ASSESSMENT OF FACTORS AFFECTING ADOPTION OF ONLINE EDUCATION

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ABSTRACT:
COVID – 2019 pandemic has changed the educational scenario and forced to develop abrupt changes in the areas of education in India. Majority of the educational institutions have to adopt online education for the benefits of students learning and internal assessments. The developing country like India where still the classroom teaching is the most favourable medium of education and online education is in the childhood stage. Due to the availability of infrastructure, mindset of various stakeholders, it is the biggest challenge for various stakeholders to switch from traditional teaching to online education. This study tries to identify factors affecting online education among faculty members and college students. Two online studies (N= 500 students and N = 250 faculty members) have been carried out with the help of structured questionnaires. Exploratory factor analysis and Confirmatory factor analysis were used to identify the factors; Infrastructure & Technology dimensions, students' related dimensions, faculty's related dimensions, facilitating dimensions, social influence dimensions, effort dimensions, perceived usefulness, performance expectations dimensions and security & risk dimensions. The study discusses the practical implications of these findings.
Keywords: Online education, dimensions related to online education, faculty, student

INTRODUCTION:

Lockdowns to contain spread of the COVID-19 pandemic have posed many challenges for the education sector globally, and India is no exception. Lock down seized the education institutions across the world and over one and a half billion learners stuck at home that is an estimation of representing 90% of world's student's population, observed in March 2020. Across all countries schools, institutes, colleges & various universities are shifting their teaching virtually. There is huge demand in different types of online educational courses. KPMG and Google assumed that the E learning market in India could reach over $2 bn in 2021. As COVID-19 pandemic, the actual figure might be double or more than that. Gradually Universities belonging to India have tried to follow the foot-steps of UK, US and UNESCO models of online education. It is estimated that 80 percent of India's population uses their mobile for accessing the internet for learning that is conversion of classroom teaching to online education, conducting classes, assignments, quizzes, assessment, grading, course credit and even degree also. There is a severe need for more technology enabled educational institutions that put in place a proper plan-of-action for millennial generation students, teachers as well as ensuring academic development in the use of technology. Apex bodies like AICTE and UGC and HEIs open platforms of online learning to students through SWAYAM, MOOCs, NPTEL, NDL and so on.

LITERATURE REVIEW:

In the education sector and allied studies, the terms such as "online education/learning", "Internet based education/learning", "E - education/learning", "I – education/learning", "Web based education/learning", "Web based instruction", "Education/learning portal", "Distributed learning", "Distance learning", "Online courses", "mobile learning", have been used simultaneously. Despite the availability of various terminologies, the "online education" is starting to be considered the most popular and widely used method during this pandemic (Kaplan & Leiserson, 2000; Khan, 2005; Masrom, 2007; Taha, 2014). Literature contains a wide range of definitions related to online education. Xaymoungkhoun, Bhauasiri (2012) defined online education as "a novel and innovative approach of delivering contents via electronic forms which enhances learners' knowledge, skill and performance. Mbarek & Zaddem (2013) defined online education as "learning and educational instructions supported by various ICT systems to gain a wide range of information as well as knowledge which is delivered through various online modes. Kaplan & Leiserson (2000) defined online education as "delivery of message and content with the help of internet and various electronic devices such as audio, video, satellite broadcast, mobile, laptops, desktops, tablets interactive television, and so on. Okiki (2011) defined online education as "the use of different hardware, software and network technologies to create, foster, deliver and facilitate learning any time, any condition and any place in the world". According to Malik (2010), Xaymoungkhoun, Bhuasiri (2012), and Odunaike, Olugbara (2013), it is the emerging medium of conveying information in the various sectors of education. Online learning becomes an integral part of the modern day education in various vocational, distance learning and teacher trainings (Bourne et al., 2005). The purpose of this study was in multi-direction by looking at factors which are affecting adoption of

online education. In the present study, researchers want to identify various dimensions which affect students and faculty members towards online education during COVID 19 pandemic in India. Kraidy, (2002) studied, the students are innovators in adopting the digital media in their learning in present & all the future studies. The term flexible learning has a broad meaning across educational institutions. However, flexible learning based on the vigorous participation from the students in various learning activities (Nikolova & Collis, 1998, Rockwell, S.K., Schauer, J., Fritz, S.M., & Marx, D.B. 1999) and extensive ways of learning could be motivated (Gendron & Teyssier, 2009). The model proposed by Peltier, Drago, and Schibrowsky (2003) was focused on "student-to-student interactions, student-to-instructor interactions, instructor support and mentoring, information delivery technology, course content, and course structure." Willingness of all the stakeholders for online learning is foremost important for successful implementation of online education (Arbaugh et al., 2009).

Selim (2007) identified that student, faculty/teacher, ICT enabled technology and organizational support is the most critical dimensions for success and failure of online education. According to Frimpon (2012) role of student, faculty, information technology are important for the success of online education. Sun, Ray (2008) identified faculty members, ICT technology, curriculum and environmental factors which affect the online education. Mosakhani and Jamporazmey (2010) identified critical success factors for e learning which are; faculty characteristics, student characteristics, quality of topics discussed, ICT quality, interaction among people, support of organization and techniques of managing knowledge. Pituch & Lee (2006) identified that technology is the important factor for effectiveness of any online education. Masoumi (2006) identified that college and management support play an important role in enhancing awareness of online education. Schroeder (2003) identified that as students pay a heavy amount of fees they require infrastructure facilities from colleges which includes availability of technology supporting online education, which includes internet connectivity, bandwidth, data transfer speed, computer, and smart phone and so on. Students were the centre of the research, by looking of progressive learning. Researchers were trying to identify learning of students online. Andersson, Annika. (2008) identified that interaction, easy availability, confidence; problem solving approach, flexibility and attitude are the key factors in success of online education. In 1989, Davis and his associates introduced TAM (Technology Acceptance Model) for development of effective framework to understand acceptance and usage intentions towards various technologies. O'Cass & Fenech (2003) concluded that when Internet users have enough knowledge about the various computer and ICT enabled technology then it boosts the belief towards understanding the E learning concepts. Further concept of Self-motivation towards online education indicates identifying a behavioural aspect towards reaching a goal (Zimmerman, 1985, 1994). During the lockdown period due to COVID-19 pandemic, it is essential to adopt self study concepts for completion of the online course of their respective curriculum.

Faculty is the core part for implementation and success of various online programs related to education. Teachers' satisfaction is the important factor for measuring the effectiveness as well assessment of any program (Salter, G. 2003). It is believed among the faculty members that students will be actively participating in online education and will communicate every portion of information with the involvement in learning with the respective course instructors (Doris U. Bolliger & Oksana Wasilik, 2009). Faculty involvement plays an important role in making the environment better during online sessions (Ali & Smith, 2015). For HEIs (Higher Education Institutes), practical implications during digital literacy efforts as well as teachers' training are key factors to evaluate the adoption of various ICT based learning technologies (Tom Buchanan, Phillip Sainter, and Gunter Saunders, 2013). However in context of motivating faculty, several research study related to online education, especially distance education found the motivating factors which influence the teachers to participate and barriers which stop the teachers to adopt the ICT enabled learning (Bower, 2001; Durette, 2000; Fredericksen et al., 2000; Hartman et al., 2000; Palloff & Pratt, 2001; Panda & Mishra, 2007; Kim, K., Liu, S. and Bonk, C.J. 2005). As the online education becomes the main stream of providing education, faculty satisfaction must be measured with consideration of adoption rates, expectations of students, support of management, availability of various ICT enabled technologies (ADEC, n.d.; Betts, 1998; Fredericksen et al., 2000; Hartman et al., 2000; Sloan Consortium, 2006; Panda & Mishra, 2007; Simonson et al., 2009, Ute Kraidy, 2002).

There are some other dimensions that were taken into consideration in this research. Those were facilitating, social influence, effort, perceived usefulness, performance expectations, and security & risk. Kaynama & Keesling (2000) found that established ICT enabled technological learning enhance subject expertise. Higher organizational support, management support, information center support will generate more favorable attitudes about the system among students. Students have to be more cautious in online learning compared to traditional learning. For effectiveness of online learning various types of learning tools and techniques as well as self involvement are the

main things. Self motivation is the biggest factor in success of online education (Smith, 2001). Learner's perception of MOOCs are affected by factors like skill of student/learner, availability, affordability and usability (Sanjay Mohapatra, Rituparna Mohan, 2016) in addition of these virtual learning experience is the biggest factor which affect students' experience towards process and outcomes of online education. Usefulness of e-learning was mentioned in research of (Davis, 1989), he also concluded that whenever positive or highly favourable perception towards usefulness of online education is created, it automatically leads to enhancement of job performance.

With consideration of available literature related to factors affecting online education, there is a shortage of studies related to this with respect to India and also lacks any proper framework which measures the success of online education or factors affecting adoption of online education. Despite the lack of relevant literature in India, previous studies found common problems and issues related to online education adoption and its various settings.

RESEARCH OBJECTIVES:

Online education is becoming the trending trend in the education sector in the pandemic. Till now the growth of online education was mostly seen in developed countries and most of the studies also have been done in developed countries as well as those universities which adopted online mode of education. India has seen an upward trend in online education due to pandemic. Majority of the studies focused on attitude, intention and behaviour towards online education. Considering the geographical coverage of India, there are no comprehensive studies that measure the factors which affect online education.

Therefore, the present study focuses on identification of factors which affect adoption of online education among students and faculty members of various colleges/institutions in India.

RESEARCH DESIGN & METHOD:

For the present study following research design and methods have been adopted. The present study follows single cross section descriptive research design with the help of online primary survey research method.

Measures of the constructs:

For the present study, standardized scales as well as constructs are not available in literature. Researchers have developed statements related to online education based on the available reviews, discussion, and some past studies related to online education and e learning. The authors have taken help of studies done by Jovic, M., Neskovic, E., Kostic Stankovic, M., (2017); Chamber and Clarke's, (1987); Jones and Clarke's, (1994);, Drambot, Watkins-Matek, Silling, Marshall, & Garver, (1985); Loyd & Gressard, (1984); Knowles & Kerkman, (2007); Robinson & Doverspike, (2006); Yudko, Hirokawa, & Chi, (2008) and Chavda, V.N. & Parmar, B.J. (2020)..

To make reliable and validate the questionnaire, researcher has done pilot study on 25 students as well as faculty members. Based on the responses of pilot study, statements of questionnaire have been revised and final survey has been carried out.

Data collection procedure:

A structured questionnaire developed with the help of Likert Scale for carrying out the survey. Students as well as faculty members from various institutes of Gujarat who have experience towards online education constituted the population for the present study. The respondents were identified by contacting the authorities of various institutes.

Two online surveys have been carried out. First online survey has been done on 500 students and second online survey has been done on 250 faculty members with the help of non probability convenience sampling method. Out of the 500 student responses, 447 valid responses were used for the analysis, while all 250 valid responses of faculty members are considered for analysis. To check the reliability of the instrument, Cronbach's alpha was utilized also descriptive statistics; factor analysis and confirmatory factor analysis were applied on collected primary data with the help of SPSS and AMOS software.

5 RESULTS AND DISCUSSION:

DEMOGRAPHIC PROFILE OF STUDENTS & FACULTY MEMBERS:

Table 1: Demographic profile of students (Source: Primary Survey)

Demographic Profile	Items	Frequency	Percentage
Gender	Male	282	63
	Female	165	37
Age (In Years)	15 - 20	49	11
	21 - 25	313	70
	Above 25	85	19
Education	Graduate	246	55
	Post Graduate	201	45
Monthly Family Income (Rs.)	Up to 15000	94	21
	15001 - 35000	175	39
	35001 - 55000	111	25
	Above 55000	67	15
Possession of Desktop/Laptop	Yes	291	65
	No	156	35
Availability of Internet connectivity at home	Yes	241	54
	No	206	46

The above table 1 identifies the demographic characteristics of respondents. Out of 447 respondents, only 291 respondents have desktop or laptop and 241 respondents have internet broadband connection available at home.

Table 2: Demographic profile of Faculty member (Source: Primary Survey)

Demographic Profile	Items	Frequency	Percentage
Gender	Male	175	70
	Female	75	30
Age (In Years)	25 - 35	55	22
	35 - 45	157	63
	More than 45	38	15
Education	Post Graduate	200	80
	Ph D	50	20
Teaching Experience (In Years)	Less than 5	28	11
	5 - 10 Years	180	72
	More than 10	42	17
Designation	Lecturer	12	5
	Assistant Professor	135	54
	Associate Professor	68	27
	Professor	35	14
Teaching Level	Only in Graduate	37	15
	Only in Postgraduate	50	20
	Both	163	65
Possession of Desktop/Laptop	Yes	250	100
Availability of Internet connectivity at home	Yes	250	100

The above table 2 identifies demographic characteristics of faculty respondents. Out of 250 respondents, all respondents have desktop or laptop and have internet broadband connection available at home. Majority of the faculty members have teaching experience more than 5 years and are teaching at graduate and postgraduate levels.

EXPLORATORY FACTOR ANALYSIS:

Exploratory factor analysis is carried out on the 41 items of online education for students and 45 items of online education for faculty members using principal component and varimax rotation. Using exploratory factor analysis, those items whose Eigenvalue greater than and equals to 1 was retained. Communality represents the proportion of variance an item shares with other items, so with this consideration those items whose communalities above 0.6 are considered for the analysis. The result condensed deleted items and later they were clubbed under different independent factors. The value of Kaiser-Meyer-Olkin (KMO) measures samples is appropriate as well as adequate for factor analysis or not. KMO (Kaiser-Meyer-Olkin) values are 0.877 and 0.899 for students and faculty members respectively which is well above the threshold of 0.60 (Kaiser, 1974). Bartlett's Test of Sphericity shows the strength of relationship among variables is strong or not. In present study, Bartlett's Test of Sphericity was found to be significant at 0.000 (Bartlett, 1954). Exploratory factor analysis provided nine factors which have Eigen value more than 1, and items together explained 63.34% of variance in students and similarly, nine factors which have Eigenvalue greater than one, and items together explained 72.29% of variance in faculty members. As seen from the analysis of students and faculty members, no factor loading is less than 0.60, suggesting that there are no cross loadings and each item has only one component associated with it. To check reliability of scale items, Cronbach's alpha is calculated. Nunnally (1978) states that whenever correlation value between items is greater than 0.4, then accept the result.

Result of Exploratory factor analysis of students:

Table 3: Final output of exploratory factor analysis (students)

Factor	Acronym	Scale Items	Cronbach Alpha	Communalities	Factor Loading	Eigen Value
Infrastructure and Technology Dimensions	IT1	Low internet bandwidth	0.763	0.688	0.779	5.634
	IT2	Inadequate training programs		0.683	.769	
	IT3	Lack of technical support		0.727	.731	
	IT4	Lack of ICT infrastructure		0.679	.702	
Student's related Dimension:	SD1	Lack of enough motivation	0.849	0.636	.743	3.693
	SD2	Lack of enough knowledge		0.723	.739	
	SD3	Lack of English language proficiency		0.804	.788	
	SD4	Lack of ICT skills to operate system		0.671	.703	
Faculty's related Dimension	FD1	Lack of compatibility	0.792	0.615	.633	2.691
	FD2	Challenge related to Teaching method & Lecture content quality		0.663	.726	
	FD3	Lecture content quality		0.674	.679	
	FD4	Lack of control over students engagement		0.669	0.669	
Facilitating Dimensions	FACD1	Course structure is well defined	0.824	0.654	.635	1.829
	FACD2	Reusable learning objects (materials, lectures, etc.,)		0.748	.601	
	FACD3	Institutions should provide necessary help and resources		0.810	.677	
	FACD4	Conveyance course framework		0.813	.627	
	FACD5	Training & manuals are easily available		0.627	.623	

Social Influence Dimensions	SID1	It is the need of this hour	0.845	0.726	.771	1.656
	SID2	Management understands the strategic advantage		0.781	.786	
	SID3	It will give recognisition among social network		0.666	.633	
Effort Dimensions	ED1	System operating will be very easy	0.704	0.732	.728	1.563
	ED2	Less efforts to understand online system		0.901	.813	
	ED3	It will be easily accepted		0.779	.723	
Perceived usefulness	PUD1	Online education content is not informative	0.629	0.753	.632	1.444
	PUD2	It will not increase academic productivity		0.819	.776	
	PUD3	It will not help me to get a better job		0.823	.818	
	PUD4	It will not improve learning performance		0.701	.663	
Performance expectations Dimensions	PED1	It will improve quality of learning	0.751	0.799	.782	1.316
	PED2	It will be useful in my further study		0.601	.669	
	PED3	It will give flexible time to learn		0.789	.736	
	PED4	It will save time in managing my work		0.816	.847	
Security & risk Dimensions	SRD1	Malicious software such as viruses, worms, Trojan horses erupt during lectures	0.727	0.522	.609	1.321
	SRD2	Privacy is the biggest concern		0.723	.636	
	SRD3	Personal information might be reached to hackers		0.842	.839	

The factors extracted were identified under the following labels.

Infrastructure and Technology Dimensions comprises Low internet bandwidth (0.779), Inadequate training programs (0.769), lack of technical support (0.731) and lack of ICT infrastructure (0.702) and the Cronbach's alpha for infrastructure and technology dimension is 0.763. Students' related dimensions comprises of lack of enough motivation (0.743), lack of enough knowledge (0.739), lack of English language proficiency (0.788) and lack of ICT skills to operate system (0.703) and the Cronbach's alpha for Student's related dimension is 0.849. Faculty's related dimension comprises of lack of compatibility (0.633), challenge related to teaching method & lecture material content (0.726), lecture content quality (0.679) and lack of control over student's engagement (0.669) and the Cronbach's alpha for faculty's related dimension is 0.782. Facilitating dimension comprises of course structure is well defined (0.635), reusable learning objects (0.601), institutions should provide necessary help and resources (0.677), conveyance course framework (0.627), and training & manuals are easily available (0.623) and the Cronbach's alpha for facilitating dimension is 0.824. Social influence dimension comprises the need of this hour (0.771), management understands the strategic advantage (0.786) and it will give recognition among social networks (0.633) and the Cronbach's alpha for social influence dimension is 0.845. Effort dimension consisting of system operating will be very easy (0.728), fewer efforts to understand the online system (0.813) and it will be easily accepted (0.723) and the Cronbach's alpha for effort dimension is 0.704. Perceived usefulness dimension comprise of online education content is not informative (0.632), it will not increase academic productivity (0.776), it won't help to get a better job (0.818) and it will not improve learning performance (0.663) and the Cronbach's alpha for perceived usefulness dimension is 0.629. Performance expectations dimension consists of it will improve the quality of online learning (0.782), it will be useful in my further study (0.669), it will give flexible time to learn (0.736) and it will save time in managing my work (0.847). The Cronbach's alpha for performance expectations dimension is 0.751. Security and risk dimension comprises malicious software such as viruses, Trojan horses erupt during lectures (0.609), privacy is the biggest concern (0.636) and personal information might be reached to hackers (0.839). The Cronbach's alpha for security & risk dimension is 0.727.

Result of Exploratory factor analysis of Faculty members:

Table 4: Final output exploratory factor analysis (faculty members)

Factor	Acronym	Scale Items	Cronbach Alpha	Communalities	Factor Loading	Eigen Value
Infrastructure and Technology Dimensions	IT1	Low internet bandwidth	0.783	0.741	.830	5.666
	IT2	Inadequate training programs		0.735	.818	
	IT3	Lack of technical support		0.775	.779	
	IT4	Lack of ICT infrastructure		0.728	.754	
Student's related Dimension:	SD1	Lack of enough motivation	0.868	0.683	.788	3.693
	SD2	Lack of enough knowledge		0.767	.792	
	SD3	Lack of English language proficiency		0.859	.840	
	SD4	Lack of ICT skills to operate system		0.735	.762	
Faculty's related Dimension	FD1	Lack of compatibility	0.799	0.659	.778	2.774
	FD2	Challenge related to Teaching method & Lecture content quality		0.716	.780	
	FD3	Lecture content quality		0.727	.727	
	FD4	Lack of control over students engagement		0.725	0.725	
Facilitating Dimensions	FACD1	Course structure is well defined	0.755	0.711	.696	1.901
	FACD2	Reusable learning objects (materials, lectures, etc.,)		0.842	.658	
	FACD3	Institutions should provide necessary help and resources		0.864	.732	
	FACD4	Conveyance course framework		0.877	.711	
	FACD5	Training & manuals are easily available		0.729	.678	
Social Influence Dimensions	SID1	It is the need of this hour	0.820	0.81	.826	1.748
	SID2	Management understands the strategic advantage		0.836	.842	
	SID3	It will give recognisition among social network		0.729	.686	
Effort Dimensions	ED1	System operating will be very easy	0.726	0.79	.772	1.634
	ED2	Fewer efforts to understand online system		0.956	.883	
	ED3	It will be easily accepted		0.83	.789	
Perceived usefulness	PUD1	Online education content is not informative	0.699	0.817	.678	1.504
	PUD2	It will not increase academic productivity		0.934	.830	
	PUD3	It will not help me to get a better job		0.895	.902	
	PUD4	It will not improve learning performance		0.775	.736	
	PED1	It will improve quality of learning	0.756	0.846	.835	1.378

Performance expectations Dimensions	PED2	It will be useful in my further study		0.653	.717	
	PED3	It will give flexible time to learn		0.837	.782	
	PED4	It will save time in managing my work		0.893	.891	
Security & risk Dimensions	SRD1	Malicious software such as viruses, worms, Trojan horses erupt during lectures	0.729	0.571	.657	1.303
	SRD2	Privacy is the biggest concern		0.766	0.678	
	SRD3	Personal information might be reached to hackers		0.898	0.888	

Infrastructure and Technology Dimensions comprises Low internet bandwidth (0.830), Inadequate training programs (0.818), lack of technical support (0.779) and lack of ICT infrastructure (0.754) and the Cronbach's alpha for infrastructure and technology dimension is 0.783. Students' related dimensions comprises of lack of enough motivation (0.788), lack of enough knowledge (0.792), lack of English language proficiency (0.840) and lack of ICT skills to operate system (0.762) and the Cronbach's alpha for Student's related dimension is 0.868. Faculty's related dimension comprises lack of compatibility (0.778), challenge related to teaching method & lecture material content (0.780), lecture content quality (0.727) and lack of control over student's engagement (0.725) and the Cronbach's alpha for faculty's related dimension is 0.799. Facilitating dimension comprises of course structure is well defined (0.696), reusable learning objects (0.658), institutions should provide necessary help and resources (0.732), conveyance course framework (0.711), and training & manuals are easily available (0.678) and the Cronbach's alpha for facilitating dimension is 0.755. Social influence dimension comprises the need of this hour (0.826), management understands the strategic advantage (0.842) and it will give recognition among social networks (0.686) and the Cronbach's alpha for social influence dimension is 0.820. Effort dimension consisting of system operating will be very easy (0.772), fewer efforts to understand the online system (0.883) and it will be easily accepted (0.789) and the Cronbach's alpha for effort dimension is 0.726. Perceived usefulness dimension comprise of online education content is not informative (0.678), it will not increase academic productivity (0.830), it will not help me to get a better job (0.902) and it will not improve learning performance (0.736) and the Cronbach's alpha for perceived usefulness dimension is 0.699. Performance expectations dimension consists of it will improve the quality of online learning (0.835), it will be useful in my further study (0.717), it will give flexible time to learn (0.782) and it will save time in managing my work (0.891). The Cronbach's alpha for performance expectations dimension is 0.756. Security and risk dimension comprises malicious software such as viruses, Trojan horses erupt during lectures (0.657), privacy is the biggest concern (0.678) and personal information might be reached to hackers (0.888). The Cronbach's alpha for security & risk dimension is 0.729.

CONFIRMATORY FACTOR ANALYSIS:

Confirmatory factor analysis was carried out to identify the fitness of the factors extracted with the help of exploratory factor analysis.

Table 5: Standardized regression weights and indicator reliability of CFA Model

Factor	Acronym	Scale Items	For Student		For Faculty member	
			Standardised regression weight	Indicator Reliability	Standardised regression weight	Indicator Reliability
Infrastructure and Technology Dimensions	IT1	Low internet bandwidth	0.678	0.749	0.729	0.785
	IT2	Inadequate training programs	0.672	0.737	0.732	0.773
	IT3	Lack of technical support	0.712	0.698	0.724	0.734
	IT4	Lack of ICT infrastructure	0.665	0.673	0.71	0.709
Student's related Dimension:	SD1	Lack of enough motivation	0.62	0.707	0.707	0.743
	SD2	Lack of enough knowledge	0.704	0.711	0.725	0.747
	SD3	Lack of English language proficiency	0.796	0.759	0.899	0.795

	SD4	Lack of ICT skills to operate system	0.672	0.681	0.725	0.717
Faculty's related Dimension	FD1	Lack of compatibility	0.596	0.597	0.744	0.633
	FD2	Challenge related to Teaching method & Lecture content quality	0.653	0.699	0.624	0.735
	FD3	Lecture content quality	0.664	0.646	0.762	0.682
	FD4	Lack of control over students engagement	0.662	0.644	0.799	0.680
Facilitating Dimensions	FACD1	Course structure is well defined	0.648	0.615	0.636	0.651
	FACD2	Reusable learning objects (materials, lectures, etc.,)	0.779	0.577	0.801	0.613
	FACD3	Institutions should provide necessary help and resources	0.801	0.651	0.846	0.687
	FACD4	Conveyance course framework	0.814	0.630	0.801	0.666
	FACD5	Training & manuals are easily available	0.666	0.597	0.702	0.633
Social Influence Dimensions	SID1	It is the need of this hour	0.747	0.745	0.827	0.781
	SID2	Management understands the strategic advantage	0.773	0.761	0.823	0.797
	SID3	It will give recognisition among social network	0.666	0.605	0.818	0.641
Effort Dimensions	ED1	System operating will be very easy	0.727	0.691	0.827	0.727
	ED2	Fewer efforts to understand online system	0.893	0.802	0.896	0.838
	ED3	It will be easily accepted	0.767	0.708	0.636	0.744
Perceived usefulness	PUD1	Online education content is not informative	0.754	0.597	0.799	0.633
	PUD2	It will not increase academic productivity	0.871	0.749	0.671	0.785
	PUD3	It will not help me to get a better job	0.832	0.821	0.822	0.857
	PUD4	It will not improve learning performance	0.712	0.655	0.725	0.691
Performance expectations Dimensions	PED1	It will improve quality of learning	0.783	0.754	0.763	0.790
	PED2	It will be useful in my further study	0.590	0.636	0.723	0.672
	PED3	It will give flexible time to learn	0.774	0.701	0.873	0.737
	PED4	It will save time in managing my work	0.830	0.810	0.829	0.846
Security & risk Dimensions	SRD1	Malicious software such as viruses, worms, Trojan horses erupt during lectures	0.508	0.576	0.603	0.612
	SRD2	Privacy is the biggest concern	0.703	0.597	0.729	0.633
	SRD3	Personal information might be reached to hackers	0.835	0.807	0.869	0.843

The table 5 shows the standardized regression weight and indicator reliability. As seen from the table 5, the weights of standardized regression of items in the confirmatory measurement model are above value of 0.50 (Hair, 1992) and indicator reliability between individual items were also well above 0.50. This suggests good convergent validity.

Table 6: Fit indices of Confirmatory Factor analysis of students and faculty members

Fit Statistics	Measured Value		Recommended value	References
	Student	Faculty		
CMIN/DF	1.823	1.936	< 5	Bentler, 1989
GFI	0.929	0.936	> 0.90	Joreskog & Sorbom, 1979
AGFI	0.976	0.968	> 0.90	Joreskog & Sorbom, 1979
TLI	0.963	0.945	> 0.90	Hu and Bentler, 1999
NFI	0.919	0.927	> 0.90	Bentler, 1992
CFI	0.904	0.909	> 0.90	Hu and Bentler, 1999
RMSEA	0.046	0.036	< 0.05	Hu and Bentler, 1999

Confirmatory factor analysis results confirm acceptable model fit with all fit indices suggested by the various authors in their respective studies. The fit indices with acceptable levels as suggested by authors are depicted in Table 6 for both student as well as faculty members. The result of confirmatory factor analysis confirms the factor extracted with the help of exploratory factor analysis. The result of confirmatory factor analysis supports the result of exploratory factor analysis which suggests that all the dimensions of online education explored contribute in the adoption of online education among students as well as faculty members of Gujarat, India.

PRACTICAL IMPLICATIONS:

The factors identified with the help of Exploratory and confirmatory factor analysis in the present study have important implications for various colleges, institutes, universities, faculty members and various decision makers. These factors will help online educator providers to establish necessary infrastructure and technical requirements. Practitioners can develop various training modules and operating procedures to enhance the performance of online education. The list of factors explained here can help the online education decision makers to understand the reasons for failure of online education and it will help them to determine the remedial steps for the same. The decision makers can ask the subordinates to provide the feedback related to online education conduction, actual experience, and behaviour of various participants in online education. This can help them understand the various areas of online education in which they can improve. Although we offer the online education dimensions as a reliable and valid measure of factors affecting adoption of online education among students, criteria related validities are also important. The current construct should be correlated with other current indices of the same or related construct. If they differ, our measure will have concurrent validity. The scale presented in this article is well developed and researchers, decision makers and practitioners will find it useful while establishing an online education system.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS:

One of the limitations of this research paper is that its scope is limited to students as well as faculty members of Gujarat state in India. The further scope of research is possible to carry out on the students as well as faculty members of various institutes and also various geographical areas available in India which help to make comparison and generalize the findings. The study did not show any comparison between urban areas and rural areas students & faculty members, thus it would be interesting to find how urban students and rural students and faculty members perceive online education and which dimensions affect them the most. The present study focuses only on finding factors affecting adoption of online education among students & faculty members, hence studies related to impact of these factors on attitude, adoption intention and behaviour will help in all online educators. It is important to find out the comparison between online education and classroom education among students which helps to overcome the factors while conducting online education.

CONCLUSION

The present study tries to identify factors affecting adoption of online education in Gujarat state of India. The study found that Infrastructure and Technology Dimensions, Student's related Dimension, Faculty's related Dimension, Facilitating Dimensions, Social Influence Dimensions, Effort Dimensions, Perceived usefulness, Performance expectations Dimensions and Security & risk Dimensions affects the students' as well as faculty members adoption of online education in Gujarat. The study explains the practical implications of major findings. The findings suggest that the institutions, colleges must focus on the enough infrastructure and facilities, students' and faculties' requirements, and also convince them how online education is necessary and will enhance the careers of students and will benefit the teachers/faculties in execution of online education. It has been more than two decades since the starting of online education, but still in Gujarat the adoption rate of online education is very low. Only due to COVID 19, online education has taken a giant leap. Thus this study enhances the existing literature related to online education and also the identified factors can be utilized for establishing online education.

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