Management education through e-learning in India: an empirical study

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Abstract

Purpose – E-learning is emerging as a potential delivery medium for education and training. This is evident from the increasing number of educational institutions and organizations adopting e-learning. In India, there has been an upsurge in the number of students going for management education. But, before management institutes embark on this e-learning journey, it is important to assess student readiness for this medium. The purpose of this paper is to examine the awareness levels, degree of familiarity and readiness to accept e-learning environment.

Design/methodology/approach – Exploratory study and personal interviews were conducted to design the instrument which was administered to 240 students pursuing management education at the Indian Institute of Management, Ahmedabad (IIM-A), which is a premier business school in India. A total of 154 duly filled questionnaires were used for data analysis. Factor analysis, cluster analysis and chi-square test were carried out to meet the objectives of the study.

Findings – Factor analysis resulted in identification of five factors which were given names. Further, two clusters were identified among the respondents. To examine if the cluster profile varied in demographic variables, a chi-square test showed that none of the demographic variables are statistically related to the clusters.

Research limitations/implications – The sample was comprised of students of a business school and therefore it may not be representative of all students studying business management. Second, since the sample comprised only 17 female students, generalization of results is difficult.

Practical implications – The research holds relevance, as an assessment of prior exposure to technology and comfort level, attitude, behavior and motivation may determine the e-learners' readiness to adopt or not adopt this medium.

Originality/value – The paper brings forth student readiness for e-learning as a medium of education in India. This may serve as a guide to those business schools which have started delivering management education or plan to deliver online education in future.

Keywords India, Business studies, Management development, Computer based learning, Online learning, Students, E-learning, Readiness, Assessment, Education

Paper type Research paper

1. Introduction

With the growing popularity of world wide web during the 1990s, a large number of online business models emerged including those catering to delivering education online. The marketplace witnessed a transition from correspondence-based distance education to lectures stored on compact disks or hard disks followed by real-time delivery of courses. Although, the evolution has been relatively slower in developing nations as compared to economically developed ones, the former is fast catching up. As per a comparison of internet penetration (IP) suggests that USA and Japan lead with IP of 69.3 percent (USA) and 67.2 percent (Japan), while economies like China and India lag with IP of 9.3 percent (China) and 5.4 percent (India) (Rao, 2011). In India, e-readiness pertaining to technological infrastructure, user capability and business application is gradually improving. This is evident from e-learning statistics. As per the 2003 e-learning readiness assessment by EIU (2003), India with an overall score of

4.56 on a scale of 10 was ranked 45th among 60 countries. This score improved to 4.96 and India was ranked 54th among 70 countries and experts believe that the most marked improvements in scores can be seen in emerging markets – notably Venezuela, India, Egypt, Jordan and Ukraine where the room for improvement is substantial (Economist Intelligence Unit (EIU), 2008).

Globally, e-learning has emerged as a popular medium for education and training. Both organizations and educational institutes have made substantial investment in e-learning systems. The Indian education sector is undergoing tremendous changes resulting in the increasing of the overall market size. The emergence of new segments like K-12, virtual universities (engineering, medical and MBA), tutoring for school kids, vocational training, etc. have offered new opportunities for both education providers and seekers. In the USA, online enrollments have continued to grow at rates faster than the overall higher education enrollments (Allen and Seaman, 2010). The USA and Europe continue to dominate the e-learning market with over 70 percent share of the revenues. The global e-learning market comprises of giants like Adobe Systems Inc, Blackboard Inc, Cisco Systems Inc, IBM Corp., Microsoft Corporation, etc. In India players like NIIT Ltd, Educomp Solutions Ltd, Tata Interactive Systems, 24×7 Learning Solution Pvt Ltd, HughesNet Global Education, U21Global Education, etc. have played an important role in taking e-learning to the next orbit.

Globalization and transformation of economies and firm have forced companies to think of innovative ways to cut-down costs and remain competitive. In the corporate world, e-learning is emerging as a preferred medium to impact training keeping as compared to the traditional instructor-led training. The growth of e-learning can also be attributed to the availability of high-speed bandwidth at relatively lower costs. India has around 100 million internet users and is the third biggest internet market in terms of user base owing to its population of more than a billion. According to statistics from Internet World Stats (www.internetworldstats.com) the IP rate is around 8.5 percent up from around 0.5 percent in 2000.

Post-economic meltdown, there has been a growing interest in continued management education as it helps the students to advance in their career as well as safeguard themselves from the effects of adverse economic conditions. Driven by this increasing demand, many schools and colleges have started delivering education via e-learning. This has helped them to bring all the stakeholders on a virtual learning platform providing students and faculty to gain global exposure. In the management education arena, institutes like Indian Institute of Foreign Trade – Delhi, Indian Institute of Technology – Delhi, Indian Institute of Management – Kolkata, Bangalore, Kozhikode and Indore, XLRI – Jamshedpur, IMT – Ghaziabad, Symbiosis Centre For Distance Learning, Amity Business School, IGNOU, etc. have been offering diploma and certificate courses online. In 2009, common aptitude test, a score is used by many management institutes in India to shortlist candidates went online similar to US exams like the graduate management aptitude test and the graduate record examination. The government is also promoting e-learning initiatives in education by providing training to faculty to ensure smooth transitions for students from classroom environments to self-directed learning (Rao, 2011).

Although, in India, the last few years have been encouraging in terms of students enrollment in e-learning programs and the increasing number of institutes/ organizations offering such courses, there is still a great deal of confusion among students pertaining to the value derived. Therefore, it's important to develop an understanding about what students feel about e-learning as a medium of education and

its associated tool and technologies. It is also important to explore dimensions of e-learning which determines student readiness for e-learning. The structure of the paper is as follows. In Section 2, a review of literature is done which includes a discussion about different assessment models, Section 3 talks about research objectives followed by methodology in Section 4. Analysis of data and findings of study are presented in Section 5. Eventually the conclusion, limitation and scope for future research are discussed in Sections 6 and 7, respectively.

2. Literature review
2.1 E-learning – an overview
Literature cites a number of views on e-learning at the individual, organizational and country level. E-learning, e-education or online learning refers to the way people communicate and learn electronically (Roffe, 2002). At an organizational level, it refers to providing online training to employees via different communication channels like intranet, internet, compact disks, satellite, etc. E-readiness, as per EIU (2008) is "the measure of a country's ability to leverage digital channels for communication, commerce and government in order to further economic and social development."

E-learning is multifaceted, covering a wide range of approaches and methods (Clarke, 2007). There are a number of technologies utilized for online learning. According to Hiltz and Turoff (2005), it includes correspondence courses, physical e-mail, printed matter, audio recordings, computer-assisted instructions, synchronous and asynchronous communication, web and multimedia material, simulation and gaming, collaborative learning, asynchronous learning networks, collaborative knowledge systems and wireless and handheld devices. The communication media may also include learning objects, video-on-demand, virtual laboratories, virtual classrooms, net meetings, streaming media, simulation, online assessment and web-based management tools (Roffe, 2002).

According to Pillay et al. (2007), e-learning not only facilities better delivery but also promote current dynamic educational content, more personalized, relevant learning experiences and more collaboration with experts and peers. It also provides faster learning and clear accountability for all participants in learning process. Flexibility is often the most commonly cited benefit of e-learning (Simonson et al., 2009).

Although e-learning provides lot of autonomy and freedom to learn, it requires lot of self-discipline and self-direction (Kearsley, 2000; Wong, 2007; Edmundson, 2009). According to Hirschheim (2005), previous studies have noted numerous disadvantages of e-learning like high frustration levels, lower levels of satisfaction and interest, technical and logistical problems, lack of instructor interaction, difficulty developing student friendships, more attendance lapses, lack of feedback, confusion about class requirements and the overwhelming volume of e-mail and online discussion. In this survey, the loss of educational quality as a result of internet delivery emerged as a major concern. It is therefore important to conduct an assessment of e-learning readiness among students before initiating e-learning planning and implementation.

2.2 E-learning readiness models
The nature of the factors that contributed toward the growth of online education and training is changing. From the delivery perspective, both technological and pedagogical orientation is shifting toward enriching the student learning experience. While information technological advancement has resulted in superior learning systems, new pedagogical approaches like simulations, case analysis and assessments

are evolving. According to Aydin and Tasci (2005), there are a number of e-learning readiness instruments available. However, since these instruments are meant to be used in developed country contexts, some of the terms and phrases used may not be relevant to developing countries. Researchers believe that framework and model to assess learner readiness for e-learning also need to evolve with passage of time as the effectiveness of new systems cannot be evaluated by old assessment approaches. Freeze *et al.* (2010) believe that this is critical in business schools since the quality of business careers will depend on the student's ability to assess the quality of changing technological systems.

Prior research studies have looked at learner readiness toward e-learning as comprising of a combination of technological readiness and attitudinal readiness. Parasuraman and Colby (2001) define technology readiness as "people's propensity to embrace and use new technologies at home and at the workplace." They have categorized this propensity into four distinct readiness dimensions, namely, optimism, innovativeness, discomfort and security. Watkins (2003) has developed an online learner self-assessment tool to provide potential e-learners with a comprehensive analysis of their e-learning readiness. This scale was revised and improved by Watkins *et al.* (2004) which provided for internal consistency and predictability of results. The self-assessment categories used in the same are technology access, online skills and relationships, motivation, online audio/video, internet discussion and importance to your success. DeLone and McLean (2003) have proposed and information system model comprising of six dimensions: information quality, system quality, service quality, use/intention to use, user satisfaction and net benefits. This model can be used to determine the effectiveness of an e-learning system by treating them as antecedents of e-learning readiness.

Parnell and Carraher (2003) design a scale to access personal readiness for online education. They listed a number of statements using exploratory research which were reduced by using factor analysis. The dimensions are technological mastery, flexibility, quality and self-management. Muilenburg and Berge (2005) identified eight factors to that comprise student's barriers to online learning. They are administrative issues; social interaction; academic skills; technical skills; learner motivation; time and support for studies; cost and access to internet and technical problems. Darab and Montazer (2011) have compared various e-learning models and found that structure readiness, content readiness, cultural readiness and financial resources are commonly emphasized.

Similarly, some e-learning readiness models have also been developed to determine the e-learning readiness of a country. Prominent ones include e-learning assessment model by EIU (2003) involving 150 qualitative and quantitative criteria divided into four categories: education, industry, government and society, each further divided into four components, namely, connectivity, capability, content and culture. This model has been improved by EIU (2008) and the six criteria used are connectivity and technology infrastructure, business environment, social and cultural environment, legal environment, government policy and vision and consumer and business adoption.

A review of literature reveals that although a number of empirical studies have been done in the past which look at e-learning perceptions and readiness among faculty, staff and administrators, little research exist on students. It is important to note that there are very few published empirical studies pertaining to student e-learning readiness among business schools in India. This study holds relevance since prior research have shown that the largest participation in distance learning programs is

exhibited by business school, exceeding other professional fields like engineering, legal services and medicine (Allen and Seaman, 2008). Further, consumer research also shows that the decision to join a course in an institute is a complex decision (Gurak and Duin, 2004) which involves the examination of a large number of attributes (Estelami and Rezvani, 2011). Although, a lot is being talked about how this medium will transform the delivery of education, little empirical evidence exists to determine if management students are ready for embrace e-learning for education. Other questions that remain unanswered are related to the dimensions associated with e-learning readiness and relative importance of each. The research objectives are discussed next.

3. Research objectives

The study has the following objectives: to assess the awareness level of e-learning among management students in India; to assess the degree of familiarity with various e-learning technologies and tools; to extract the underlying factors of e-learning readiness and determine the importance of each of these factors; to examine whether the respondents could be segmented based on their readiness toward e-learning; and to explore the relationship between various segments, if any; obtained from objective; and the various demographic variables.

4. Research methodology

4.1 Sample

The sample consisted of 154 students (137 males and 17 females) enrolled for the two-year post-graduate program in management and one year program for executives at Indian Institute of Management, Ahmedabad (IIM-A), India. IIM-A is one of the most prestigious business schools in India known worldwide for its quality education. A convenience sampling scheme was used to select the respondents.

4.2 Instrument

An exploratory research was conducted by talking with 15 students in an informal manner. This discussion helped us to get a preliminary understanding of the e-learning awareness level of among and their degree of familiarity with various e-learning tools. A review of literature was also carried out to study the existing e-learning assessment models and the essential elements used. Based on the feedback from students and literature review, evidences related to critical e-learning dimensions was summarized and put in the form of a questionnaire. The instrument consisted of 14 statements related to e-learning readiness. Each statement used a seven-point Likert scale with responses ranging from "completely disagree" to "completely agree."

The questionnaire was divided into three sections. The first section comprised of questions related to e-learning awareness and familiarity with various e-learning technologies. A number of popular terms defining e-learning and associated technologies as discussed in literature and during personal interviews were used to assess the awareness levels and degree of familiarity with e-learning technologies. The second section comprised to questions on e-learning readiness. The third and last section comprised of demographic questions related to gender, age, qualification, educational background and experience. To gauge e-learning awareness, nominal scale statements defining e-learning were used. Further, various e-learning tools and technologies identified in exploratory study were taken and students were asked to indicate their degree of familiarity on an ordinal scale having four options (not heard, heard, familiar and used).

Sample e-learning readiness statements included: "I am the last one to explore new things among peers"; "I prefer individual learning to collaborative studies"; "I never use a to-do list, or monthly calendar to keep track of my various activities." The statements gauged their abilities (social and technological) to operate in an e-learning environment, that is, their e-learning readiness. In order to minimize a response bias, a mix of favorable and unfavorable statements was used. A pilot test was conducted by administering the survey to 15 respondents. The respondents were asked to fill the paper-based questionnaire in the presence of the researchers. This was done to identify any confusion associated with the questions used in the survey. Based on the inputs, some of the questions were rephrased to improve their ability to communicate the exact meaning they represented. Based on the initial data collection and analysis, the final questionnaire was designed.

4.3 Procedure
For final data collection, an e-mail explaining the objective, rationale of the study and containing the link to the online survey was drafted. This was sent to a sample of 240 students who were pursuing either the two-year full-time post-graduate program in management or the one year executive course in management. A total of 157 responses were received out of which three were incomplete and therefore, were omitted from the sample. Finally, 154 complete and usable responses were received, yielding a response rate of 64 percent which is phenomenal.

A coding sheet was prepared before transferring the data for statistical analysis. SPSS 14.0 was used to tabulate and analyze the data. A reliability test was carried out on responses to Likert scale questions on e-learning readiness by computing Cronbach's α. The value worked out to be 0.725 which is considered satisfactory. With respect to the first and second objective, that is, estimating awareness level and degree of familiarity with e-learning, a frequency table was prepared.

Next, to extract the underlying factors of e-learning readiness and determine the importance of each, a factor analysis was conducted which was followed by computing the mean factor scores for each of the factors and its standard deviation. For objective five, that is, to examine if the respondents could be segmented based on their readiness toward e-learning, a hierarchical clustering method followed by k-means cluster analysis was used. Each cluster was assigned a name based on the student characteristics. Finally, to explore the relationship between the factors and various demographic variables, a χ^2 analysis was conducted.

5. Analysis of data and findings
5.1 Profile of sample data
The respondents' profiles are presented in Table I. The results show that 89 percent of the respondents are males and 11 percent are females. Majority of the respondents are aged below 25 years (59.7 percent) followed by 35.1 percent who are between 25 and 34 years. About one-third of the respondents have a bachelor's degree while 25.3 percent are post-graduates. Majority of respondents (82.5 percent) are engineers. Majority of the respondents (around 60 percent) had a work experience or more than one year. These findings provide useful insights about the emerging trends in India that majority of students after pursuing engineering and working for two or three years, prefer to pursue a management program to upgrade their knowledge and dabble with managerial decision making rather than getting associated with purely technical disciplines.

Demographic variables	Options	Frequency	%
Gender	Male	137	89
	Female	17	11
Age	Under 25	92	59.7
	25-34	54	35.1
	35 and above	8	5.2
Qualification (highest level)	Bachelors degree	114	74.0
	Post-graduate degree	39	25.3
	Any other ___ (please specify)	1	0.6
Educational background	Arts	4	2.6
	Science	13	8.4
	Engineering	127	82.5
	Commerce	4	2.6
	Others___ (please specify)	6	3.9
Work experience in years	<1 year	63	40.9
	1 – less than three years	48	31.2
	3 – less than five years	12	7.8
	5 – less than seven years	3	1.9
	⩾7 years	28	18.2
Total		$n = 154$	

Table I.
The respondents profile

5.2 E-learning awareness

Table II presents a frequency distribution of the question related to e-learning awareness statements. Majority of the respondents' defined e-learning as synonymous to computer-based learning delivered via digital technologies with percentages of 61.7 and 57.8, respectively. In total, 40.3 percent treat it as a hybrid model of classroom- and web-based learning; 26.6 percent feel e-learning is delivered via satellite while interestingly; and 21.4 percent feel that it's equivalent to distance mode of education via any medium.

5.3 Familiarity with e-learning technologies. As indicated in Figure 1, majority of the respondents are familiar with e-learning technologies like computer-based assessments, e-books, streaming video/audio, simulation and video conferencing. In other words, majority of students are up-to-date with latest information technology tools which make them best suited for e-learning adoption.

5.4 Factors explaining e-learning readiness

The Likert scale statements on e-learning readiness were subjected to factor analysis. The applicability of factor analysis was tested using KMO and Bartlett's test of sphericity. The value of KMO in our case was 0.643 which is > 0.5 and so satisfactory. Similarly, the Bartlett's test of sphericity was found to be significant using χ^2 statistics. Also, the number of observations (154) is more than four times the number of statements used to perform factor analysis. These results show that one could go ahead with factor analysis exercise (Malhotra and Dash, 2011).

There were five factors extracted accounting for 62.44 percent of the variations. A varimax rotation was performed on principal component matrix and the rotated component matrix is given in Table III.

A cut-off factor loading score of 0.5 was chosen to name the factors. The statements corresponding to each of the five factors where the factor loading was above 0.5 are given in Table IV.

Factor 1 comprises of five statements as mentioned in Table II and could be named as "comfort level with technology." The second to fifth factor comprises of two statements each as mentioned in Table IV. The second factor could be named as "learning using technology"; third factor was named as "group learning"; fourth factor is named as "meticulous" and the last factor was labeled as "disciplined explorer."

S. no.	Response	Number	%[a]
1	E-learning is computer-based learning	95	61.7
2	E-learning is distance learning via any medium	33	21.4
3	E-learning is combination of classroom- and web-based learning	62	40.3
4	E-learning is distance learning via satellite	41	26.6
5	E-learning is delivered via digital technologies	89	57.8
Total		154	

Note: [a]Percentages in the column add up to more than 100 percent because of multiplicity of answers
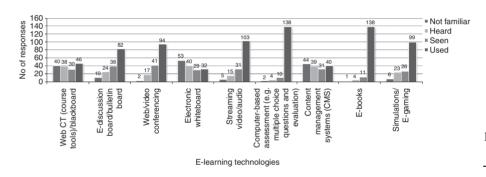
Table II.
E-learning awareness

Figure 1.
Degree of familiarity with
e-learning technologies

Statements	1	2	3	4	5
I plan my assignment submission in advance	−0.146	−0.140	−0.239	0.769	0.304
I prefer individual learning to collaborative studies	−0.218	0.078	−0.871	0.101	−0.113
I regularly use online collaboration tools like discussion forum, chat, blog, etc.	0.184	0.787	−0.007	−0.011	0.252
I find the idea of taking an online course interesting	0.531	0.448	−0.164	0.171	0.005
I prefer doing online transactions	0.516	0.211	0.282	0.298	−0.063
I use internet for searching and downloading files	0.109	0.248	0.093	0.698	−0.128
I learn best by interacting with others	−0.339	0.156	0.783	0.067	0.067
I am comfortable taking online quizzes	0.241	0.387	0.044	0.466	−0.281
I communicate through e-mail on study matters	0.128	0.778	0.120	0.176	0.117
I am the last one to explore new things among peers (R)	0.362	0.198	0.167	−0.022	0.510
I do not feel a need for e-learning besides the regular face to face learning (R)	0.624	−0.008	0.128	0.336	0.228
I find it difficult to focus when online (R)	0.755	0.079	−0.027	−0.059	0.125
I never use a to-do list, or monthly calendar to keep track of my various activities (R)	0.072	0.158	0.058	0.018	0.825
I am uncomfortable reading articles online (R)	0.640	0.253	−0.143	−0.133	0.043
Percentage of variance explained by each factor	16.841	13.327	11.639	11.378	9.257

Note: (R) means statements are reversed

Table III.
Rotated component matrix

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I find the idea of taking an online course interesting	I regularly use online collaboration tools like discussion forum, chat, blog, etc.	I prefer individual learning to collaborative studies	I plan my assignment submission in advance	I am the last one to explore new things among peers (R)
I prefer doing online transactions	I communicate through e-mail on study matters	I learn best by interacting with others	I use internet for searching and downloading files	I never use a to-do list, or monthly calendar to keep track of my various activities (R)
I do not feel a need for e-learning besides the regular face to face learning (R) I find it difficult to focus when online (R) I am uncomfortable reading articles online (R) I find the idea of taking an online course interesting				

Note: (R) stands for statements reversed

Table IV.
Statements that comprise of various factors

The importance of each factor can be ascertained by computing the mean and standard deviation of each factor score (DiStefano *et al.*, 2009). In our case, the results are given in Table V.

It is seen from Table V that being meticulous is the most important factor followed by learning using technology, disciplined explorer, comfort level with technology and group learning in the descending order. Clearly, being meticulous can help students in preparing themselves for e-learning adoption as e-learning involves time management skills, continuous self-monitoring and assessment. Moreover, this aspect can also help in reducing the high drop-out rates associated with e-learning. Similarly, students should also have an idea of the different ways in which IT is used for imparting education and training and should also have basic computer and internet skills. Additionally, self-discipline and community learning among students is crucial as multiple forms of formal and informal engagements may be required during the course.

5.5 E-learning student cluster
A cluster analysis was performed on 14 statements of readiness toward e-learning. A non-hierarchical clustering resulted in two clusters. Using *k*-means cluster the final cluster centers were obtained and are reported in Table VI.

Name of the factor	Mean	Standard deviation
Comfort level with technology	4.81	1.68
Learning using technology	5.40	1.42
Group learning	4.57	1.50
Meticulous	5.49	1.15
Disciplined explorer	4.93	1.72

Table V.
Mean and standard deviation of factor scores

No.	Statements	Cluster 1	Cluster 2
1.	I plan my assignment submission in advance	4.31	4.51
2.	I prefer individual learning to collaborative studies	4.28	3.60
3.	I regularly use online collaboration tools like discussion forum, chat, blog, etc.	4.37	5.46
4.	I find the idea of taking an online course interesting	4.33	5.56
5.	I prefer doing online transactions	4.52	5.92
6.	I use internet for searching and downloading files	6.37	6.64
7.	I learn best by interacting with others	5.54	5.17
8.	I am comfortable taking online quizzes	5.44	6.17
9.	I communicate through e-mail on study matters	5.09	6.07
10.	I am the last one to explore new things among peers (R)	4.70	5.71
11.	I do not feel a need for e-learning besides the regular face to face learning (R)	3.72	5.47
12.	I find it difficult to focus when online (R)	2.37	4.94
13.	I never use a to-do list, or monthly calendar to keep track of my various activities (R)	3.50	5.05
14.	I am uncomfortable reading articles online (R)	3.11	5.43

Note: (R) stands for statements reversed

Table VI.
Final cluster centers

It may be noted that the score on statements numbering 3, 4, 5, 8, 9, 10, 11, 12, 13 and 14 are higher for Cluster 2 than for Cluster 1. Therefore, Cluster 2 comprises of those respondents which are more inclined toward technology and therefore, could be named as "more technology savvy" whereas, Cluster 1 could be labeled as "less technology savvy." It may also be noted that students in Cluster 1, in addition to being more technology savvy also like to explore new areas of interest and keep a track of various tasks/activities to be performed. This behavior is typical of students who use various kinds of IT tools like search engines, online calendars, social media, forums, etc. to keep themselves updated.

5.6 E-learning readiness and demographics – the relationship
A χ^2 analysis was conducted to examine whether there is any relationship between the cluster membership and various demographic variables like gender, age, education, educational background and work experience. It was found that none of the demographic variables is statistically related to these clusters.

6. Conclusion
Identifying the awareness levels, degree of familiarity and readiness to adopt e-learning as a medium of education among students, is one of the most crucial challenges that educational institutes face today. Establishing virtual education infrastructure cannot guarantee its use.

The results show the majority of the respondents could correctly identify the meaning of e-learning and its associated delivery mediums. Further, the use of e-learning tools and technologies was found to be widespread and common among students. This could be attributed to the student high reliance on web-based tools, online exams, assessments, e-books, social media, audio/video chat, streaming, etc. during their course of management education. The work of Folorunso *et al.* (2006) for the Nigerian university shows that generally the awareness about e-learning is one of the major determinants of its acceptability. Further, the cost of implementation and low computer literacy are also the major bottlenecks in the way to e-learning for the students of Nigerian university. This finding is corroborated by Rao (2011), who believes that India lacks proper technological infrastructure. Although India has emerging as a leader in the information technology domain, still tremendous digital divide exists. The gap between technology have and technology have-nots is increasing. Therefore, India and other developing nations need to work at minimize this gap at the individual, organizational and country level.

Five factors were identified which were labeled and ranked based on the mean and standard deviation of factor scores. The findings show that students undergoing e-learning courses should demonstrate some degree of behavioral, attitudinal, social and technological readiness which can explain the extent of e-learning readiness among students. Unlike traditional learning, e-learning involves taking care of minute details associated with technology, courses, evaluation, etc., that is meticulous planning is required before embarking on e-learning journey. The next important dimension of e-learning readiness is learning using technology, which reflects on the importance of technological readiness. Further, e-learning is best suited for people who are explorers proactively looking out for newer opportunities. In addition to this, e-learning is best suited for those students, who feel excited about the concept of e-learning and demonstrate confidence in the ability to use various tools for e-learning. This finding is corroborated by Ling and Moi (2007) who found that professional

accounting students in Malaysia were neither techno-ready nor techno-resistant but had strong intentions to use e-learning systems. This finding is consistent with prior studies done by Dabholkar (1994) and Mick and Fournier (1998) who found that individual with positive beliefs about technology are more receptive to new technologies. For successful e-learning adoption, it's important for students to collaborate and work in a group.

The results of cluster analysis show that there are two categories of students, one who are more technology savvy and others, less technology savvy. However, none of the demographic variables were found to statistically differ between the two clusters, although prior studies have examined the role of demographic variables in the readiness to adopt new technologies. A plausible reason could be that these students have similar kind of educational background, education level, age group and work experience. Majority of them are engineers with one or two years of work experience. The selection process followed at IIM-A ensures that the best of the brains are selected. This could answer the homogeneity found as part of the sample. With respect to gender, Gutek and Bikson (1985) found that men tend to be more technology savvy than women. Also, Harrison and Rainer (1992) suggested that since men possess advanced computer skills as compared to women, they are more likely to accept technology. Further, age has also been found to have a negative correlation with computer attitudes (Nickel and Pinto, 1986). In another study involving managers of Turkish companies, Aydin and Tasci (2005) found women to be more e-learning ready as compared to males, although no significant difference was found between age groups, education levels and computer experiences. Tsikriktsis (2004) in a UK sample demonstrated that student clusters differ in terms of demographics, laggards are mainly females older than 45 years with low education and low income, skeptics are mainly males, below 45 years with average income and education while explorers were mainly males in late 20s or early 30s with high education and income. Chaturvedi and Dhar (2009) in Indian context found that variables like gender and age affect the acceptability or non-acceptability of e-learning which in turn determines the learners' success in an online environment. They found in Indian context that respondents of different age groups differ significantly in the perception of e-learning.

7. Limitations and scope for future research
The study has some limitations. First, since all the students surveyed are from IIM-A, they may not be representative of all students studying business management in India. Second, since the sample comprises of only 17 female students, generalization of results is difficult. Therefore, continued research is required on a larger sample with a balanced representation of male and female respondents. The research findings reported here can be advanced further by expanding the scope of the variables and sample. It is important to investigate if e-learning readiness varies for other professional disciplines such as medicine and engineering. In addition to student e-learning readiness, it is also important to get an estimation of faculty readiness, institutional readiness, cultural readiness, government readiness and recruiter's readiness. This would help in identifying and correcting the weak links in the e-learning value chain. Further, e-learning readiness comparison among developed and developing nations could also be carried out. Clearly, this could very well be treated as the scope for future research.

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