

Acceptance for e-learning through development programmes among faculty and students in India

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Abstract

Higher education institutions had been delinquent in adopting e-learning platforms before COVID-19 hit. The sudden shift was both dark and bright for institutions depending upon their infrastructural capabilities, faculty and student acceptance, and intention to adopt e-learning platforms. As a part of capability building, many universities initiated online development programmes for faculty and students to ensure uninterrupted learning. This study examines the success of similar programmes run by a state university in India. The aim is to examine the improvement in the acceptance for e-learning among faculty and students and its impact on their self-efficacy and behavioural intention. The study analyzes the responses pre- and post-successful completion of a month-long faculty and student development programme. The results reveal that acceptance, self-efficacy, and behavioural intention increased after these programmes.

Keywords: E-learning, experiment study, higher education, self-efficacy, behavioural intention

1. Introduction

The year 2020 presented unprecedented challenges in the form of international lockdowns aiming to contain the spread of the deadly coronavirus. The World Health Organization (WHO) declared COVID-19 a global epidemic threatening humanity (WHO, 2020). The global shutdown caused ripple effects across sectors, including education, leading to interruption and sudden

closures of academic institutions (Ebner et al., 2020) to comply with the social distancing norms. Consequently, the global academic landscape witnessed a dramatic shift to technology-enabled learning (Radha, Mahalakshmi, Kumar, & Saravanakumar, 2020).

Technology has influenced education decades, devising the ‘E-learning revolution’ as a common terminology (Galagan, 2000). The pre-pandemic growth of e-learning globally was 15.4 percent yearly, but it came without pressure on the institutions, faculty, or students (Toth-Stub, 2020). However, after COVID-19, there was a quantum leap to online as a surrogate for face-to-face teaching. Among many other developing nations, India also struggled to promote e-learning entirely due to an unplanned shift and a lack of technology readiness, knowledge, and infrastructure (Alqahtani & Rajkhan, 2020). A recent government survey report, confirms that only 27 percent of Indian households have internet connectivity, the foundational requisite for e-learning (India Today, 2021).

Also, due to the inadequacy of digital strategy and lack of proper training, students and faculty faced challenges and obstacles to adopting digital technology for learning (Baticulon et al., 2020). Considering these challenges, institutions have gathered pace to build competencies among faculty and students through development programmes as part of their digital capacity-building exercise. It is crucial to uncover the impact of these programmes on the acceptance and behavioural intention of faculty and students to use digital technology for learning. Therefore, this paper aims to examine the role of the Faculty Development Programme (FDP) and Student Development Programme (SDP) in building faculty and student perception about the acceptance and intention to use digital technology for learning. It assesses one such development programme in a university situated in India. The paper continues as follows. Section 2 presents the evolution, significance, and adoption of e-learning, while Section 3 discusses the material and methods used in the study. Section 4 reports analysis and interpretation, while Section 5 presents a discussion.

2. The evolution and significance of e-learning

The continuously evolving, dynamic era of the web (from Web 1.0 to 4.0) has led to a dominant digital influence on the realm of learning. E-learning, also called electronic learning or technology enhanced learning, is the intentional use of networked information and communications technology (ICT) in teaching and learning (Naidu, 2006; Nuncio et al., 2020). Other equivalent

terms like online, virtual, and digital learning denote a secure, collaborative, constructivist, and sustainable knowledge-sharing process (Yee & Luan, 2009; Choudhury & Pattnaik, 2020).

E-learning technology offers access to educational curricula outside a traditional classroom and utilizes electronic information and alternative communication channels (Gaikwad & Vrishalli, 2016). The primary goal of e-learning is to support individual learning through ICT and facilitate the integration of web-based learning approaches in conventional knowledge distribution settings while innovating pedagogy and teaching models and expanding educational territories (Milicevic et al., 2021; Maldonado, Khan, Moon, & Rho, 2011; Chalela Naffah, Valencia-Arias, Bermúdez-Hernández, & Ortega Rojas, 2016; Valencia-Arias, Chalela-Naffah, & Bermúdez-Hernández, 2018).

Literature has acknowledged numerous benefits of e-learning, including accessibility, student autonomy, greater convenience and flexibility, effective learning process, and reduced operational costs (Viberg & Grönlund, 2013; Ozdamli & Uzunboylu, 2015). From acquiring and distributing knowledge online to delivering certifications and degrees, e-learning has significantly influenced the teaching and learning processes in higher education institutes globally (Valencia-Arias et al., 2018). Consequently, it has become an important component of the long-term strategic plan of educational institutions.

2.1 The emerging role of e-learning in higher education

The global higher education community faced sudden disruption and significant challenges in the wake of the coronavirus outbreak (Crawford et al., 2020). Institutional closures to combat the pandemic resulted in a change of focus to transitioning content in an online environment, altering stakeholders' attitudes and behaviours, developing online pedagogy, enhancing students' and teachers' ability to adopt e-learning, and meeting online infrastructural requirements. However, the larger question of whether global higher education is capable of responding swiftly in order to counteract such emergencies remains unanswered (Houlden & Veletsianos, 2020).

Millions of faculty and students around the world had to swiftly adapt to e-learning because of an unprecedented halt in routine operations at their institutions. Most of them faced challenges with digital infrastructure, internet connectivity and IT hardware availability, e-learning literacy and resources, student engagement, online content design, awareness of teaching and learning

tools, and lack of timely support from education technology teams (Ebner et al., 2020; Rawashdeh, Mohammed, Al Arab, Alara, & Al-Rawashdeh, 2021).

2.2 Adoption of e-learning in Indian higher education

The Indian higher education system, one of the largest network of institutions (India Brand Equity Foundation, 2020), has considerable potential for the enhancement of e-learning. The National Education Policy also outlines the important role of e-learning in reforming the country's education system and expanding access to higher education (Ministry of Human Resource Development, 2020). The adoption of e-learning will enable accessibility and flexibility beyond formalized classroom contexts. However, this requires the Indian higher education to switch from traditional teaching and learning styles to e-learning and competency development to ensure success. Ironically, most Indian universities promoting technological integration into teaching and learning had not shifted to pure online education before the COVID-19 crisis.

The success of e-learning systems relies on understanding the adoption factors and the challenges facing the current e-learning systems (Almaiah, Al-Khasawneh, & Althunibat, 2020). Several barriers to adopting e-learning have been identified, some of which are faculty's lack of training and comfort in online teaching. Similarly, challenges such as acceptance for e-learning, self-efficacy of the faculty and the students, their attitudes and behavioural intentions to use e-learning on a digital platform, perceived credibility of e-learning, and perceived ease of use of e-learning systems in the emerging economies have been widely discussed in the literature (Choudhury & Pattnaik, 2020; Valencia-Arias et al., 2018). Against this backdrop, considerable effort is needed for the continuous professional development of faculty and students for the better leveraging e-learning in higher education (Ministry of Human Resource Development, 2020).

The introduction of e-learning initiatives in higher education by the Indian government has also forced institutions to prepare students to access learning opportunities, and faculty to gain the required skills in new teaching models. Naturally, the faculty (facilitator) and the students (learners) are the most critical stakeholders in e-learning. Current e-learning literature has been focusing on understanding the psychological factors influencing e-learning, especially in developing countries (Maldonado et al., 2011).

Institutional-level efforts are vital to address the challenges in the adoption of e-learning and to facilitate ease of acceptability by important stakeholders (Phutela & Dwivedi, 2020).

Therefore, further attention is required on strategies and policies focusing on implanting e-learning in the system. The development programmes work as schemas for developing such strategies and focusing on innovation and human resources development (Haviland, Shin, & Turley, 2010). Such programmes are typically seen as innovative and indicate institutional effectiveness. However, assessment of such programmes is required to ensure the attainment of objectives. Such evaluation also helps in communicating informed improvements at the institute level. Therefore, this paper aims to examine the role of the Faculty Development Programme (FDP) and Student Development Programme (SDP) in building faculty and student perception of the acceptance and intention to use digital technology for learning.

2.3 Acceptance for e-learning

Acceptance for e-learning among participants is the foremost phase in realizing e-learning outcomes (Martínez-Torres et al., 2008). Therefore, acceptance for e-learning must be secured at both facilitator and learner levels in higher education. Although a salient amount of literature has emphasized students' acceptance for e-learning, conspicuous variances arise in an environment where teachers approach e-learning methods and processes with some skepticism (Lee, Yoon, & Lee, 2009; Hrtoňová, Kohout, Rohlíková, & Zounek, 2014). Therefore, institutional support must be extended to bridge these gaps by improving participants' professional competencies in e-learning.

Scholars have identified several factors which affect the reception of e-learning, including the lack of perceived usefulness, lack of knowledge about the level of effort needed to promote the use of e-learning, low performance expectancy among participants, and the lack of a positive attitude towards e-learning (Tarhini, Masa'deh, Al-Busaidi, Mohammed, & Maqableh, 2017). According to the widely used Technology Acceptance Model (TAM) by Davis (1989), in the context of e-learning, users' perceived ease of use/effort expectancy and perceived usefulness play an important role in explaining e-learning acceptance behaviour (Lee et al., 2009). In addition, users' perception of low effort expectancy and enhanced benefits of using e-learning could build positive attitudes towards e-learning.

2.4 Self-efficacy in e-learning

Self-efficacy is an important notion in social psychology that describes an individual's belief in their ability to perform a specific behaviour. Perceptions of self-efficacy determine one's approach, attitude, and ability to acquire skills and perform a behaviour (Liaw & Huang, 2013; Prifti, 2020). Bandura (1997) conceptualizes self-efficacy as one's judgment of their capability of organizing and undertaking efforts to accomplish designated goals. Therefore, self-efficacy appears to influence one's choice of behaviours and the level of effort and persistence in attempting those behaviours (Barling & Beattie, 1983). Individual perceptions of self-efficacy also tend to manage individuals' emotional reactions (including stress and anxiety) to the actual behaviour (Bandura, 1997; Compeau & Higgins, 1995). Self-efficacy does not reflect individuals' perceptions of their skills; instead, it reflects their beliefs about what they can do under various circumstances.

In e-learning, self-efficacy is understood as one's judgment about their ability to be engaged through computers, that is, using computers and the internet, following web-based instructions and using learning tools, etc. The Theory of Reasoned Action (TRA) helps in understanding e-learning adoption behaviour to support self-efficacy beliefs. This theory highlights that beliefs influence attitudes, which further the intention to use or impact actual usage behaviour (Ajzen & Fishbein, 1980). Accordingly, self-efficacy is an internal control mechanism that affects an individual's decision to adopt e-learning. Students tend to be more autonomous in asynchronous learning environments, and their perceived self-efficacy can act as a factor affecting the adoption of e-learning. Higher perceived faculty self-efficacy can also lead to positive attitudes toward the adoption of e-learning and an increased ability to gain mastery in e-learning processes. Henceforth, we consider the self-efficacy belief of the faculty and the students as significantly influencing e-learning adoption.

2.5 Behaviour intention towards e-learning

Behavioural intention is considered an attitudinal factor governing e-learning success (Martínez-Torres et al., 2008). It is another important internal factor associated with the adoption of e-learning and is closely related to actual use (Thongsri, Shen, & Bao, 2019). Actual use is the behaviour, while the intention to use is an attitude facilitating definite usage behaviour. The TRA (Ajzen & Fishbein, 1980) and the TAM (Davis, 1989) help in understanding the formation of intention toward the adoption of e-learning. The consciously intended e-learning behaviours are determined

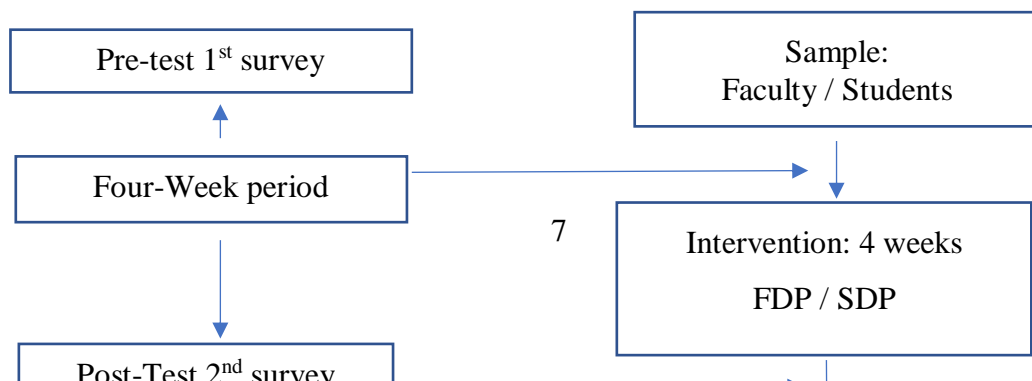
primarily by users' perceived usefulness, self-efficacy, and ease of use (Abdullah & Ward, 2016). The Theory of Planned Behaviour (TPB; Taylor & Todd, 2001) is another theoretical base that helps in understanding users' control over their behaviour, taking into account the perceived ease or difficulty of performing the e-learning behaviour. The study considers behavioural intentions to perform e-learning behaviour as an important success factor influenced by several external and internal factors.

3. Material and methods

The study pertains to the assessment of online development programmes, i.e., FDP and SDP, delivered to faculty and students respectively, in an Indian university over four weeks (28 days). An FDP was specially designed for the faculty members of the university, covering various topics like tools and techniques for online learning, innovative teaching pedagogies, and massive open online courses (MOOCS). At the same time, an SDP was conducted for students, which consisted of numerous online learning interventions for their course curriculums. Data was analyzed using the SPSS software, and a paired t-test was performed after checking the assumptions of the paired t-test. Table 1 presents the sample characteristics of participants in both e-teaching/learning programmes.

The study employs a pre-validated survey instrument on acceptance for online learning, self-efficacy of online learning, and intention to use online learning to check the effectiveness of the FDP programme in supporting faculty adoption of digitally enabled learning. Similarly, another questionnaire was administered to check the effectiveness of the SDP in supporting student adoption of digitally enabled learning. The same survey instrument was used in pre-test and post-test data collection. Information / opinion from the participants was captured using a five-point Likert scale.

Figure 1: Procedure for administering survey instruments to participants



Source: Authors' own

Table 1: Sample statistics of online development programmes

Programme	Participants	Sample size	Pre-Test survey	Post-Test survey	Both surveys
Faculty Development Programme (FDP)	Faculty	52	41 (79)	29 (55)	22 (42)
Students Development Programme (SDP)	Students	107	90 (84)	77 (72)	60 (64)

Note: Figures in the parentheses represent the percentages of the respective categories.

Source: Authors' own

Table 1 displays the total sample size for both samples, i.e., FDP participants (faculty) and SDP participants (students). Finally, after cleaning a few outliers, 52 respondents from the FDP participants' and 107 from the SDP participants' samples were selected and analyzed. The table further reflects that only 22 FDP participants and 60 SDP participants responded to both pre- and post-surveys conducted to ascertain the effectiveness of the online development programmes.

4. Analysis and interpretation

This section presents the analysis and interpretation of key statistics, pre- and post-survey means and the paired t-test, to ascertain the significant differences between the pre- and post-survey responses for establishing the effectiveness of both online development programmes in higher education in India.

Table 2: Key statistics of participants of the online development programmes

Sample features	Attribute of samples	Faculty Development Programme (FDP)	Students Development Programme (SDP)
Effective sample size (number)		22 (42)	60 (64)

Gender	Male	11 (50)	28 (46)
	Female	11 (50)	32 (54)
Age	20-30 years	4 (18)	53 (88)
	30-40 years	13 (59)	7 (12)
	40-50 years	5 (23)	-----
Work experience	Less than 5 years	11 (50)	-----
	5-10 years	8 (36)	-----
	More than 10 years	3 (14)	-----

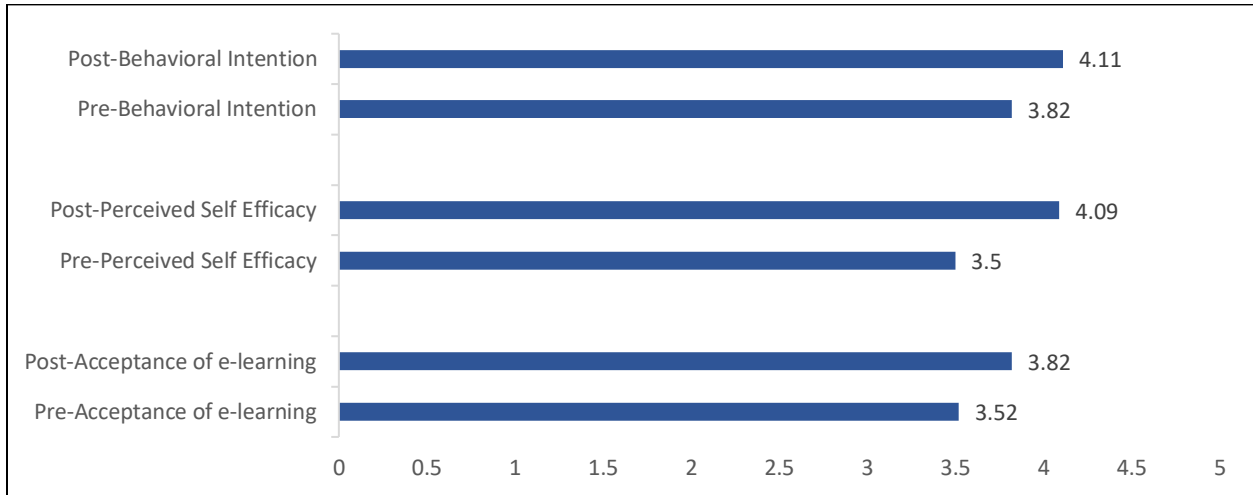
Note: Figures in the parentheses represent the percentages of the respective categories.

Source: Authors' own

Table 2 shows equal gender participation in the FDP while more women participated in the SDP voluntarily. In terms of age group, 59 percent of the faculty members who participated in the survey were from the age group of 30-40 years, whereas the majority of student participants (88 percent) were from the age bracket of 20-30 years. Most faculty members who participated in both online surveys possess less than five years of work experience.

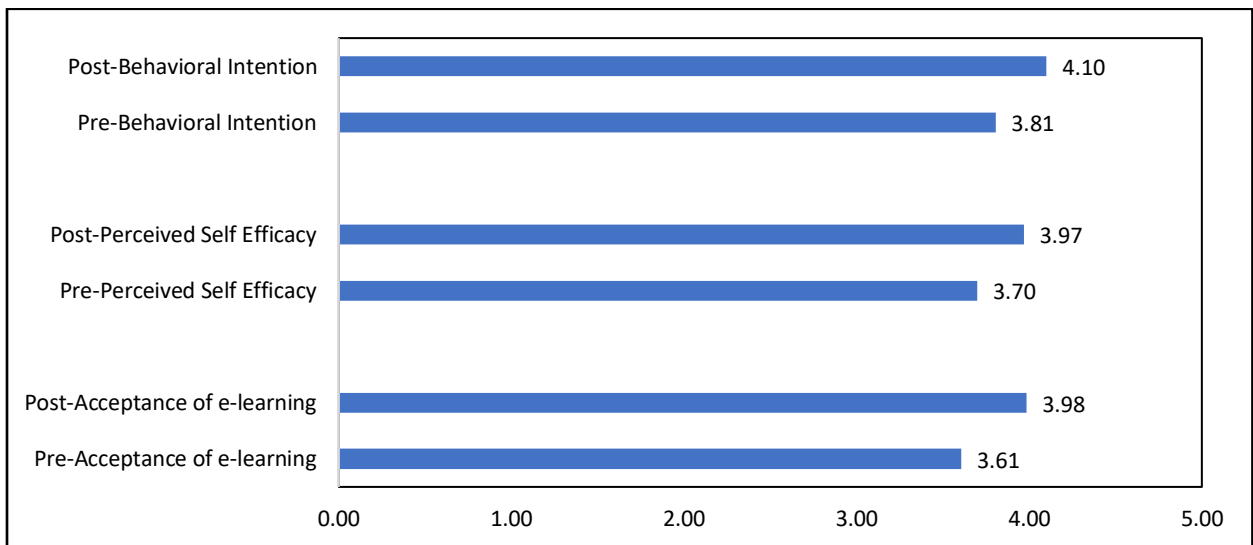
Figure 2 displays the mean score of the pre-test and post-test responses from faculty who participated in the FDP. The post-mean score of all three attributes, acceptance for e-learning, self-efficacy, and behavioural intention is higher when compared to that of pre-test responses. Similarly, Figure 3, which highlights the mean score of responses from students who participated in the SDP, reveals that the means of post-test responses are greater than those of the pre-test responses in the case of all three attributes considered.

Figure 2: Comparison of pre-test and post-test means of faculty responses



Source: Authors' own

Figure 3: Comparison of pre-test and post-test means of student responses



Source: Authors' own

The results from the paired t-test on responses from the FDP participants, i.e., faculty members, are shown in Table 3. The difference in means was found to be significant, which indicates that the FDP supported the faculty in accepting online learning, improving self-efficacy, and increasing the intention to use online learning. Similarly, the results from the paired t-test on responses from the SDP participants, i.e., students, are presented in Table 4. Students too, had support for accepting online learning, improving self-efficacy, and increasing their intention to use online learning. Therefore, the findings confirm that the participants will accept online teaching/learning programmes, leading to the enhancement of self-efficiency, and intention to use them in the future.

Table 3: Paired sample test of faculty responses

		Paired differences					t	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	Upper			
Pair 1	POST-ACCEPTANCE - PRE-ACCEPTANCE	.2945**	.5592	.1192	.04656	.5424	2.470	21	.022
Pair 2	POST-PSS - PRE-PSS	.6210*	.8438	.17998	.2469	.9952	3.452	21	.002
Pair 3	POST-INT - PRE-INT	.2878**	.6282	.1339	.0093	.5664	2.149	21	.043

*Note: * and ** statistically significant at 1 and 5 per cent level of significance.*

Source: Authors' own

Table 4: Paired sample test of student responses

Paired samples test

		Paired differences					T	df	Sig. (2-tailed)
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	Upper			
Pair 1	POST ACCEPTANCE - ACCEPTANCE	.3785*	.6116	.0840	.2099	.5471	4.506	52	.000
Pair 2	POST PSE - PSE	.2704**	.8347	.1146	.0403	.5005	2.359	52	.022
Pair 3	POST INT - INT	.2955*	.7298	.1002	.0944	.4967	2.948	52	.005

Note: * and ** statistically significant at 1 and 5 per cent level of significance

Source: Authors' own

5. Discussion

The COVID-19 pandemic pushed educational institutions to shift from face-to-face teaching/learning processes to e-learning. All stakeholders, such as faculty, educational institutions, and students, among others, were concerned about the inevitable shift. Faculty and students were skeptical about the change, lacking the competencies to accept e-learning processes and possessing negative intentions towards e-learning (Choudhury & Pattnaik, 2020). The development programmes could be one way to impart competencies to stakeholders and encourage them to accept the change. Educational institutions conducted online development programmes for faculty and students to overcome such challenges. Therefore, this study evaluated the effectiveness of online development programmes in improving the acceptance for e-learning, self-efficacy, and behavioural intention toward e-learning among students and faculty.

The results offer insights into the efficacy of online development programmes. Online development programmes effectively improved the acceptance and adoption of e-learning and behavioural intention among students and faculty in one Indian institution, indicating that phase-wise development programmes could change acceptance levels and help educational institutions adopt digital technologies for learning.

The findings suggest that educational institutes can conduct development programmes online as it is also cost-effective. This will help in reducing costs and arranging multiple programmes within the same budget to make them more accessible to participants. Moreover, the fees for online development programmes are comparatively less as institutes conducting such programmes can save on time and resources, and pass on these savings to the participants as well. Therefore, attending online development programmes, both nationally and internationally, is convenient and cost-friendly for faculty and students.

The data collection for the present study was cross-sectional. Future research could focus on longitudinal studies. The data for this study was collected from a state university. Future studies could work with data from multiple universities, and make comparisons with other central universities, autonomous institutes, and private institutions to generalize the findings. The study evaluated programmes which focused on acceptance, self-efficacy, and participants' behavioural intention to adopt e-learning. Further studies could focus on estimating such programmes' effectiveness by evaluating participants' use of e-learning.

6. Conclusion

This study examined the effectiveness of online training programmes on digital technologies for learning (FDP & SDP) to promote acceptance for e-learning, self-efficacy of e-learning, and intentions to use e-learning in 52 faculty members and 107 students from a university. The study employed a paired t-test to ascertain the relative effectiveness of these programmes through pre- and post-training surveys. The study revealed that online development programmes are very effective for teachers and students. Furthermore, there is acceptance for online learning in universities, which promotes self-efficiency and intention to use in teachers and students of universities. Therefore, the study is a good case for promoting and adopting e-learning in universities to minimize the cost of learning compared to traditional offline teaching. Therefore, the study recommends using e-learning among university students as it is time and resource-savvy.

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