

An Analysis of Learner Satisfaction and Needs on E-Learning Systems

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Abstract

The main objective of this study is to analyze the tendencies of contemporary learners about the use of e-learning systems in teaching and learning process. This paper also aims at listing the drawbacks existing in the present e-learning systems or learning management systems (LMS) and gather vital requirements of the learners to improve their satisfaction levels on e-learning. It would be highly difficult to address the learners' needs without knowing their present experiences and thereby identify areas of improvement. A pre-designed questionnaire was canvassed to obtain learner responses on a Likert scale. The instrument was divided into different groups based on the nature of questions. The result of this survey shows that 77.49% of surveyed students were comfortable in using internet and web services for learning while 51.93% of them were always able to use technology and internet for learning. The survey results displayed that the students were not fully satisfied with present e-learning systems although versatile in using internet and web. The survey focused on the important aspects of e-learning which drive learner satisfaction and also the personalization factors influencing the success of e-learning. 65.59% of the surveyed students expressed that they were either rarely or never provided with the precise course content of their choice by the e-learning system they have used. 43.74% of the surveyed learners stated that they either always or often need moderator assistance to freeze their learning choices. The survey results clearly revealed the need for personalized and more adaptive e-learning systems with possible moderator support to satisfy the needs of contemporary learners.

Keywords: E-Learning; Learning Management System; Factors Influencing E-Learning; Personalized E-Learning; Learner Satisfaction.

1. INTRODUCTION

The popularity of the Internet and recent advances in Information Technology generated new possibilities for training and education delivered through online learning or e-learning. With a variety of electronic devices, applications and services available, electronic mode of teaching & learning has emerged as a vital alternative/supplement to traditional “chalk & talk” mode of teaching. E-learning systems or in other words Learning Management Systems (LMSs) have become the core component of the teaching-learning process in many Institutions across the world [1].

The Internet and World Wide Web became the most effective ways of communication in present days. Communication based on internet could be either synchronous or asynchronous [2]. The concept of e-learning includes a variety of applications, processes and learning methodologies. It can also be referred to as using Information and Communication Technology (ICT) to facilitate teaching and learning resources through web-based applications [3]. The objective of this paper is to explore the satisfaction levels of contemporary learners in Higher Education on e-learning systems and recognize the various aspects preventing the usage and growth of e-learning to identify approaches to improve the satisfaction of the learners.

2. THEORITICAL BACKGROUND

There are a variety of theoretical frameworks available on usage of technology in education, cognitive learning styles, and pedagogical approaches suitable for e-learning. However, this study mainly focuses on knowing learner satisfaction on the existing e-learning technologies with emphasis on the key areas of improvement.

2.1 Technology Acceptance Model

The theoretical framework used to study the satisfaction levels of the students on e-learning is based on the Technology Acceptance Model (TAM) proposed by Davis [4]. According to TAM, the adoption of technology by students depends on the perceived usefulness and the ease of use of the system. The TAM has a strong theoretical basis and has been developed in relation with information technology. Several researchers have reused TAM to provide experimental evidence on the relationships that exist between usefulness, ease of use and technology use [5]. Venkatesh and Davis extended the original TAM to describe perceived usefulness and usage purposes in terms of social influence and cognitive instrumental process. The tests that were carried out both in voluntary and mandatory settings on the extended model named as TAM2 support the model [6].

The Davis model on adoption of technology in learning is based on internal and external variables. The internal variables in the model describe that the attitude of the learner on the use of modern technology is explained by the perceived ease of use and the perceived usefulness of that technology. The theory supports the influence of perceived usefulness of e-learning technology on the acceptance of e-learning system by students to pursue online learning. The theory recognizes the influence of the

perception of ease of use of the features of e-learning systems or LMS platform on the adoption of e-learning. The external variables relate to the model are collected by other aspects influencing learner's acceptance of e-learning systems in teaching & learning and they are expected to impact the intentions of e-learning adoption through ease of use and usefulness. In the present study the experience of learners in using internet and web, personalization of content, design of e-learning system are not explicitly incorporated in the model, but are assumed to impact the intentions of usage of innovation through ease of use and usefulness. Figure-1 shows the acceptance of e-learning systems in learning explained by the perceived usefulness and ease of use of the system.

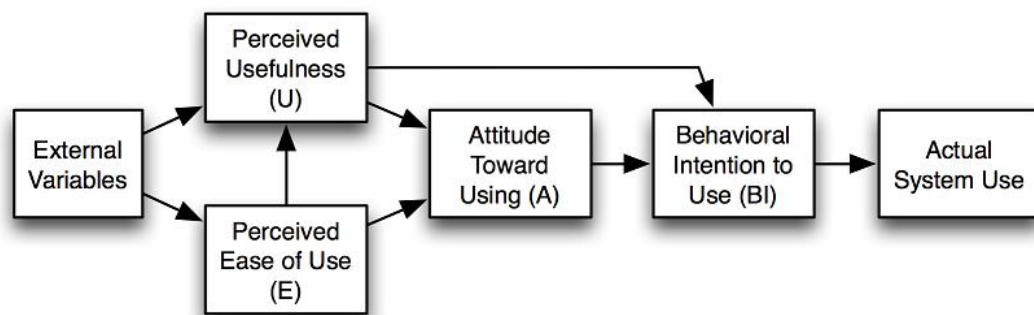


Figure-1: Davis's Technology Acceptance Model (Source: Wikipedia)

2.2 E-Learning Success Factors

The success of e-learning depends on informative, well organized content, and high quality of design. However, knowing prospective learner's requirements before offering the course would be beneficial to meet the expectations of the learners. Some of the key areas on which the learner needs to be analyzed are learning objectives, prior knowledge, expected outcomes, technical requirements or limitations, and learning preferences [7]. Although the learner can be analyzed during the actual process of learning through his/her feedback and performance on the LMS, it may consume substantial amount of time and resources to deduce the personal learning characteristics of each learner as the user has to spend significant duration on the e-learning course to enable the system to automatically collect this information based on the usage and performance.

3. RESEARCH QUESTIONS

The main objective of this study is to explore the satisfaction levels of contemporary students over the use of e-learning systems. In the process, inhibiting factors for the success of e-learning could also be identified. The internal and external variables described in Davis model [4] are the factors that can be tested. The ease of understanding the features of e-learning system and the usefulness of e-learning system or LMS are the internal variables included in Davis model. The experience of learners in using internet and web, flexibility, content, prior knowledge, and the design of LMS are the assumed external variables linked to the model that impact the success of e-learning system.

Hypotheses guiding the present study are categorized into three major groups with each group containing relevant questions. The following are the hypotheses in the present study.

- Are the contemporary learners satisfied with the present e-learning system or LMS being used by them? This group will have questions about internal and external variables linked to Davis model [4].
- Are the contemporary learners assessed on their learning needs before the start of the e-learning course? This group will have questions about the factors that influence success of e-learning course [7].

After examining the two hypotheses stated above, a new interesting question emerged which led to the third hypothesis.

- Are the contemporary learners capable of choosing or providing their learning preferences so as to personalize their e-learning course experience? If so to what extent? This group will have questions about the readiness of contemporary learners in choosing their e-learning priorities.

4. METHODOLOGY

In order to explore the satisfaction levels of the learners on present e-learning systems, and to identify their stand on the critical success factors of e-learning, a survey was conducted among contemporary learners from different domains in higher education institutions.

4.1 The Sample

A survey was organized with a selected group of 622 contemporary learners during the academic years 2015 and 2016. The participants in this study comprised of students from various Higher Education Institutions (HEI) with diversities in age, gender, location, level and domain of study. These selected sample of learners were using various e-learning systems or LMS either personally or provided by their Institutions.

4.2 Survey Instrument

A pre-designed questionnaire was used in the study which was distributed in multiple modes like face-to-face, online form and interviews. The questionnaire contains 7, 7, and 4 questions within first, second and third group of hypotheses respectively described under research questions. Results along with parts of the questionnaire, survey items and satisfaction levels were presented in forthcoming sections. A five-point Likert Scale [8] was used to analyze the survey responses. The Likert scale is generally used psychometric scale in research involving questionnaires. In this study, the respondents were made to specify their level of acceptance on a symmetric

always-never scale for a series of statements. Responses based on Likert Scale and their corresponding scores are shown in Table-1.

Table-1: Scores against five-point Likert item

Always	Often	Sometimes	Rarely	Never
5	4	3	2	1

4.3 Description of Survey Instrument

The questionnaire was divided into 4 sets with each set comprising of questions related to factors that impact satisfaction on e-learning. The first set contains questions about demographic and general characteristics of the sample, such as age, gender, location, domain, and level of study. The second set contains questions related to the satisfaction levels of learners on e-learning systems they were using. The third set of questions is related to key aspects of learner needs assessment assumed important for the success of e-learning. The fourth set has questions relating to the abilities of contemporary learners in providing their learning needs and preferences if they were asked to choose on a personalized e-learning course.

In order to ensure unbiased responses from the participants, the context of the survey was clarified to the participants when the questionnaire was distributed face-to-face and online. Clarifications were provided whenever participants felt ambiguity about any question.

5. FINDINGS AND DISCUSSIONS

Findings from the survey are represented in the following tables. Result tables display the satisfaction levels of learners for each question along with the frequency and percentage of responses to each of the levels. Mean score was computed for each question on a five-point scale.

Table - 2: Satisfaction levels of contemporary learners on present e-learning systems (n=622)

S.No.	Factor	Level of Satisfaction	Responses		Mean (\bar{x})
			Frequency	%	
1	Were you able to use the technology and internet including web browsing for your learning with ease?	Always	323	51.93	4.20
		Often	159	25.56	
		Sometimes	95	15.27	
		Rarely	32	5.15	
		Never	13	2.09	
2	Was the e-learning system or LMS used by you useful to fulfil your learning needs?	Always	69	11.09	2.51
		Often	73	11.74	
		Sometimes	123	19.77	
		Rarely	201	32.32	
		Never	156	25.08	

3	Was the e-learning system used by you organized to satisfy your learning objectives?	Always	55	8.84	2.39
		Often	67	10.77	
		Sometimes	137	22.03	
		Rarely	172	27.65	
		Never	191	30.71	
4	Was it easy for you to understand the features of the e-learning system or LMS that you have used?	Always	76	12.22	2.64
		Often	112	18.01	
		Sometimes	103	16.56	
		Rarely	172	27.65	
		Never	159	25.56	
5	Was the e-learning system used by you providing you with the precise course content that you are looking for?	Always	34	5.47	2.20
		Often	52	8.36	
		Sometimes	128	20.58	
		Rarely	197	31.67	
		Never	211	33.92	
6	Was the e-learning system used by you providing you with flexibility to navigate among learning resources to control your individual learning speed?	Always	81	13.02	2.68
		Often	114	18.33	
		Sometimes	122	19.61	
		Rarely	136	21.87	
		Never	169	27.17	
7	Was the design and user interface of the e-learning system used by you attractive and customizable?	Always	98	15.76	2.73
		Often	119	19.13	
		Sometimes	86	13.83	
		Rarely	154	24.75	
		Never	165	26.53	

The results in Table-2 show that 77.49% of surveyed learners were quite comfortable in using the internet and web for learning. The mean score of this factor is 4.2 which shows majority of contemporary learners has expertise in using technology for learning. All other factors displayed in Table-2 recorded a mean less than 3 of which the factor of providing precise course content to the learners was the lowest with a mean of 2.2 on a 5-point scale. 65.6% of the surveyed learners were either rarely or never receiving the expected content from the present e-learning systems. Results on questions related to learning needs assessment are shown in Table-3 below.

Table - 3: Experiences of contemporary learners about learning needs assessment (n=622)

S.No.	Factor	Level of Satisfaction	Responses		Mean (\bar{x})
			Frequency	%	
1	Have you ever been assessed on your learning objectives before the start of an e-learning course?	Always	45	7.24	2.29
		Often	67	10.77	
		Sometimes	105	16.88	
		Rarely	211	33.92	
		Never	194	31.19	
2	Have you ever been assessed on your personal learning needs and context before the start of an e-learning course?	Always	65	10.45	2.57
		Often	79	12.70	
		Sometimes	153	24.60	
		Rarely	174	27.97	
		Never	151	24.28	
3	Have you ever been questioned on your personal learning preferences before the start of an e-learning course?	Always	33	5.31	2.11
		Often	52	8.36	
		Sometimes	96	15.43	
		Rarely	208	33.44	
		Never	233	37.46	
4	Have you ever been questioned on your personal learning habits before the start of an e-learning course?	Always	26	4.18	1.92
		Often	41	6.59	
		Sometimes	57	9.16	
		Rarely	229	36.82	
		Never	269	43.25	
5	Have you ever been questioned on your preferred teaching styles before the start of an e-learning course?	Always	72	11.57	2.51
		Often	86	13.83	
		Sometimes	121	19.45	
		Rarely	154	24.76	
		Never	189	30.39	
6	Have you ever been assessed on your personal online learning skills and abilities before the start of an e-learning course?	Always	54	8.68	2.27
		Often	69	11.09	
		Sometimes	112	18.01	
		Rarely	142	22.83	
		Never	245	39.39	
7	Have you ever been assessed on your prior knowledge required to learn the course before the start of an e-learning course?	Always	81	13.02	2.64
		Often	92	14.79	
		Sometimes	138	22.19	
		Rarely	145	23.31	
		Never	166	26.69	

It can be observed from the data in Table-3 that the mean scores of majority factors are even lower than 2.5 on a 5-point scale. Learner's assessment of personal needs and context, preferred teaching styles or pedagogy, assessment of prior knowledge are the only factors that displayed a mean score marginally above 2.5. It is evident from Table-3 that 65.11% and 70.90% of the surveyed students were either rarely or never assessed on learning objectives and preferences respectively.

Table-4 given below shows the results of questions related to abilities of contemporary students in providing learning preferences.

Table-4: Ability of contemporary learners to provide personal learning needs and preferences (n=622)

S.No.	Factor	Level of Satisfaction	Responses		Mean (\bar{x})
			Frequency	%	
1	How likely you will be able to provide your learning objectives and context during the selection of personalized e-learning course?	Always	148	23.80	3.42
		Often	171	27.49	
		Sometimes	154	24.76	
		Rarely	94	15.11	
		Never	55	8.84	
2	Will you be able to choose your preferred teaching/pedagogical preferences for an e-learning course?	Always	83	13.34	2.82
		Often	98	15.76	
		Sometimes	175	28.14	
		Rarely	157	25.24	
		Never	109	17.52	
3	Will you be able to specify your personal learning preferences on an e-learning course so as to customize your learning experience?	Always	105	16.90	3.01
		Often	125	20.10	
		Sometimes	161	25.90	
		Rarely	134	21.50	
		Never	97	15.60	
4	How frequently will you need moderator/peer assistance to select your personal learning choices for an e-learning course?	Always	129	20.74	3.27
		Often	143	23.00	
		Sometimes	184	29.58	
		Rarely	96	15.43	
		Never	70	11.25	

Results in Table-4 show that 51.29% of learners mentioned that they will be always or often able to provide learning objectives and context. The overall mean score of this factor is 3.42 on a 5-point scale. About the ability to choose teaching/pedagogical preferences, 29.10% of respondents felt that they were either always or often provide preferences as observed from an overall mean score of 2.82. 37% of the respondents felt that they were either always or often able to provide personal learning preferences with an overall mean score of 3.01. The last question in Table-4 was intended to know what extent of learners need moderator assistance to choose their learning preferences. 43.74% of the respondents specified that they will either always or often need assistance (Overall Mean score of 3.27).

6. CONCLUSIONS AND SUGGESTIONS

It is evident from the results of the present study that majority of contemporary learners displayed low or no positive contentment on the present e-learning systems in use although most of them were comfortable in using internet and web for learning purposes.

The results of the present study made it clear that majority of the learners were not assessed on their learning needs before the start of e-learning course. The results also show that critical factors for success of e-learning course like learning objectives, context, preferences, individual learning habits, learning skills & abilities on e-learning and prior knowledge of the course were not clearly known to the course developers to personalize learning experiences of the learners.

The results of this study further show that significantly contemporary learners possess the ability to provide their learning objectives and context before the start of an e-learning course. There are predominant learners who seek moderator or peer assistance to choose their pedagogical and personal learning preferences.

During this internet age where e-learning is intruding into the daily life of teachers and learners across numerous HEIs, learner satisfaction on e-learning becomes key for its success. Hence, referring to the results of this study, the following suggestions are recommended to improve learning experiences of the learners.

- Learner's assessment on their learning needs and objectives has to be initiated before starting the e-learning course.
- Prior knowledge of the learner on intended e-learning course is to be tested before start of the course.
- Personal learning preferences of the learners have to be gathered in order to customize their learning experience.
- Presentation of course content should be mapped with the learner's objectives, preferences and learning styles.
- Course content developers need to create course profiles for e-learning courses so as to map them with learner requirements.
- Developers have to take special care in designing e-learning systems so as to provide flexibility to the learners in customizing the user interface and to navigate through the learning resources and content at their choice.
- To meet the growing demand for moderator/peer collaboration, future e-learning system designers should focus on providing need based collaborative features to facilitate the learners.

In conclusion, it is essential to personalize the E-learning environment, pedagogy, objectives, content, and assessments to suit individual requirements of the learners so as to make their learning experience pleasurable for desired learning outcomes.

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APPENDICES

Questionnaire for obtaining learner satisfaction levels on present e-learning systems; learner needs assessment and the abilities to choose learning preferences.

Set1: General and Demographic Characteristics

1. Name of the Learner:
2. Learner's Age:
 - a. 18-21
 - b. 22-25
 - c. 26-30
 - d. Above 30
3. Learner's Gender:
 - a. Male
 - b. Female
4. Location of Study:
 - a. Urban
 - b. Rural
5. Level of Study:
 - a. UG
 - b. PG
 - c. Professional/Certificate
 - d. Doctoral
6. Domain of Study:
 - a. Engineering
 - b. Management
 - c. Sciences
 - d. Others

Set2: Satisfaction levels on present e-learning systems

- 1) Were you able to use the technology and internet including web browsing for your learning with ease?
 Always Often Sometimes Rarely Never
- 2) Was the e-learning system or LMS used by you useful to fulfil your learning needs?
 Always Often Sometimes Rarely Never
- 3) Was the e-learning system used by you organized to satisfy your learning objectives?
 Always Often Sometimes Rarely Never
- 4) Was it easy for you to understand the features of the e-learning system or LMS that you have used?
 Always Often Sometimes Rarely Never
- 5) Was the e-learning system used by you providing you with the precise course content that you are looking for?
 Always Often Sometimes Rarely Never

6) Was the e-learning system used by you providing you with flexibility to navigate among learning resources to control your individual learning speed?

Always Often Sometimes Rarely Never

7) Was the design and user interface of the e-learning system used by you attractive and customizable?

Always Often Sometimes Rarely Never

Set3: Learning Needs Assessment

1) Have you ever been assessed on your learning objectives before the start of an e-learning course?

Always Often Sometimes Rarely Never

2) Have you ever been assessed on your personal learning needs and context before the start of an e-learning course?

Always Often Sometimes Rarely Never

3) Have you ever been questioned on your personal learning preferences before the start of an e-learning course?

Always Often Sometimes Rarely Never

4) Have you ever been questioned on your personal learning habits before the start of an e-learning course?

Always Often Sometimes Rarely Never

5) Have you ever been questioned on your preferred teaching styles before the start of an e-learning course?

Always Often Sometimes Rarely Never

6) Have you ever been assessed on your personal online learning skills and abilities before the start of an e-learning course?

Always Often Sometimes Rarely Never

7) Have you ever been assessed on your prior knowledge required to learn the course before the start of an e-learning course?

Always Often Sometimes Rarely Never

Set4: Ability of learners to provide learning preferences

1) How likely you will be able to provide your learning objectives and context during the selection of personalized e-learning course?

Always Often Sometimes Rarely Never

2) Will you be able to choose your preferred teaching/pedagogical preferences for an e-learning course?

Always Often Sometimes Rarely Never

3) Will you be able to specify your personal learning preferences on an e-learning course so as to customize your learning experience?

Always Often Sometimes Rarely Never

4) How frequently will you need moderator/peer assistance to select your personal learning choices for an e-learning course?

Always Often Sometimes Rarely Never