Factors Affecting The Adoption Of E-Learning Among The Organizations In India

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ABSTRACT

Purpose: E-learning has gained a lotof momentum in recent years, but the adoption of the same has become difficult because of several factors that affect the agility and digital preparedness of the corporates. The outbreak of COVID-19 has made the adoption of e-learning indispensable for the corporates to keep up with the learning culture. Many countries have researched to understand the factors which influence the adoption rates. The paper gives an understanding of the factors in the Indian context.
Methodology: Literature review of the existing research was done in identifying the different adoption models and possible factors that affect adoption. To further evaluate the factors, A primary research was done through a semi-structured self-administered questionnaire among the Indian corporates. Analysis of the data was done using various tests and techniques on SPSS.
Practical Implications: This study will help the corporates in identifying the relevant factors before rolling out any e-learning program and would aid the whole change management process.
Originality: The study is original in nature and would help the corporates with the adoption of learning management systems.

Keywords
E-learning, adoption, Change management

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Introduction

In the recent years e-learning has gained a lot of traction among corporates and is considered as a powerful tool to enhance the learning of the employees and is playing a crucial role in imparting training to existing and newly joined employees. E-learning doesn't only provide corporates a platform to impart knowledge, but also help in assessing the knowledge and gaps in skills among the employees. Using electronic mode like a computer for delivering training to learners is called e-learning[1][2]. It provides flexibilityto the learners. "It can also be called as the mean of learning that promotes self-motivation,communication, efficiency, and technology". The advantages of e-learning are divided into two parts one being strategic benefit and the other being technical benefits. The ability to get a competitive advantage by building a global workforce with shorter development cycle, adjusting with employees work time, and to enhance knowledge and skills of the employees is considered as a strategic advantage. The savings drawn by the reduction in travel time, delivering quick learning sessions, and updating the courses continuously using the already setup infrastructure is considered as a technical advantage.
Despite having many accepted advantages, the adoption of the E-learning or Learning management system among the employees has become difficult for employers. With the outbreak of COVID-19 it has become indispensable for the corporates to make sure that their employees are adopting to e-learning platforms and use them effectively to enhance their skills and knowledge from time to time. There are many technology adoptions models like Technology Adoption Model (TAM), Theory of Reasoned Action (TRA)[3], Theory of Planned Behavior (TPB)[4], and the Theory of Acceptance and Use of Technology (TAUT)[5] and many more. These models give us the barriers which the employees face while adopting to a technology. The factors identified through these models can help corporates in planning their change management plan while implementing e-learning modules in their companies.
In the following section, Factors identified through various existing studies are discussed and then a research model based on the identified model is proposed. Finally, the results are analyzed and presented.

Literature Review

Many researchers have worked on several adoption models that can be used to increase the adoption of technology during implementation. Studies on e-learning systems have also been done to identify the possible factors which can act as barriers to adoption.

A. Theory of reasoned action (TRA)

Even though TRA was initially created for social and other psychology related studies, it has gained traction for analyzing individuals' IT utilization intentions [6]. In this Model, three fundamental cognitive components are given which are attitudes (persons feeling about the action), social standards (social impact), and intentions (the intention of an individual to do an action or not). It is supposed to be volitional, systematic and rational. There are several other boundary factors like context, time, action and many other factors are also covered under TRA.Also, to make the model better and robust a few strategies such as sweeping statement, activity, context, and activity are built up to make

the strength between comparing intention and state of mind.[3]

B. Theory of Planned Behavior (TPB)

Themodel extends the previous TRA model and add perceived behavioral control (PBC) to it. Simply put, PBCdepends upon the factors like the presence of required resources, Aptitude of a person, opportunity from using the system and importance of adopting it to get the desired result.
The model links an individual belief to the system. The context of e-learning it is important to make sure that the user has belief in the system and it will thus increase the chances of adoption. The behavior of a person here can be controlled by giving them as much existing information available about the new platform and by influencing them by using people. Here top management can act as influencers which will lead to a positive opinion about the system.Finally, the three main components which come into the picture in this model are, perceived behavioral control, the subjective norm, and behavioral attitude. Be that as it may, there are two primary problems with the model. First one being, the one's attitudes will not be generally important in the event that a computer framework isn't available. Second, the reexamined modelcan be perceived as the better model which is affected by the level of choice made by the individual to select the information available within the organization.[7].

C. Technology Acceptance Model (TAM)

The model is a better version of the previously discussed model. It has evolved over the years and has now become one of the most widely used model to drive the change in an organization. This starts with looking at the perceived benefit of using any new technology. Implementation is not useful if users don't see any benefit of the new system. In the context of our study it is important to check whether the users are able to identify with the benefits attached to e-learning systems. The second thing which it takes into consideration is the perceived ease of using the system. The complexity associated with any system makes it unattractive and hence the users should be able to look at the new system as easy to use and user friendly with easy navigation and other features. In our context, it is important to make the e-learning system easy and understandable so that it doesn't push the target audience away from it and users can actually use the system to enhance performance and productivity. The third most important factor is the intention of an individual to use the system. If the user intention is not aligned with the intent of the system, whatever measures are taken by the organization will prove ineffective. To make sure that intention is present, the organization need to communicate the advantages and also identify the intention of the user beforehand by conducting proper surveys. External factors also come into play into this model, but it does not take into account the factors like values and intrinsic motivation. The lack of which makes it not usable in areas where the person is only looking for emotional need and not completing any task[8]. The variables which can be included to check these factors can be related to useful content for learning, increase in productivity and performance of the user, ease of use of the platform, the intention of using the platform repeatedly.

D. Social Cognitive Theory (SCT)

Coming with the background of social Psychology, this modelcontains mainly three primary components; conduct, individual, and environment that are associating with each other to understand the behavior of a group and a person. Also, it can differentiate between different strategies which can change the behavior of a person. In this model, the behavior of individual acts as the driving factor for adoption. In any case, individual figure is any identity, cognitive and statistic viewpoints characterizing an individual. Whereas, social and factors which influence the adoption are related to the environment in which the implementation is happening and how the surrounding corresponds to that change.The modelforms a structure where all the three factors continually play their role, correspondingly deciding each other. The SCT model is used to understand the perspective of the users from the factors like self-efficacy, outcome, complexity, social influence.[9]

E. Diffusion of Innovations Theory (DOI)

Davis has recognized five components of an innovation that are key influencers on technology adoption[10]. The characteristics identified under this model are relative advantage, compatibility, complexity, trialability, and observability. The Relative Advantage is the degree to which an individual compares the new system with the previous one and find the advantage over the other. According to Davis[10], it does not matter in the event that the innovation has objective benefits or not. The relative advantage can be measured in "economic terms, social distinction, comfort and satisfaction". Compatibility is the degree to which an individual accepts that the new system is fulfilling its needs or not to check it based on"existing values, past encounters and needs of the potential adopters". Complexity is the degree to which an individualfinds it hard or difficult to understand the new system. As discussed by him, a few developments may well be less demanding for individuals to get it, and others, if, for example, they include extra level of information, may well be more troublesome for individuals to get it. Trialability is the degree to which an individual accepts the innovation by trying the features before its implementation to check the level of comfort it has. An innovation that's trailable represents less instability to the person who is considering it for selection, who can learn by doing. Observability refers to the level of which "he benefits of the innovation is obvious to others". Such perceivability promotes peer dialog of a new idea, as companions and neighbors of an adopter frequently ask innovation-evaluation data around it.

F. Unified theory of acceptance and use of technology (UTAUT)

UTAUT and UTAUT2 are themost used model to understand the user behavior with respect to the adoption of

new systems and [11][5][12] and in e-learning context [13][14][15][16]. The UTAUT2 proposes mainly 7 components which can explain the adoption of any technology. The components are:

Performance Expectancy(PE)

Performance expectancy is characterized as the degree in which expect the technology to help him/her in improving or completing a task at hand (Venkatesh et al., 2003). In this research, performance expectancy means the degree that individual accepts an e-learning system will upgrade his/her learning performance and productivity in the organization. Existing researchers have found that execution hope speaks to be a solid indicator for behavioral intention (BI) of numerous kinds of innovations e.g. Net banking [16]mobile banking and e-government, social media, and e-learning.

Effort Expectancy (EE)

Effort expectancy is about the degree to which the user expects the effort required to operate the technology to be minimal in nature (Venkatesh et al., 2003) and the degree to which an individual accepts that the use of technology is simple and easy to use (Yadav et al., 2016). Effort expectancy is comparative to perceived ease of use within the original technology acceptance model (TAM). Past research indicated that EE has a direct impact on behavioral intentions. Also, it is also considered as a basic factor of learning intention to use the new system or model. Within the setting of this study, it is expected that in the event that the users discover the framework simple to utilize, at that point they are more likely to use it.

Hedonic Motivation (HD)

Hedonic motivation is characterized as the way utilized to measure the degree user's find the system to be enjoyable and exciting[12] Hedonic motivation can also be linked with the interactivity of the system as more the interactivity of the system, more are the chances that the user is more engaged and hence enjoying the process. It also covers the feeling of using a new system which can be considered as innovation and can act as a driver for change. Studies have found that it can play a major role in increasing the adoption of the e-learning system in an organization. For e-learning, it is anticipated that if the system makes the user feel more engaged and blissful, theyare more likely to adopt o it and use it regularly.[14]

Habit (HB)

Habit is characterized as doing something frequently and routinely. It can also be said that when a person repeats an activity routinely and he/she is satisfied with the result, the activity at that point gets to be routine. Past studies included habit to get it user's behavior as earlier periodic behaviors can deliver favorable feelings toward the behavior. In the contest of e-learning, habit can be measured my checking the frequency and usage pattern of an employee on the e-learning platform.

Trust (TR)

Trust acts as "anindividual readiness to depend based on the convictions in capacity, generosity, and integrity". Trust implies "a subjective desire that someone or something is solid and readiness to acknowledge powerlessness"[17]. Arguably, trust in the outcome of using the system has become an important factor as if the users don't believe in the final outcome of using any new system. They are bound to lose interest in the system as they find it irrelevant for usage. In the context of this study, we can say that digital presence brings more danger totrust of the user to make sure that the system is trustworthy, it is important to showcase the importance of it by giving proper rewards. It can be achieved on the chance that they trust the outcome of the system.

Facilitating Conditions (FC)

Facilitating conditions is characterized as "the level of recognition to utilize organizational and technical infrastructure to back the utilize of the new frameworks"[5]. Facilitating conditions acts as a driver for adoption as the user looks for support and infrastructure from the organization and the system whenever they are stuck and a proper guidance and basic IT infrastructure helps in improving the adoption. In other words, it is giving the outside assets that are needed to encourage the execution of a specific conduct[4]. Within the setting of workplace innovation use, FCs include training on the new system, constant support and IT infrastructure at their disposal. Within the setting of this study, FC will check whether proper resources, training, guidance and infrastructure required to use the e-learning system is present or not[14].

Self-Efficacy (SE)

Self-efficacy - as an inner person characteristic–"is characterized as individuals' judgments around their capabilities to organize and execute the courses of activity required to deliver given attainments".Within the Social Cognitive Theory (SCT), SE is a kind of self-assessment that an individual does to check whether the certain task can be achieved by them or not. Its talks about the intrinsic confidence of performing a task with minimal or no help from anyone else.In the context of e-learning, SE has been characterized as "an individual's recognitions of his or her capacity to use computers within the achievement of an assignment instead of reflecting basic component skills". Earlier studies have found SE to be the basic indicator that directly influences the user's behavioral intention and e-learning acknowledgment.

When we look at the technology adoption from the context of e-learning than factors such as workload, time availability and interactivity of the system also comes into the picture. The whole idea of implementing any system to reap the benefits out of it in the long run and by making sure that a proper change management plan is put into action which highlights all the possible barriers and required interventions beforehand. Organizations bear high cost to implement these systems and it is indispensable to make sure that these are adopted and utilized at optimum levels.

Objectives

The study tries to find the answers to below mentioned objectives which are majorly related to identifying the factors affecting the adoption of the e-learning system It attempts to find:

- To identify different factors affecting the adoption of e-learning among employees
- To identify 3 major factors which cannot be ignored by the organization while implementing the new e-learning platform.

Hypothesis

H0: There is no significant correlation between the different variables identified under e-learning adoption
Ha: There is a significant correlation between the different variables identified under e-learning adoption

Researchmethodology

An exploratory research frame was designed to understand the factors behind e-learning adoption among the corporates in India.

A. Sampling procedure and selection of respondents

As our research population is restricted to organizations where some kind of e-learning platform is already present. For primary data collection, a questionnaire was floated to different organizations ranging from IT to manufacturing to get the wide range of perspective. A multi-stage sampling procedure was followed. Non-Probability Convenience sampling was done. Later, while floating the questionnaire among the employees, a simple random sampling approach was followed. Personal interviewswere also conducted to get the better hold of the reality with respect to the issues and expectations of the employees. The aim was to get as many diverse opinions as possible from the employees itself.

B. Sample

A total of 70 responses were collected from more than 40 corporates through survey. Male-female ratio is little skewed, with 72.9 percent of respondents being male and remaining 27.1 per cent being female. The distribution of employee experience is respectable with 25.7 percent falling under the experience range of 0-1, 37.1 percent under the range of 1-3 years, 27.1 percent under the range of 3-5 years, 4.3 percent falling under the range of 5-8 years and remaining 5.7 percent under the range of 8 and above years of experience. Personal interview of 5 respondent were also conducted to understand the factors.These interviews helped in getting the ground level reality that organizations face while implementing these changes.

C. Method of Preparing the Questionnaire

Based on the literature review and by taking interviews from the employees,a questionnaire was prepared using the combination of Technology Adoption Model (TAM), UTUAT2 and insights collected from interviews. Thecomponents taken into consideration were Perceived benefit, the perceived ease of use, e-learning content, self-efficacy, support of management and facilitating conditions. The questionnaire consisted of 24 questions with 17 variables collected on 5-pont Likert scale.

Results And Analysis

Factor analysis was done using SPSS to identify the factors relevant for the study. These factors may help in identifying the factors affecting the e-learning adoption. Table I gives the result of the KMO and Bartlett's test. With the sig. value at .000 which is less than .05, we can reject our null hypothesis (H0). Hence, there is a significant correlation between the different variables identified under e-learning adoption. KMO sampling value of .650 represents good sampling adequacy as it is greater than the threshold value of .500.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.650
Bartlett's Test of Sphericity	Approx. Chi-Square	342.522
	df	120
	Sig.	.000

TABLE I

Table II represents the number of relevant components which can be created and work as the factors of e-learning adoption. Total of 6 components have an eigen value more than 1, hence we can assume that total 6 distinguish factors come into play when it comes to adoption of any e-learning system. A total of 69.447 percent variance is explained by these components with maximum variance explained by the first component of 25.991 percent and top 3 factors explaining around 48 percent variance. Principal component Analysis with varimax rotation was used to derive the results. Variable 8 was removed from the analysis which was related to the self-efficacy of an individual because it had the communality value less than .5 and also the correlation with all the components was also below 0.5. The main reason of this could be the advancement of technology has made people comfortable with new technology and they feel more confident in using it. The recent COVID-19 outbreak can also be the reason of this confidence as more and more people are now working from home and using technology daily.

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.319	26.991	26.991	2.685	16.782	16.782
2	1.827	11.421	38.412	2.001	12.505	29.287
3	1.511	9.446	47.857	1.922	12.009	41.296
4	1.338	8.360	56.218	1.608	10.047	51.344
5	1.089	6.807	63.025	1.471	9.193	60.536
6	1.028	6.422	69.447	1.426	8.910	69.447
7	.853	5.333	74.780			
8	.773	4.830	79.610			
9	.671	4.193	83.803			
10	.613	3.831	87.634			
11	.520	3.248	90.881			
12	.408	2.551	93.432			
13	.368	2.299	95.731			
14	.260	1.627	97.358			
15	.243	1.521	98.879			
16	.179	1.121	100.000			

Extraction Method: Principal Component Analysis.

TABLE II

Table III Gives us information about which variable is correlated to which component. The matrix gives us a clear picture of the variables which needs to be taken care of to achieve the particular component. Table IV represents the description of variables and the component name is given based on the commonalities observed among the variables. The final 6 factors which affect the adoption are Perceived benefits of using e-learning, Organization support, facilitating conditions, Perceived ease of use of the system, interaction level and lack of time to use the system because of the high workload. These factors can further be measured by using the questions mentioned in Table IV.

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
VAR00001			.793			
VAR00002			.822			
VAR00003					.637	
VAR00004	.590					
VAR00005	.530					
VAR00006		.635				
VAR00007				.727		
VAR00009					.817	
VAR00010				.574		.509
VAR00011	.827					
VAR00012	.702					
VAR00013	.776					
VAR00014				.647		
VAR00015						.870
VAR00016		.786				
VAR00017		.752				

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

TABLE III

Perceived benefits	**1.** e- learning system improves my learning performance. (VA00004) **2.** e- learning system improves my productivity. (VA00005) **3.** I find the content on e-learning platform relevant to my current job. (VA00011) **4.** I find the content on e-learning platform up to date with latest courses. (VA00012) **5.** I find e-learning platform useful for my career progression. (VA00013)

Organization support	**1.** e- learning system is easy to use. (VA00006) **2.** My manager encourages me to use e-learning platform. (VA00016) **3.** Top leaders also use e-learning system. (VA00017)
Facilitating conditions	**1.** I Have the necessary knowledge to use the e-learning platform? (VA00001) **2.** I have all the required resources (like internet, mobile, laptop) to use the platform. (VA00002)
Perceived Ease of use	**1.** e-learning system is complicated. (VA00007) **2.** Interaction will fellow learners is more difficult in e-learning system. (VA00010) **3.** It sometimes become difficult to understand the language of the instructor. (VA00014)
Interactivity	**1.** Whenever I need some help with the platform, Guidance is available to me. (VA00003) **2.** e-learning system enables interactive communication with the instructor. (VA00009)
Time	**1.** I don't get the time to learn online. (VA00015)

TABLE IV

Table V represents the correlation between the components. Low correlation values represent minimum cross loading and effectiveness of the components. Each component is independent of each other and should be treated differently.

Component Transformation Matrix

Component		1	2	3	4	5	6
dimension	1	.685	.467	.352	-.085	.326	-.274
	2	.255	.179	-.637	.699	.001	-.091
	3	.175	-.212	.571	.576	-.106	.505
	4	-.297	.816	.082	.008	-.417	.256
	5	-.551	.184	.153	.283	.744	-.070
	6	.208	.072	-.338	-.303	.393	.769

Component Transformation Matrix

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Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

TABLE V

Findings And Discussion

The results helped us in accepting our alternate hypothesis and hence established the fact that there is a significant correlation between the different variables identified under e-learning adoption. These variables were further grouped into 6 factors having corelated variables.

Our first objective was to identify different factors affecting the adoption of e-learning among employees. The research helped us in identifying 6 factors which has a significant impact on e-learning adoption process in an organization and they are perceived benefits, facilitating conditions, organizational support, the perceived ease of use, interactivity and time. These could be the possible barriers which an organization can face while implementing the e-learning platforms.The importance of these factors is discussed further in the paper.

Our second objective was to identify 3 major factors which cannot be ignored by organization while implementing new e-learning platform. The top three factors which explain the maximum variance are perceived Benefits, facilitating conditions and organizational support. Organizations should make sure that these factors are not ignored at any time of implementation as they help in increasing the adoption at a higher rate

The importance of all the identified six factors is discussed below:

Perceived benefits

It talks about the benefits which a user looks for before using any system in the context of this study, the benefit revolves around how e-learning can help employees in enhancing their productivity and learning with the relevant content which is updated time to time.

Organizational Support

The support from top management and middle management is really important for driving the adoption. If top leaders are advocating any platform then it creates curiosity and build trust among the employees to use the system.

Facilitating conditions

Proper infrastructure setup and constant guidance for the employees should be made available to the employees to increase adoption. As lack of support system discourages the employees to use the system again and again.

Perceived Ease of use

The perceived ease of use of the system makes it more usable and user friendly. The ease of use perceived by the employee has direct impact on the adoption rates as a more complex system tend to lose in the long run as it requires extra efforts from the employees to use it. Hence organizations should make sure the ease of using the system is simple and easily understandable.

Interactivity

The interaction level with instructor and the way the system responds to the employees comes under this component. High interaction ensures high engagement level with the system and provides better results and satisfaction.

Time

The time required to access the system is the least important factor. With higher workload employees tend to keep the e-learning modules at the backseat and only consider it as a to do the task. Hence, it is important to create a learning culture in the organization so that employees don't miss the critical lessons which they need to learn to do their job.

Conclusion And Recommendations

Implementing an LMS or e-learning system is not useful if employees are not realizing its full potential. To make sure the implementation is smooth and understandable to the employees. It is important for any organization to communicate the need of the new system and how it is going to affect them. Communicating what is in it for me to each and every stakeholder in the organization is necessary. For getting the buy-in from the top leaders a business case can be created highlighting the cost benefit analysis of using the new system and how it can make the organization more future ready. Middle management should be communicated how it is going to help them in their career progression and how it connected with their long- and short-term plans.

While selecting and implementing the system all the above six factors should be taken into consideration. It is important that the organization create a facilitating environment for the employees so they can easily move on the new system and use it to improve their skills and knowledge. The study can be used to drive the change management program at the organization as it focuses on different factors which can act as barriers if not addressed properly on time.

Limitations

As the study is focused only on few factors and factors like attitude and values are not taken into consideration, it doesn't explain the intention of adoption based on the values and attitude of the employees. Also, the study takes in account organizations of different sectors, so it can't be specific for all the sectors as different sectors can have different challenges and thus further sector specific study can be done to identify those factors.

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