THE MOST, LEAST AND MODERATELY INFLUENCING FACTORS OF TEACHING TECHNOLOGY ADOPTION IN MANAGEMENT EDUCATION IN INDIA

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ABSTRACT

Teaching Technology especially E-Learning is the use of technology to enable people to learn anytime and anywhere. E-learning refers to the use of electronic media and information and communication technologies (ICT) in education. E-learning is broadly inclusive of all forms of educational technology in learning and teaching. E-learning is broadly synonymous with virtual learning, online education, technology enhanced learning, computer based training. The main objective of this study is to determine the factors affecting adoption of Learning Management System (LMS) by MBA students. Data were collected in the form of a structured questionnaire from the MBA students of deemed universities in Tamil Nadu who have used Learning Management System for at least one of their courses in their learning. A total of 506 respondents were surveyed across 11 deemed Universities. The results showed that the factors determining the adoption were differently rated by the students. The results also showed that the most important factors leading to the adoption of LMS was compatibility, voluntariness and relative advantage.

Keywords: Adoption, E-learning, LMS, ICT, Diffusion of Technology, Adoption of Innovation.

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1. INTRODUCTION

Globalization and technological change—processes that have accelerated in tandem over the past fifteen years—have created a new global economy “powered by technology, fueled by information and driven by knowledge.” The process of globalization is technology - driven and knowledge – driven. Therefore, the success story of economic reform policies depends
only upon the competence of human capital available in the nation. The emergence of this new global economy has serious implications on the nature and purpose of educational institutions. As the half-life of information continues to shrink and access to information continues to grow exponentially, schools cannot remain mere venues for the transmission of a prescribed set of information from teacher to student over a fixed period of time. Rather, schools must promote learning to learn, i.e., the acquisition of knowledge and skills that makes possible continuous learning over the lifetime. According to futurist, Alvin Toffler in his book “Future Shock”, “The illiterate of the 21st century, will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”

ICT stand for information and communication technologies and are defined, for the purposes of this primer, as a “diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information.” These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony.

Although, most commonly associated with higher education and corporate training, e-learning encompasses learning at all levels, both formal and non-formal, that uses an information network—the Internet, an intranet (LAN) or extranet (WAN)—whether wholly or in part, for course delivery, interaction, evaluation and/or facilitation.

2. ADOPTION OF E-LEARNING

“The information revolution has forced most developed economies into an era which demands effective utilization of information and communication technologies in universities and institutions to prepare knowledge workers for the knowledge economy” (Drucker, 1998). The technology is oversold and under used with respect to education. In order to understand the promise of technology in classroom and to save education, this study has been undertaken to analyze the current ICT (Information and communication Technology) scenario in classrooms and to promote LMS usage. It is important to acknowledge their opinion about new educational technology because university teaching is also undergoing technological revolution (Johnston and McCormack, 1996). In recent years there has been an increased interest in the topic of technology used in the classroom and awareness of how technology is adopted as an innovation (Holcombe, 2000). The introduction and successful adoption of new technology, particularly the e-learning has created an interest among researchers because this technology would lead to the modification of traditional classroom teaching. As an answer to the above challenge, E-learning has just begun to make a significant impact on educational delivery; undoubtedly its role will exponentially expand in the years ahead. E-learning has often been pursued out of the convenience and flexibility it offers to learners.

3. REVIEW OF LITERATURE

Miftqachul huda Et al (2018) portrays the importance of digital devices like tablets, smart phones, and laptop have become increasingly raised and utilized I higher education. According to him current trends on ICT (Information and Communication Technology) used in education begin widely with focusing on teaching and learning. In the words of Quoc Trung Pham (2018), E-Learning is the application of innovative ICT platforms and internet in education to make it easier, spacious and more efficient. Advantages of e-learning are recognized, but with a doubt of its impact on learning attainment and knowledge transfer are which are not confirmed clearly.

S. Raymond Ting and Et. Al (2018) expresses that China has advanced in their economic development and have expanded its education by developing and adopting e-learning through
technologies. Allan and Will (2008) portrays that TAM was used as a core framework to predict and understand teachers’ technology use and acceptance. In the words of Bostjan Sumak and et al (2011), most of the Technology Acceptance Models (TAM) were used to study the casual relationships proposed by the technology acceptance theory.

His-Peng Lu (2005) revealed that the users’ perceptions of the relative advantage and compatibility of e-learning websites exhibited significant relationships with their adoption intentions.

Christina Keller (2009) in her study found that self-efficacy had significant influence on perceived ease of use and perceived usefulness.

In the article by (Md.Idris, 2009) the author tries to investigate University Utara Malaysia (UUM) lecturer’s perception of the decision regarding adopting e-learning as a teaching tool. The study found that academic specialisation is significantly related to the adoption decision; relative advantage and trialability was positively related to the adoption of e-learning.

In the article (Sima Sayadian, 2009), the author tries to investigate the factors that influence the adoption and integration of Web-Based Instruction (WBI) by English language university lecturers in Malaysia. The study intends to: a) investigate the relationship between the five attributes of the Diffusion of Innovations model (relative advantage, compatibility, complexity, trialability, and observability) and WBI adoption and integration by TESL (Malaysian) English language lecturers.

At Brunel University in England, Ali Tarhinia et al., (2013) used the extended technology acceptance model (TAM) ) found that computer self efficacy (SE) and facilitating conditions (FC) were all having a significant positive influence on the adoption and usage of blackboard system.

4. OBJECTIVES OF THE STUDY

➢ To find the most influencing factors that determines the adoption of e-learning in deemed universities.
➢ To find the moderately influencing factors that determines the adoption of e-learning in deemed universities.
➢ To find the least influencing factors that determines the adoption of e-learning in deemed universities.

5. SCOPE OF THE STUDY

➢ The study is limited to students who have used LMS (Learning Management System) in their MBA program.
➢ The study is confined to Deemed universities in Tamil Nadu who use LMS for at least one of the subjects in their MBA.

6. LIMITATIONS OF THE STUDY

➢ The study depicts the present scenario in the deemed universities of Tamil Nadu and hence the result may not be applicable to another period of time.
➢ The study is limited to 506 students.
➢ Answer to the questionnaire depends upon the beliefs and prejudices of the respondents.
➢ The present study is restricted to information collected about the e-learning / learning management system with the help of questionnaire.
7. METHODOLOGY

7.1. RESEARCH DESIGN
An exploratory research was conducted to find out the factors determining the adoption of LMS. The first step involved in the research was to create a pool of adoption facilitating factors. This was done by accessing the literature. This pool was converted into a structured questionnaire for the purpose of primary data collection. The five-point Likert’s scale was used for this purpose. The language was kept very simple so that the respondents could accurately understand the question. The sequence of questions was such that it was easy for the surveyor to move from one question to the next. The questionnaire was pilot tested for content, sequence and wording. Minor changes were made, and the revised questionnaire was used for conducting the study. The secondary data sources used are reports, journal articles, conference proceedings and past thesis that were taken from the web and e-resources like EBSCO and Proquest.

7.2. SAMPLING DESIGN
Deemed Universities recognized by UGC (University Grants Commission) offering M.B.A in Tamil Nadu was considered as a sample frame. This study was carried out by eliciting responses from the MBA students of deemed universities in Tamil Nadu, who have used LMS as a part of their learning. Using simple random sampling method, 11 deemed universities in Tamil Nadu were selected to collect the data and the sample size taken for this study was 506.

7.3. INSTRUMENT
A structured questionnaire was constructed which consists of three major sections namely, students demographic factors, information about the LMS used and the various items that determine the adoption of LMS. A set of fifteen items were identified through the literature review and exploratory research. They were scaled on a 5 point likert scale ranging from “Strongly Agree” to “Strongly Disagree”.

8. RESULTS

8.1. ANALYSIS OF FACTORS DETERMINING THE ADOPTION OF LMS BY STUDENTS

8.1.1. RELIABILITY
Reliability test was done to test the internal consistency of items across the multi item scale used in the study. Initially 15 items were scaled to study the adoption of LMS, the Cronbach alpha value was found to be 0.777. Therefore, all the fifteen factors were considered for the analysis.

8.2. STUDY HYPOTHESIS
To prioritize the various factors that determine the adoption of LMS by students, the following hypothesis were framed.

- Null Hypothesis (H0): The factors determining the adoption of LMS are not differently rated by students.
- Alternate Hypothesis (H1): The factors determining the adoption of LMS are differently rated by students.
To test the above hypothesis, it was decided to apply Friedman Test- a non-parametric test with 95% confidence level.

**Table 1 Friedman Test Statistics**

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>139</td>
</tr>
<tr>
<td>Chi-Square(χ²)</td>
<td>794.599</td>
</tr>
<tr>
<td>Df</td>
<td>20</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Table 2 Friedman – Mean Rank Table (Arranged from highest to lowest mean rank)**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Items determining adoption</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I think that using a LMS fits well with the way I like to work. – Compatibility</td>
<td>15.58</td>
</tr>
<tr>
<td></td>
<td>If I am using LMS, it would completely be my own decision. No one would influence me in making that decision. – Voluntariness</td>
<td>14.95</td>
</tr>
<tr>
<td></td>
<td>Using a LMS enables me to accomplish tasks more quickly. – Relative Advantage</td>
<td>14.54</td>
</tr>
<tr>
<td></td>
<td>Using LMS seems very user friendly to me. – Enjoyment</td>
<td>13.94</td>
</tr>
<tr>
<td></td>
<td>The faculties in my class have been helpful in the use of LMS. – Social Influence</td>
<td>12.86</td>
</tr>
<tr>
<td></td>
<td>A specific person is available for assistance with LMS technical issues. – Facilitating Conditions</td>
<td>11.42</td>
</tr>
<tr>
<td></td>
<td>Using LMS would have a positive impact on my image and social status. – Image</td>
<td>11.41</td>
</tr>
<tr>
<td></td>
<td>I believe I could communicate to others the advantages of using a LMS. – Results Demonstrability</td>
<td>11.37</td>
</tr>
<tr>
<td></td>
<td>Completing assignments using LMS makes me more confident. – Self-efficacy</td>
<td>11.11</td>
</tr>
<tr>
<td></td>
<td>I see many people in my class who use LMS. – Visibility</td>
<td>11.06</td>
</tr>
<tr>
<td></td>
<td>I would like to try out new LMS features before recommending them to my friends. – Trialability</td>
<td>8.99</td>
</tr>
<tr>
<td></td>
<td>The fast technological developments are a good thing. – Optimism</td>
<td>8.76</td>
</tr>
<tr>
<td></td>
<td>I want to be among the first to learn using LMS. – Innovativeness</td>
<td>8.06</td>
</tr>
<tr>
<td></td>
<td>I consider myself well-informed about the possibilities and disadvantages of LMS. – Product Knowledge</td>
<td>7.28</td>
</tr>
<tr>
<td></td>
<td>If any new feature of LMS was used by the faculty, people in my environment will certainly come to me for advice. – Opinion Leadership</td>
<td>4.35</td>
</tr>
</tbody>
</table>

9. INTERPRETATION

From the table 1, it can be confirmed that the “The factors determining the adoption of LMS are differently rated by students”, $\lambda^2(20) = 794.60, P<0.05$.

The mean rank table ranging from highest to lowest rank indicates the degree of influence of various factors towards adoption of LMS.

The most important factor in determining the adoption is, “I think that using a LMS fits well with the way I like to work”, which is compatibility. This followed by, “If I am using LMS, it would completely be my own decision. No one would influence me in making that decision” which is voluntariness and “Using a LMS enables me to accomplish tasks more quickly” which is relative advantage.

The least important factor in determining the adoption is, “If any new feature of LMS was used by the faculty, people in my environment will certainly come to me for advice” which is opinion leadership. This is preceded by, “People who are important to me think that I should use the LMS” which is social influence and “I consider myself well-informed about the possibilities and disadvantages of LMS” which is product knowledge.

Based on the ranking, the factors can be classified into three categories namely High influence, moderate influence & least influence. The mean ranks of above 12 are classified as
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high influence, between 10 and 12 as moderate influence and below 10 are classified as least influence respectively.

**Table 3** Categorization of factors determining adoption

<table>
<thead>
<tr>
<th>S.No</th>
<th>Highly Influencing Factors</th>
<th>Moderately Influencing Factors</th>
<th>Least Influencing Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compatibility</td>
<td>Facilitating Conditions</td>
<td>Trialability</td>
</tr>
<tr>
<td>2</td>
<td>Voluntariness</td>
<td>Image</td>
<td>Optimism</td>
</tr>
<tr>
<td>3</td>
<td>Relative Advantage</td>
<td>Results Demonstrability</td>
<td>Innovativeness</td>
</tr>
<tr>
<td>4</td>
<td>Enjoyment</td>
<td>Self-efficacy</td>
<td>Product Knowledge</td>
</tr>
<tr>
<td>5</td>
<td>Social Influence</td>
<td>Visibility</td>
<td>Opinion Leadership</td>
</tr>
</tbody>
</table>

From the table 3, it can be seen that five factors fall in the high influence category, five factors in moderate influence category and five factors in the least influence category are considered.

10. DISCUSSION

- Opinion of students regarding, the factors determining the adoption of LMS are not same.
- The highly influencing factors to the adoption of LMS are Compatibility, Voluntariness, Relative advantage, Enjoyment and Social Influence.
- The moderately influencing factors to the adoption of LMS are Facilitating conditions, Image, Results demonstrability, Self-efficacy and Visibility.
- The least influencing factors to the adoption of LMS are Trailability, optimism, innovativeness, Product Knowledge and Opinion Leadership.

11. RECOMMENDATIONS

- The institution can capitalize on the highly influencing factors on adoption like compatibility, voluntariness and relative advantage.
- The institution should reduce their expenses in supporting the least influencing factors.

12. CONCLUSION

Research has shown that the appropriate use of ICTs can catalyze the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21st century. If designed and implemented properly, ICT-supported education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning.

When used appropriately, ICTs—especially computers and Internet technologies— enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning are underpinned by constructivist theories of learning and constitute a shift from a teacher-centered pedagogy—in its worst form characterized by memorization and rote learning—to one that is learner-centered.

If there is one truism that has emerged in the relatively brief history of ICT use in education, it is this: It is not the technology but how you use it! Put another way in the words of

Thomburg D: “How you use technology is more important than if you use it at all and unless our thinking about schooling changes along with the continuing expansion of ICTs in the classroom then our technology investment will fail to live up to its potential.”
First and foremost, the institutions should enhance the quality of e-learning and at the same time consider relative advantages, trialability, compatibility, and other factors of adoption when introducing new technologies. Consistent with Wild et al. (2002), it is agreed that combining the characteristics of effective traditional learning with those of effective e-learning will provide rich and varied presentation environment that will satisfy individual needs of users. In addition, it can also be enhanced by educating the faculty and students about the importance and advantages of using e-learning in teaching and learning process. Undoubtedly, adoption of e-learning is a boon.

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