

Facilitating positive attitude in students: A study of critical e-learning factors

Iti Verma¹ & Shalini Nigam²

¹Research Scholar, Management, Dayalbagh Educational Institute, Agra

Email- itiverma140069@dei.ac.in

²Professor, Dept. of Dayalbagh Educational Institute, Agra

Abstract

Planning the implementation of e-learning requires study of various factors that play a key role in its success. Although many studies on e-learning factors have been conducted from time to time, the majority of them aimed at identifying critical success factors based on literature review or through surveys, while only a few studied the impact of critical success factors on other variables. (Farid et al., 2018; Qammach and Al-Sharifi, 2021). The present study aims to analyze the impact of critical success factors on students' attitudes towards e-learning. Through the questionnaire, a total of 300 respondents were reached, out of which 221 responded giving a response rate of 74 per cent. Analysis of data was done using IBM SPSS and AMOS graphics. Findings reveal that University Support has a positive impact on students' attitudes towards online learning, whereas, technology issues have a negative impact on students' attitudes towards e-learning. Instructor support is seen to have an insignificant impact on students' attitudes towards e-learning. Only three critical factors have been tested in the present study to study their impact on students' attitudes, while future studies can involve even more factors. The study holds importance for all stakeholders in the education industry.

Keywords: University Support, Technology, Instructor Support, Students' Attitude, Critical Success Factors.

Introduction

In recent years, online learning is gaining momentum in schools and colleges around the world due to its feature of flexibility and student-centric approach. However, it is very important to pre-plan the implementation process of online learning as an unplanned effort can be a waste of time, effort, and knowledge. The adoption and implementation of e-learning need careful analysis of critical success factors of e-learning. A lot of previous research has tried to draw attention to some critical success factors that can improve the performance and success chances of online learning.

According to the Center for Management and Organization Effectiveness, 2022, "Critical Success Factors refer to those specific elements or action areas that require focus and should be implemented for achieving strategic goals". In the context of e-learning, Critical success factors refer to those factors that help to accelerate the success of online learning by achieving planned learning outcomes. These factors can include a wide variety of elements but frequently include, student-related factors, instructor-related factors, technology-related factors, and university-related factors.

For the purpose of study, students' perception of e-learning will be

analysed. Students are the end users of e-learning, and satisfying them should be one goal of effective e-learning. If students' attitudes are positive, they will accept e-learning, and it will be easier to engage them leading to better learning outcomes. A study of critical success factors of e-learning is important as e-learning requires a strong base to function effectively, which is possible only if certain elements are actively engaged in the learning environment like competency of students and instructors, reliable technology, quality content, supportive institutional policies, etc.

The present study will aim at recognizing the frequently prioritized critical success factors of e-learning and analyzing their role in influencing students' attitudes towards e-learning. The study is important for higher

educational institutes in planning the successful implementation of e-learning through focused investment in the critical success factors of e-learning as they result in positive attitude of students which result in increased student acceptance of online learning and thereby better learning outcomes.

Literature Review

The study has collected literature reviews from the period 2007 to 2020 which dealt with the study of key factors pertaining to e-learning implementation, key factors related to e-learning adoption, and key factors impacting the success and effectiveness of e-learning especially in higher education. The following table highlights various studies that investigated the Critical Success Factors of e-learning:

Table-1: Showing Review of Literature related to Critical Success Factors of e-Learning

S. No.	Author (yr.)	Title	Purpose	Methodology	Findings
1.	(Qammach and Al-Sharifi, 2021)	The Impact of Critical Success Factors for E-Learning on Strategic Performance: An applied study in a sample of the faculties for the University of Baghdad	To test the impact of critical success factors for e-learning on the strategic performance of a sample of Baghdad University faculties.	Survey	There is a correlation and a statistically significant effect between the critical success factors for e-learning with its dimensions (information technology, the teaching staff) and the strategic performance with its dimensions
2.	(Priatna <i>et al.</i> , 2020)	Key Success Factors of e-Learning Implementation in Higher Education	This study aims to analyze the Key Success Factors (KSFs) of e-learning implementation	Multi Attribute Utility Theory Approach	The dominant factor that needs attention is organizational aspect, while other factors are technology and human resource.
3.	(Alqahtani and Rajkhan, 2020)	E-learning critical success factors during the covid-19 pandemic: A comprehensive analysis of e-learning managerial perspectives	To identify the critical success factors for E-learning during COVID-19	Analytical Hierarchy Process	Technology management, support from management, increased student awareness to use E-learning systems, and demanding a high level of information technology from instructors, students, and universities were the most influential factors for E-learning during COVID-19.

4.	(Raman et al., 2019)	Investigating Key Factors for successful e-learning implementation	To identify the critical success factors of e-learning	Extensive Literature Review	The CSFs are teacher's characteristics (teacher's attitude, teacher's computing or technical skills, interaction among teacher-students, teaching style, knowledge in e-learning content development and self-efficacy), student's characteristics (attitude, computer competency, interaction, self-efficacy, motivation and cultural and social norms), information technology infrastructure (internet accessibility, reliability and availability), design and content (perceived ease of use and perceived usefulness) and organization characteristics (training and support).
5.	(Kasani and Mourkani, 2019)	A research synthesis of critical success factors of e-learning: A model development	To identify critical success factors of e-learning to develop a model for e-learning success	Review	E-learning success factors include three dimensions: Structural dimension (including: organizational, educational, content, support, and system quality); Content or behavioral dimension (including factors: learner and teacher); and the contextual or environmental dimension (including factor: technology)
6.	(Cheriyani, 2018)	Critical Success Factors for E-learning: An Indian Perspective	This paper attempts to identify the critical factors attributing to the success of e-learning in higher education sector through a student perspective.	Survey Principal Component Analysis	The study identifies five factors as critical in the success of e-learning viz. technological support, e-learning resources, e-learning support and training, characteristics of student, and characteristics of instructor in their order of relative importance with technological support being the most critical factor
7.	(Farid et al., 2018)	Critical Success Factors of E-Learning Systems: A Quality Perspective.	To identify CSFs through review and identify their impact on e-learning quality	Review and Survey	Perceived usefulness, lack of learning objects in local languages, quality of educational system, Lack of instructional designer, lack of instructional design process and information quality have emerged as top critical factors hindering the quality of e-learning.

8.	(Anggrainingsih et al., 2016)	Determining eLearning critical success factor at Sebelas Maret University using Analytical Hierarchy Process (AHP)	To determine the Critical Success Factors of the UNS e-learning implementation using Analytic Hierarchy Process Citations (AHP).	-	The most important factor is Technology, followed by the E-learning Development, Students' characteristics, Lecturer's characteristics, and Management Support.
9.	(Basak, Wotto and Bélanger, 2016)	A Framework on the Critical Success Factors of E-Learning Implementation in Higher Education: A Review of the Literature	This paper presents a conceptual framework on the critical success factors of e-learning implementation in higher education, derived from an in-depth survey of literature review.	Review	The proposed conceptual framework on critical success factors of e-learning include Technological Factors, Institutional factors, Pedagogical factors, Ethical factors, Resource factors, Evaluation Factors, Management factors, Social Interaction Factors
10.	(Gamage, Fernando and Perera, 2014)	Factors affecting to effective eLearning: Learners Perspective	To explore the dimensions of effectiveness from learners' perspective catering to the current demand.	Interview and observation (Qualitative methodology)	Identified 10 factors that affect e-learning effectiveness, out of which the top 5 are as follows: Interactivity, Collaboration, Motivation, Network of Opportunities, Pedagogy. The remaining 5 factors are Content/Material, Assessment, Usability, Technology, Support for Learners
11.	(Cheawjindakarn, Suwannattachote and Theeraroungchaisri, 2012)	Critical Success Factors for Online Distance Learning in Higher Education: A Review of the Literature	The aim of this paper is to specify the Critical Success Factors (CSFs) for Online Distance Learning (ODL) in Higher Education (HE).	Review of Literature	The critical success factors of ODL include institutional management, learning environment, instructional design, services support, and course evaluation.
12.	(Fitzpatrick, 2012)	Key Success Factors of eLearning in Education: A Professional Development Model to Evaluate and Support eLearning	The purpose of this paper is to introduce the KSF (Key Success Factors) model of eLearning to support and evaluate eLearning in secondary schools.	In-depth Interview	Dominant factors of e-learning are technology, human, design, support, and evaluation.
13.	(Musa and Othman, 2012)	Critical Success Factor in E-Learning: An Examination of Technology and Student Factors	To examine the e-learning critical success factors (CSFs) as perceived by students.	Survey	Internet browsing speed and instructor participation in discussion groups are most critical factors for e-learning.

14.	(Rijal & Wardani, 2012)	Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty	It aims at identifying the Critical Success Factors that aim to influence the acceptance of e-learning in developing nations.	Interview Delphi and AHP method	Technology awareness, motivation, and changing learners' behavior are prerequisites for successful e-learning implementations.
15.	(Bhuasiri <i>et al.</i> , 2012)	Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty	To identify multiple factors that influence the success of e-learning systems.	Delphi and AHP	Technology awareness, motivation, and changing learners' behavior are prerequisites for successful e-learning implementations.
16.	(Selim, 2007)	E-learning critical success factors: an exploratory investigation of student perceptions	To identify and measure its Critical Success Factors (CSFs) from student perceptions.	Survey	The surveyed students indicated that instructor characteristics factor is the most critical factor followed by support and technology. The Student characteristics factor was perceived as the least critical factor to the success of e-learning.

Research Gap

Although there are a lot of studies on critical success factors of e-learning, no study has tried to investigate the relationship between critical success factors of e-learning and students' attitudes towards e-learning. Moreover, most studies are review papers and lack empirical investigation. As such,, there is a need to explore the role of critical success factors of e-learning in developing positive attitudes of students towards e-learning.

Research Objectives

The study aims at fulfilling the following objectives:

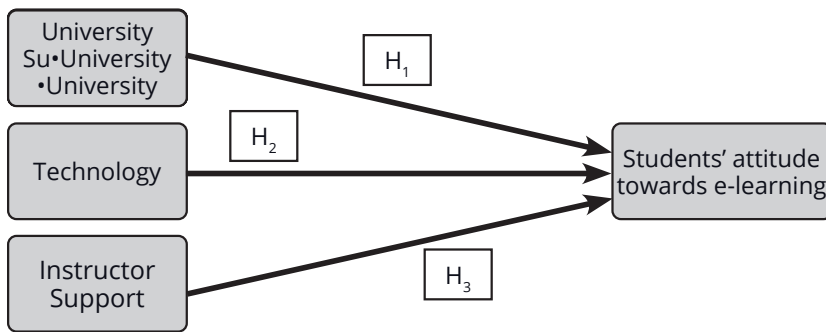
1. To analyse the impact of university support on students' attitudes towards online learning

2. To analyse the impact of instructor support on students' attitudes towards online learning
3. To analyse the impact of technology issues on students' attitudes towards online learning.

Conceptual Framework and Research Hypotheses

The most frequently identified critical success factor in past literature has been technology (indicating technology issues or technology support), followed by university support, and instructor support. Thus, based on a detailed analysis of the literature review, three factors, technology, university support and instructor support, have been chosen as the critical success factors for further analysis of their impact on students' attitudes towards online learning.

Figure-1: Shows Conceptual Framework proposed for the Study



Source: Self Constructed The study will involve the perception of students as well as analysis of students' attitudes towards online learning. Students are the end users of e-learning system. Students' acceptance of online learning is important to fully realize the benefits of online learning, which can only be possible if they have a positive attitude. If students' attitude towards e-learning is positive, it makes them more interested and motivated to learn, whereas, if the students' attitude towards e-learning is negative, it can create hurdle in achieving learning outcomes. According to Maheshwari Greeni, 2020 Students who enjoy their courses have stronger intentions to use e-learning in future also.

H₁: University support positively influence students' attitude towards e-learning

University Support is also an essential component of e-learning system. Without university support, it might not be possible for e-learning to be successfully implemented at ground levels. According to Maheshwari Greeni, 2020 Students intentions to use e-learning system in future are influenced by the level of institutional support provided to them. The present study will aim to understand if university support influence students' attitude towards e-learning.

H₂: Technology issues negatively influences students' attitude towards e-learning

The term 'technology' can include variables indicating technology management or lack of technology management in the form of technological barriers and issues. According to Zalat et al., 2021, the highest barrier in accepting e-learning included insufficient or unstable internet connectivity, inadequate computer labs, lack of computers/laptops, and technical problems. Technology Support implies managing technology in a way that the technological barriers in e-learning system are minimized and the benefits of e-learning technology can be fully realized. Proper management of technology is important as it ensures uninterrupted internet access, reliability on technology, better browsing speed, etc. Technology has been identified as an important factor in majority of studies (Raman et al., 2019); (Anggrainingsih *et al.*, 2016); (Gamage, Fernando and Perera, 2014); (Fitzpatrick, 2012); (Priatna *et al.*, 2020); (Selim, 2007); (Musa and Othman, 2012); (Qammach and Al-Sharifi, 2021); (Basak, Wotto and Bélanger, 2016); (Kasani and Mourkani, 2019); (Alqahtani and Rajkhan, 2020). According to Taat & Francis, 2019, Technology support plays a vital role in e-learning adoption and implementation. It is the lack of technology support that leads to technical issues and challenges that hinder the success of e-learning process. The present study will aim to analyze the impact of technology issues on students'

attitude towards online learning.

H₃: Instructor Support positively influence students' attitude towards e-learning

For e-learning to be effective, support of instructors to students in online learning environment is essential. Instructor characteristics include their Attitude, technical skills, interaction, participation, teaching style, knowledge of content development on online learning platforms and self-efficacy. (Raman et al., 2019); (Anggrainingsih et al., 2016); (Kasani and Mourkani, 2019) and such characteristics should be utilized to support students' learning in virtual environment. Instructors should guide and encourage students to boost their motivation to use e-learning (Taat & Francis, 2019). The present study will aim to analyze whether instructor support influences students' attitude towards e-learning.

Research Methodology

Data and sample: Primary data have been collected through an online questionnaire distributed to graduate students of different colleges in Western U.P. using purposive sampling. Purposive sampling is used as the study aimed at collecting the responses of only those graduate students who have taken online courses in their colleges. Self-constructed questionnaire is made to measure the constructs of proposed conceptual framework using detailed

review of past literatures. A total of 300 respondents were reached out of which 210 responded resulting in response rate of 74 per cent. The data were coded and checked for outliers and missing values before proceeding for further analysis.

Variables of the study: The study aimed at studying variables four variables which includes university support, instructor support, technology issues, and students' attitude towards e-learning.

Scales of measurement: All variables were measured using 5-point Likert scale, where 1 meant "strongly disagree" and 5 meant "strongly agree". The questions were self-constructed through variables identified from past literature.

Statistical techniques: Analysis of demographic and study habits was done using SPSS 20. Structural equation modelling was used to study structural relationships between the variables. For Structural equation modelling, AMOS Graphics was used.

Results and analysis

57.5 per cent males and 42.5 per cent females participated in the survey, out of which majority of students took online classes in regular mode.

Table-2: showing Factor items reliability and validity through Average variance extracted (AVE) and construct reliability (CR)

		Cronbach alpha	Factor loadings	AVE	CR
University Support	US2	0.841	.505	0.491	0.857
	US3		.520		
	US4		.759		
	US5		.837		
	US6		.773		
	US7		.810		

Instructor Support	IS1	0.781	.503	0.601	0.818
	IS2		.562		
	IS3		.800		
	IS4		.524		
	IS5		.629		
	IS6		.552		
	IS7		.780		
Technology issues	T1	0.808	.737	0.498	0.858
	T2		.711		
	T3		.738		
	T4		.648		
	T6		.747		
	T7		.664		
	Students' Attitude towards e-learning		SA1		
SA2		.767			
SA3		.791			
SA4		.518			
SA5		.738			
Overall reliability		0.804			

Source: IBM SPSS Statistics

The reliability of constructs is checked using Cronbach alpha which is within acceptable limits of 0.6 to 0.8 for all items indicating internal consistency of the scale. Factor loadings are at least 0.5. The value of AVE should be at least 0.5 and the value of CR should be at

least 0.7. Approximately all factors fit in the criteria.

Structural equation modeling

The study uses AMOS graphics for studying the hypothesised relationships which gives the following results:

Table-3: showing the hypothesised relationships tested using AMOS

Hypothesis	Path	Path coefficient	Critical Ratio	p value	Direction	Decision
H ₁	US → SA	.242	4.492	***	Positive	Supported
H ₂	T → SA	-.236	-3.767	***	Negative	Supported
H ₃	IS → SA	0.051	0.913	0.361	Positive	Not Supported

*** Significant at 0.001 level

Source: AMOS Graphics

It can be observed that University Support (US) influence students' attitude towards e-learning (SA) in a significant positive way. ($r = 0.242$; $CR = 4.492$), thus, H_1 is supported. T represents technology issues due to lack of technology support which negatively impacts students' attitude towards e-learning (SA), thus supporting H_2 ($r = -0.236$; $CR = -3.767$). Instructor Support (IS) does not significantly impact students' attitude towards e-learning (SA) and hence, H_3 is not supported ($r = 0.051$; $CR = 0.913$).

Discussion

The impact of critical success factors of e-learning on students' attitudes has not been studied beforehand. Findings indicate that critical success factors play an important role in shaping students' positive attitudes towards e-learning. Active support from universities in the field of e-learning helps to develop positive attitude towards e-learning in the mind of students, whereas, the role of instructor support is insignificant in influencing students' attitude towards e-learning. Lack of technology support results in technology related issues and challenges which negatively influence students' attitude towards e-learning usage. There should be an active effort to mitigate technological issues in e-learning, as well as proactive university support in planning e-learning in universities.

Research Implications

The research can be beneficial as it

pinpoints the basic requirements for successful implementation of e-learning in Higher education, through active university support and technology support. Many studies have identified critical success factors of online learning from time to time, but rarely have they tried to analyse their impact on students' attitude towards e-learning. The research is valuable to all stakeholders, but most importantly to the universities in planning the implementation of e-learning. E-learning can only be effective if it is wholeheartedly accepted by the students. Positive attitude of students towards online learning is possible only if university provides enough support in e-learning implementation, and by mitigating the technical barriers in e-learning.

Limitations and Scope of future study

Due to time constraint, the present study has considered only three critical success factors including instructors support, technology support and university support, while future studies can involve analysis of other key factors also in understanding their role in students' acceptance of online learning by developing their positive mindset towards e-learning. Moreover, the study has taken place in western Uttar Pradesh and can involve analysis in other geographical areas to check the replicability of results. Future studies can extend to analysis of more critical success factors and even involve model proposition.

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Table Legends

Table 1 shows the review of the literature collected relating to critical success factors of e-learning. The researcher has reviewed sixteen past studies relating to key factors for e-learning success, key factors for e-learning quality, key factors for e-learning implementation, key factors for e-learning acceptance etc. Most studies have explored critical factors, while the impact of these factors on other variables has been rarely studied.

Table 2 shows the calculation of important values like construct reliability and average variance extracted which is important to validate the constructs. It also depicts Cronbach alpha and factor loading values calculated using IBM SPSS. AVE shows convergent validity and ideally, all calculated values of AVE are 0.5 or more. Cronbach alpha shows internal consistency of scale and ideally, all values are between 0.6 to 0.8. Construct reliability is also an indicator of internal consistency of scale and all calculated values are ideally above 0.7 assuring internal consistency.

Table 3 shows the hypothesis testing conducted using AMOS graphics. Initially, AMOS has been used just to test the presence and direction of the relationship between the variables although, it can also be used for creating an SEM model.

Figures Legend

Fig. 1 shows the conceptual framework for the study. The variables have been chosen based on a systematic review of past literature. The framework reflects the potential hypothesis that will be tested in the study. All variables have already been explored in previous studies as critical to the success of online learning and hence are taken for analysis.