. The current study, through the use of the TAM, investigates factors affecting the acceptance of e-learning system.
According to the TAM, there are three factors: perceived ease of use, perceived usefulness, and subjective norms that affect the students’ attitude toward using the e-learning system. However, researchers need to pay attention to how other factors affect behavioral intention, since it may not be fully reflected by perceived ease of use and perceived usefulness. These other factors may vary with the technology, target users and context, which include external influences [20]. Based on the literature survey, the following factors have been identified for the study.

2.1.1 Perceived Ease of Use

Perceived ease of use refers to the degree to which a prospective user believes learning to use a technology to be free of effort. This means that a higher technology ease of use would result into a higher acceptance of technology by users [21]. Perceived ease of use of technology can lead to higher learning performance, because of the central role of technology in E-learning [16].

2.1.2 Perceived Usefulness

Perceived usefulness is defined as the extent to which an individual believes that the use of technology will improve his or her performance within an organizational context [22].

While perceived usefulness impacts the intention and attitude directly [23], perceived ease of use affects them indirectly through perceived usefulness. It is also important to note here that these two factors are the product of a number of external variables as mentioned below.

2.1.3 Subjective Norms

A subjective norm is defined as an individual’s perception about what significant others think he or she should or should not perform the behaviour in question [24]. A subjective norm is also referred to as a person’s perception of the social pressures put on him or her to perform the behaviour in question [25]. Research results have shown varying effects of subjective norms from significant direct [14], [26], [25] to indirect [27] on a person’s intention. It has been found to be from completely insignificant [28] to somewhat significant in mandatory settings [27]. It has also demonstrated to influence perceived usefulness.

2.1.4 Internet Experience

Experience in technology influences an individual's perception and thus intention. Research indicates that older students with more experience use e-learning systems more than young students with less experience [29]. Also, technical skills and ability to navigate the internet determine the success in learning because they influence an individual’s perceptions of ease of use and usefulness of that technology [30]. Studies highlight direct effect of Internet experience on perceived usefulness and ease of use.

2.1.5 System Interactivity

Interaction is an important element of a learning process and can take place between faculty and students and among students themselves, either in synchronous or asynchronous mode. An important aspect of these interactions is that they give rise to collaboration in learning. Technologies promoting learner interaction have been the main cause of development of e-learning over the years. The system interactivity is expected to influence students’ decision of choosing e-learning systems. Researchers argue that system characteristics have a direct impact on perceived usefulness and ease of use [31].
2.1.6 Self-Efficacy

Self-efficacy is an important concept in social learning theory and is interpreted as an individual's belief in his or her ability to succeed in specific situations [32]. It is one's belief in one's capability to perform certain behaviours or one's personal beliefs about one's ability to perform certain tasks successfully. A review of literature reveals that perceptions of self-efficacy affect choice of behaviours to be undertaken, persistence in attempting certain behaviours, and the person's attainments of actual performance in terms of those behaviours [33], [34], [35]. Self-efficacy in e-learning is reflected as a student's strong sense of his or her capability to perform certain learning tasks using a computer in diverse situations. A learner who has self-confidence in his or her ability to deal with a technology is likely to have a more positive perception of its ease of use and usefulness and is expected to be more inclined to accept and use the system.

2.1.7 Technical Support

Technical support refers to the people assisting the learners with computer hardware and software products. Its availability plays an important role in the acceptance of e-learning [36], especially in the beginning stage of technology adoption. Researchers have found that perceived ease of use is often determined by external control and support as a facilitating condition, and also that e-learning projects without technical advice and support have not been successful [37], [38], [39]. Therefore, researches have extended TAM to include technical support as an external variable that has an effect on perceived usefulness as well.

3 METHODOLOGY

As indicated in the earlier sections, the current study focused on the identification of factors that motivated learners to choose and accept e-learning in educational and organizational settings. A questionnaire including the following points was prepared to survey the target respondents in both the educational institutions and business organizations:

- How aware and knowledgeable is the respondent about e-learning
- How keen are they to learn online
- What are the factors encouraging and limiting their choice of courses
- What are the types of courses preferred for e-learning
- How frequently they use e-learning
- What are the technologies and facilities available to the learners
- What is the mode of e-learning adopted by the institutions and organizations
- What are the benefits and drawbacks of e-learning
- How effective is e-learning in comparison with conventional form of learning

It must be pointed out here that separate survey questionnaires were prepared for the respondents of education and corporate sectors. An online survey tool was used for this purpose and the questionnaires were administered to the learners of the two sectors across the United Arab Emirates.

The questionnaires distributed among the learners of educational institutions included 27 questions based on the general information about their views, experiences, components, frequency and percentage of usage of e-learning, challenges faced by them and their institutions, effectiveness, and benefits and barriers of e-learning systems. However, the questionnaires administered to the organizational members comprised of 26 questions which were mostly similar to the ones used for institutions, but also included questions based on the organizational purpose and financial goals for which e-learning was used in the organizational settings.

Out of 30 respondents who were surveyed in the educational settings, 21% were in the range of 17-24 years old, 49% belonged to the age group 25-22, and the remaining 30% were between 34-40 years old. Only thirty percent were women respondents whereas the others were men. Also, 60% of these learners used e-learning for undergraduate or postgraduate courses whereas the remaining for training or professional courses.

Out of 26 participants surveyed in the organizations, 37.5% were aged 25-33 years old whereas 31.25% were in the range of 17-24 and 34-40 years each. Here, 44% were women learners and the remaining
were men. Nineteen (19) full time employees and 7 full time students participated in the survey, out of which 40% defined e-learning as learning a course online using latest technologies. In organizations, 65% of the learners used electronic mode of learning for training and 21% opted for it for professional courses, and only a small percentage (14%) learnt undergraduate and postgraduate courses through this mode of learning. This trend of e-learning usage was quite different from the one prevailing in the institutions.

4 RESULTS

The key findings of the current study shed light on the factors that impact e-learning and the challenges faced by the learners while undertaking e-learning.

Statistical analysis was used to test the influence of the seven identified factors on the adoption of e-learning. With the help of Chi-square tests, the data taken from the institutions and organizations were analyzed separately. The results are as follows.

Table 1. Influence of the Identified Factors on Acceptance of E-Learning in Educational Institutions.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Acceptance of E-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>78</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>71</td>
</tr>
<tr>
<td>Subjective Norms</td>
<td>69</td>
</tr>
<tr>
<td>Internet Experience</td>
<td>74</td>
</tr>
<tr>
<td>System Interactivity</td>
<td>85</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>83</td>
</tr>
<tr>
<td>Technical Support</td>
<td>82</td>
</tr>
</tbody>
</table>

Table 1 given above shows the result of a survey conducted to determine the influence of the identified factors on the acceptance of e-learning by the users in the educational institutions. The chi-square statistic is 1.08. The P-Value is 1. The result is not significant at p < 0.05. Using the Chi-square statistics, it is inferred that these variables have a positive effect on the adoption of e-learning. They increase the possibility of accepting and adopting the e-learning systems by the individuals. The variation in the extent of influence that these variables have on the behavioral intention to use e-learning is not very significant. However, system interactivity which facilitates collaboration and involvement of the learners has turned out to be the strongest predictor of this behavioral intention.

Table 2 below shows the effect of the variables on the behavioral intention to use e-learning by the employees in organizations. The chi-square statistic is 1.97. The P-Value is 1. The result is not significant at p < 0.05. Using the Chi-square statistics, it is inferred that these variables have a positive effect on the adoption of e-learning. In organizations self-efficacy or self-confidence plays the most significant role in motivating the learners to use e-learning, closely followed by system interactivity and technical support.

Table 2. Influence of the Identified Factors on Acceptance of E-Learning in Organizations.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Acceptance of E-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>80</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>73</td>
</tr>
<tr>
<td>Subjective Norms</td>
<td>60</td>
</tr>
<tr>
<td>Internet Experience</td>
<td>74</td>
</tr>
<tr>
<td>System Interactivity</td>
<td>85</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>87</td>
</tr>
<tr>
<td>Technical Support</td>
<td>84</td>
</tr>
</tbody>
</table>
The study also aimed to design a model for the acceptance of e-learning. As discussed earlier, there are various existing models of acceptance, but not a single model which can be applied universally. In the background of the above and on the basis of the research conducted, an attempt has been made to develop a model of acceptance of e-learning which is applicable to both educational institutions and the corporate houses. This model is an extension of the TAM and also includes the five external variables identified by the study. These five variables have been found to affect the acceptance of e-learning and thus needs to be integrated to the model. Of these five, the subjective norms have a direct influence on the intention to use, whereas the other four indirectly influence the intention through the perception of easy to use and of usefulness. Based on the current study and earlier researches, the following model (Fig. 2) has been designed.

![Figure 2. Modified Technology Acceptance Model.](image)

5 CONCLUSIONS

During the course of developing this paper no recorded research was found that specifically explores the factors influencing the choice and acceptance of e-learning among learners within the UAE. The current research has thrown some light upon the factors affecting the behavioral intention to use e-learning with the help of literature review and a sample survey in the UAE. On the basis of the identified factors, a model has been proposed for the service providers to modify their strategies to increase the number of users. Also, several suggestions have been given in order to improve the enrollment for e-learning courses in institutions and organizations of the UAE.

E-learning is interpreted differently by different people. Majority of users in different institutions interpreted it as distance learning to be used for undergraduate or postgraduate courses, while those in organizations categorized e-learning as a mode of learning via online relying on latest forms of technology to be used for training courses.

Several external factors have emerged across the research including variables such as subjective norms, internet experience, system interactivity, self-efficacy and technical support which influence the intention to use and acceptance of e-learning.

System interactivity often influences the level of student involvement and engagement. E-learning classes like the traditional ones demand a high level of student interaction and involvement that may vary even within a single university by course or department. Therefore, it is highly recommended to use technology which fulfills the demand of interaction among all parties involved in e-learning system. Self-efficacy which is a personal factor is consistently identified as a very important factor for continuing in the e-learning environment. Therefore, it is recommended to promote self-efficacy within students. A learner’s decision whether to persist in an e-learning environment or not is also influenced by environmental factors such as family support, organizational support, and technical support. Internet experience also influences a learner’s decision to persist or drop an e-learning course.

In the light of the above discussion, we may conclude by saying that:

1. Learners with family and technical support are more likely to opt for and persist in an e-learning environment.
2. Learners who have high internet experience will more frequently use e-learning systems.
3 Learners who are self-confident with perceived ability to sustain an e-learning system without help are more likely to adopt the system.

4 Learners who find e-learning systems offering high level of interaction and involvement will become users.

5.1 Limitations
Although the study has enumerated key findings and results, the sample size is too small to make valid conclusions. Moreover, the participants surveyed belonged to limited number of institutions and organizations. Also, a more suitable empirical analysis other than chi-square test needs to be carried out to test the proposed model.

5.2 Future Work
Future work in the given field can explore the ways to make e-learning more user-friendly and accessible to the learners in various settings. Researchers should focus on providing more e-learning solutions to the employees of different organizations which motivates them to opt for e-learning to acquire the required skills. They should also focus on the course design in addition to the mode of delivery in online environment.

ACKNOWLEDGEMENTS
The author would like to acknowledge the help extended by different individuals belonging to different educational institutions and organizations towards the collection of data.

REFERENCES


