

Technology Acceptance among Faculty Members towards E-Learning Systems Adoption

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Abstract: The concept of e- Learning does not target to replace the class room teaching totally. In-fact, the efficiency of class room teaching for different courses can be enhanced by incorporating some of the tools deployed in the e- Learning. The major advantage of e-Learning systems results in an Enhanced learner autonomy through audio and visual graphics, downloadable text and PDF files along with voice chatting and video conferencing features. Despite the fact that e-Learning systems offer numerous advantages, its adoption into the Indian Higher Education systems still remains insignificant. While strategic, financial and human centric issues are cited as the major reasons hampering the adoption of e-learning systems into Indian higher education systems, this work is focused on human centric issues hampering the adoption process. More specifically the willingness of the academic faculty members towards the adoption of e-learning systems and their willingness to contribute to the e-content development were studied with survey data generated from 89 full time faculty members serving in a State University in the State of Tamilnadu. The empirical findings made in the study suggest that the willingness of the academic faculty members to contribute towards e-content development in their respective domain is high and it's an encouraging sign for a successful e-learning Systems adoption in various higher learning facilities in India. Further findings of this work reveals that the existing levels of e-Learning System acceptances among the faculty members have a significant dependency with their technology acceptance and IT fluency levels. While mediations into these dependencies can further enhance the acceptance levels of e-learning systems, it becomes extremely important for the higher learning facilities to conquer the organizational and financial capabilities rather than human centric issues specific to academic faculty members to successfully implement e-learning systems In India. A policy framework at highest level is needed in right direction.

Key Words: e-Learning, IT fluency, Technology Acceptance, E-Contents & Higher Education.

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I. E - Learning Systems

The concept of e- Learning does not target to replace the class room teaching totally. In-fact, the efficiency of class room teaching for different courses can be enhanced by incorporating some of the tools deployed in the e- Learning. The best example for such system is the OLE (Online Learning Environment) provided in the Tel Aviv University, Israel for the undergraduate students enrolled in English course for the Middle Eastern Studies. (Scholnik, 2001); The students can use the OLE for information searching, meaningful interaction, and sharing of both educational process and products in addition to their classroom lessons in Tel Aviv University(Fleix, 2001). Similarly, "An intermediate level Chinese distance course developed at the University of Melbourne, Australia consists of texts, exercises, and quizzes supplemented by an audio and video CD. The students are required to watch 6 films and required to take part in 2 week study tour to China. The course takes advantage of the web's potential to present information to provide for extensive language practice, to monitor students progress and to motivate student's participation"(Romn-Mendoza, 2002). Thus, an e-Learning system can be an independent system without a real time class room teaching or it can be an additional system to the standard class room teaching. Learning system (e-learning) without real time class room teaching employs web based Internet technology to deliver the instructions and instructional materials.

1.1 Advantages of e-Learning Systems

Some of the advantages of an e-learning system highlighted in the works of Rajmohan and Panchanatham (2004) include

1. Comprehensive access to the instructional materials on any time anywhere.
2. Possibility to learn the subject through experts staying in a distant place.
3. Effective content support through large digital libraries.

4. Enhanced learner autonomy through audio and visual graphics, downloadable text and PDF files along with voice chatting and video conferencing features.
5. Ability of the learner to check the progress made through automated testing tools supported in the system.

1.2 Difficulties in Implementing E-learning Practices

While the higher education system in India is characterized by large numbers of Institutes, Universities and Colleges funded by State and the Private entities, the e-learning practices existing in these systems are highly limited to class room based teaching and learning support with little scope for advanced integration of e-learning tools. This is mainly due to various challenges faced by the Institutions to successfully adopt such systems in place. In this regard, Levine and Sun (2002) reports some of the strategic and financial challenges faced by the Higher learning Institutes. For instance, lack of adequate finance makes the availability of equipment, technical support and training on e-learning out of reach for many institutes of higher learning in India. While financial challenges plays a major role hampering the adoption of e-learning systems in Indian Higher education systems, some of the strategic challenges for e-learning system adoption include human centric and organization centric issues. Some of the organization centric challenges cited in the works of Ceri et al.(2005) include staff organizational Integration, Issues on providing flexible delivery to students off campus and challenges on the methods of working especially for web instructional designers and challenges on recruiting right people for e-learning systems. The major human centric issue on e-learning system adoption is the allegiance of academic staff members towards the traditional teaching model (face-to face teaching) causing lots of skepticism about the success of e-learning, especially regarding issues such as workload and loss of control and quality(Al-adwan and Smedley, 2012).

1.3 Research Problem

Lack of adequate e-Learning system adoption among the various Indian academic entities and the underlying reasons for the same give scope for the research problem conceived in the present work. While various reasons can be attributed to the non adoption e-learning systems, human centric issues comprising the attitude of the academic faculty members serving in the academic entities is viewed as the potential research problem for the present work. The major attitude requirement on the part of the academic faculty members for positive e-learning system adoption in the work place include factors such as IT fluency and the willingness to adopt new technology in the work place. These factors were measured and analyzed with the perspectives on willingness to adopt e-learning systems in the Higher learning facilities.

(a) Measuring IT Fluency

Fluency of an Individual on using IT product is a measure of perceived ease of use of technology in the work place (Davis, 1989). While experimental procedure is needed to establish fluency levels on IT usage, perceived fluency levels in IT usage is an Indicative parameter of an Individual to accept technology in Work place. The Information Technology products or services that are used as the basis for measuring the IT fluency of the Individuals in the present work include the comfort levels on the usage of Internet, e-mails, Social Networking tools, Multimedia tools, Net banking applications, Personal Productivity applications, Programming applications and e-Content development tools.

(b) Measuring Willingness to adopt New Technology

Willingness to adopt new technology in the workplace is viewed as the function of perceived usefulness of the technology (Davis, 1989). Thus, the positive attitude towards the computer usage and the computerized environment in the organizational settings is considered as the measure of willingness to adopt new technology in the work place. Also, the positive attitude towards the process mediated by the technology is very important towards gaining acceptance to the new technologies like e-learning systems. For instance, the willingness of the faculty members to contribute to the development of e-content is an important parameter determining the acceptance of the e-learning systems in the higher learning facilities.

II. Studies on User Acceptance of E-Learning Systems

In information systems research, the user's attitude towards intention to use and the actual usage of a technology are addressed in the TAM (Davis, 1989; Davis et al., 1989). TAM is based on the Theory of Reasoned Actions (TRA) (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) in psychology research. It proposes that perceived ease of use and perceived usefulness of technology are predictors of user attitude toward using the technology, subsequent behavioral intentions and actual usage. Perceived ease of use was also considered to influence perceived usefulness of technology. TAM has been applied in numerous studies testing user acceptance of information technology, for example, word processors (Davis et al., 1989), spreadsheet applications (Mathieson, 1991), e-mail (Szajna, 1996), and websites (Koufaris, 2002).

In a study conducted to identify the learner acceptance of e-learning based course support systems, Gao (2005) used Technology Acceptance Model (TAM) successfully and generated set of propositions towards defining user acceptance of e-learning systems. According to the findings made in the above study, perceived ease of use is positively related to perceived usefulness of e-learning systems. Further, this study reports that perceived usefulness of the e-learning system is positively related to attitude towards using and actual intention to use such systems. Also, the above study reports that attitude towards using e-learning systems is positively related to actual intention to use which again is positively related to actual use of e-learning systems among the learners.

III. Details of Objectives and Methodology

The existing scenario of non adoption of e-learning systems in various higher education systems in India is viewed in two dimensions such as organization centric challenges affecting the adoption and the human centric challenges affecting the adoption. While, both these propositions give scope for the research problem taken-up, the present work concentrates on human centric issues and hence, this work is approached with following objectives.

1. To measure the willingness of the academic faculty members to contribute to e-content development.
2. To identify the dependency existing between the e-learning system acceptance and technology acceptance among the faculty members

This research work has been implemented with a descriptive research design comprising the validated questionnaire employed for primary data collection process. Further, the dependency among the various independent and dependent variables were tested with linear multiple regression model assumed suitable in this regard.

3.1 The survey instrument details

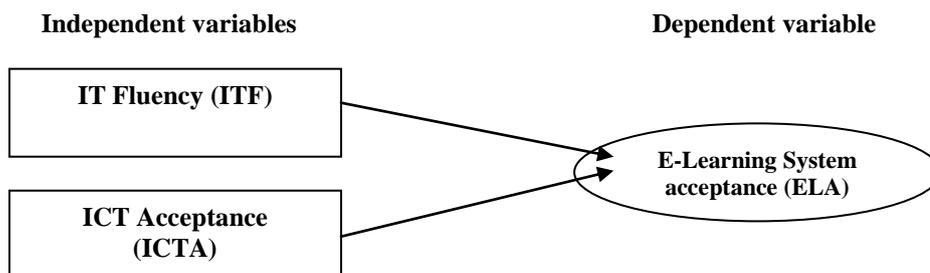
The questionnaires deployed for collecting the primary data for the present study comprise 40 items and these items were classified broadly into three major categories such as general information(10 items),IT Fluency Components (15 items) and Technology Acceptance Components (15 items). 7 point scale was deployed in measuring IT fluency components and Technology Acceptance components.

3.2 Pre-testing and Sampling Details

The pretesting for the survey instrument was done by conducting a pilot survey among 40 academic faculty members serving in a State University in the State of Tamilnadu. The result obtained through this pre-testing validates the research instrument and hence, the survey instrument was used for collecting the primary data. The Cronbach alphas and the composite reliability measures were used as the reliability index which was found to be above 0.6 for both IT fluency components and Technology acceptance components recommended by Nunnally (1978).The survey for present work was carried out in a State University among the faculty members drawn from 7 different faculties of studies such as Arts, Science, Fine Arts, Agriculture, Education, Paramedical Studies and Engineering & Technology. All the respondents of the survey were kept informed about the objective of this study and this has ensured fullest cooperation in the data collection process. Thus, the rejection rate of the filled up response is less than 15 percent of the total distributed questionnaire of 100. Hence, the final sample size constituting this work is kept at 89 and this represents more than 5 percent of the total faculty members serving the University on full time basis. Since, the respondents were identified on random basis, the sampling procedure adopted for this work is categorized under stratified random sampling procedure. The primary data for this work was collected between November 2017 and December 2017. The sample size comprising 89 academic faculty members drawn from 7 faculties of studies is considered relevant size for the present work.

3.3 Details of the research model

Exhibit 1: E-Learning System Acceptance and Technology Acceptance



$$ELA = \alpha_0 + \alpha_1 ITF + \alpha_2 ICTA + \mu \quad \text{---} \quad (1)$$

Where,

- ELA** : E-Learning System Acceptance
- ITF** : IT Fluency.
- ICTA** : ICT Acceptance
- E₃** : Entrepreneurial concerns on online payment systems
- α₁ & α₂** : Regression coefficients
- α₀** : Constant
- μ** : Standard error

IV. Results and Discussions

Table1: E-Learning System Acceptance and Technology Acceptance

Model	Un standardized Coefficients		Standardized Coefficients	t	Adjusted R Square	F
	B	Std. Error	Beta			
1	(Constant)	0.460	1.654		0.61	28.3*
	IT Fluency(ITF)	0.046	0.026	0.252		
	Technology Adoption Willingness (ICTA)	0.190	0.029	0.923		

(*Significant at 5 percent level
Dependent Variable: E-Learning System Acceptance)

The results of the multiple regression analysis is provided in the table 1, where it can be inferred that the F value of 28.3 is found to be significant at 5 percent level. This proves that E-learning system acceptance among faculty members has significant level of dependency with their IT fluency levels and their technology adoption willingness in the work place. The validity of this dependency is further strengthened by the adjusted R square value of 0.61, which is well above the suggested vale of 0.5 (Nunnally , 1978). Also, the t values of 6.522 and 1.783 corresponding to the factors Technology Adoption Willingness (ICTA) and IT Fluency (ITF) are found to be significant at 5 percent level. Thus, e- learning system acceptance among the faculty members has significant level of dependency with both the factors taken together and also on individual basis.

Table2: Faculties willingness and their fluency levels in productivity tools

Details of Productivity tools and willingness	High	Medium	Low
Willingness to contribute towards e-Contents	46%	17%	38%
Fluency with Word Applications	40%	33%	27%
Fluency with Power Point Applications	41%	19%	40%
Fluency with Excel applications	30%	30%	40%

The details of the academic faculty member's willingness to contribute to e-Contents and their fluency level on personal productivity suits like Word, Power Point and Excel applications are provided in the table 2, where it can be noted that 46 percent have expressed their high willingness for e-contents development on their respective fields. Since, the fluency levels on productivity suits like word, power point and excel is very important towards e-Content development those details were also identified and provided in table2. Based on the details those details provided in table2, it can be inferred that the willingness of the faculty members to contribute to e-Contents is more (46 percent) when compared with their actual fluency levels on productivity suits like word(40 percent), power point(41 percent) and Excel (30 Percent).

V. Findings & Implications

1. The willingness of the academic faculty members to contribute towards e-content development in their respective domain is high and it's an encouraging sign for a successful e-learning Systems adoption in various higher learning facilities in India. This is contrary to the earlier reported findings of Al-adwan and Smedley (2009), which places academic faculty members on negative side of e-Learning System adoption in Higher learning facilities. The existing low and medium levels of willingness to contribute to e-Contents among the faculty members is due to the inadequacies on IT fluency levels and not because of the low levels of acceptance of e-Learning systems. Thus, it becomes extremely important for the Higher learning facilities to conquer the organizational and financial capabilities rather than human centric issues specific to academic faculty members to successfully implement e-learning systems In India.
2. The existing levels of e-Learning System acceptance among the faculty members have a significant dependency with their technology acceptance and IT fluency levels. While this finding goes in line with the propositions of Technology Acceptance Model (Davis, 1989), the dependency with IT fluency levels is something that can be mediated with Interventions at Organization level. From the perspectives of e-Learning System adoption, the shortcomings in the existing IT fluency levels of the academic faculty members have to be identified towards imparting training to overcome such shortcomings. Further, recruitment to the new academic positions irrespective of the specializations needs to be carried out taking into consideration the IT fluency levels and technology acceptance levels of the new recruits.

VI. Concluding Remarks

The advantages offered by the e-Learning systems are well established and it's beyond the doubt of any academic planners. While developed countries of the world have succeeded in exploiting such advantages, the scenarios in India are not encouraging in terms of e-Learning system adoption. While, the reasons for this poor adoption or non adoption of e-learning systems in Indian Higher education systems is well known, the findings made through this work at least points to the fact that the faculty members of various Universities and Colleges are not hampering the adoption decisions. More precisely it's the organizational issues that effectively block any such progress in terms of e-Learning System adoption in Indian Higher education facilities. A policy framework at highest level is needed in right direction.

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APPENDIX

QUESTIONNAIRE FOR DATA COLLECTION



ANNAMALAI UNIVERSITY
DEPARTMENT OF BUSINESS ADMINISTRATION
IT FLEUNCY AND TECHNOLOGY ACCEPTANCE AT WORK PLACE

1. Name: -----
2. Designation: -----
3. Department: -----
4. Age: _____
5. Gender: _____
6. Educational qualification: _____
7. Marital status: _____
8. Total work experience: _____
9. Experience in the present organization: _____
10. No of dependents: _____

Please rate your IT fluency in a scale of 1 to 7 where 7 represents highest fluency and 1 represents least fluency. (Round of the Option)

IT FLUENCY COMPONENTS		Least fluent						Most fluent
1	Comfort level in surfing Internet	1	2	3	4	5	6	7
2	E-Mail Usage	1	2	3	4	5	6	7
3	Social Networking applications(Face Book etc.)	1	2	3	4	5	6	7
4	Comfort level in Smart Phone Usage	1	2	3	4	5	6	7
5	Comfort level in Tablet Usage	1	2	3	4	5	6	7
6	Comfort Level in Using Internet based Conferencing tools like Internet Telephony and Skype etc	1	2	3	4	5	6	7
7	Net Banking Usage	1	2	3	4	5	6	7
8	Comfort Level in Word applications	1	2	3	4	5	6	7
9	Comfort Level in Power Point preparations	1	2	3	4	5	6	7
10	Comfort Level in Excell applications	1	2	3	4	5	6	7
11	Comfort level in creating Database applications	1	2	3	4	5	6	7
12	Comfort Level in application programming	1	2	3	4	5	6	7
13	Comfort Level in Systems Programming	1	2	3	4	5	6	7
14	Comfort level in e-Content Developments like Incorporating Flash and Multimedia applications in Teaching	1	2	3	4	5	6	7
15	Comfort Level in any other application relevant to you Job (Please Specify the application(_____))	1	2	3	4	5	6	7

Please rate your response in a scale of 1 to 7 where 7 represents highest acceptance and 1 represents least acceptance of the statements. (Round of the Option)

TECHNOLOGY IN WORKPLACE		Least Acceptance						Highest Acceptance
1	Computerizing the Operations of the University is Good for the Organization	1	2	3	4	5	6	7

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2	Computerizing the Operations of the University is Good for you	1	2	3	4	5	6	7
3	Paperless office is a Good idea	1	2	3	4	5	6	7
4	Electronic Communication Channels like internal mail system for the University is an essential requirement	1	2	3	4	5	6	7
5	Students attendance details should be Computerized and be made available online	1	2	3	4	5	6	7
6	Students assessment details should be computerized and be made available online	1	2	3	4	5	6	7
7	Staff attendance should be computerized	1	2	3	4	5	6	7
8	Teaching learning should comprise increased levels of electronic Contents	1	2	3	4	5	6	7
9	You are willing to contribute to the development of e-Contents for the courses you teach	1	2	3	4	5	6	7
10	Online Feed back system on your performance metrics in the job is a good idea	1	2	3	4	5	6	7
11	Online Feed back system for various performance metrics of the Universities is a good idea	1	2	3	4	5	6	7
12	Computerizing the Operations of the University will improve the overall efficiency.	1	2	3	4	5	6	7
13	Computerizing the Operations of the University will improve the your efficiency in the Job	1	2	3	4	5	6	7
14	Computerizing the Operations of the University will result in increased academic audit	1	2	3	4	5	6	7
15	Computerizing the Operations of the University will result in increased Administrative audit	1	2	3	4	5	6	7

*****Thank You *****

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