A SYSTEMATIC REVIEW OF ED TECH EDUCATION PLATFORM– AN INDIAN PERSPECTIVE

Jatin Pande and Dr. Anurag Pandey

ABSTRACT

Virtual learning has become most desired learning choice open to the educational institutions i.e., schools, colleges and universities due to the fast development of the internet technologies in India. New trends are emerging which affects the field of education such as Artificial intelligence, Virtual education, Game-based curricula, Paperless textbooks, Open education resources (OER), Collaborative learning, learning analytics, flipped learning, Blended learning, Massive Open Online Course (MOOCs) etc.

One can witness the increase in the number of people choosing the e learning platforms for the purpose of learning on a daily basis. Parents are absolutely ready in terms of investing in these virtual platforms so that their children are benefitted by quality education for the entire life. Hence it becomes imperative to study the varied Indian virtual learning applications which are thriving in the market and catering to the needs of students from schools, higher educational institutions and also those preparing for various competitive examinations. The study is conducted to understand the background knowledge of Ed Tech education system, to find out the key variables playing important role in the acceptance Ed Tech education and to understand the challenges, products and market players offering in Ed Tech education.

Key words: EdTech, system quality, information quality, service quality, e learning effectiveness, user satisfaction, school education, competitive examinations, higher education.

I. INTRODUCTION

EdTech (Educational technology) is achieved by the use of computer hardware, software, and educational theory and practice together to aid in learning. In other words, EdTech means a full-fledged industry of companies that create educational technology.

Educational technology is based on theoretical knowledge from various disciplines such as communication, education, psychology, sociology, artificial intelligence, and computer science. E-learning is covered under a broader term of technology-based learning, which comprises of learning methodology through electronic technology, like internet or intranet, video conferencing or satellite broadcasts. E- learning is the recent trend in terms of enhancing academic and professional skills through the internet.

Online learning means "learning experienced with the help of internet" where the students are engaged with teachers being at their convenient place and designated time (Singh and Thurman, 2019). This has shown immense growth during the past decade. Before COVID-19 pandemic, the e learning industry was growing at a moderate pace. However, on account of the pandemic, closure of the off line mode of learning, this has led to increased opportunities in this industry leading towards many organizations investing in online learning platforms. As per the statistics shared by Global Market Insights (2021), the e learning market is growing at a rapid pace and is expected to click a whooping figure of $375 billion by 2026. The 21st century scenario makes way for the virtual learning applications with human and computer interacting with each other in a friendly manner, making use of games, personalized care, mechanism of scoring points and data driven insights to help humans sharpen their skills and knowledge in basic courses. Such teaching strategies brought a sea change in the process of learning and helped in motivating students in numerous ways to display their talent in classrooms.

In order to have an edge over others and to succeed, the students require new ways and means of acquiring new skills and expertise. The path of learning commences with basic skills and abilities which can be later on consolidated and upscaled throughout our lives. To be more successful and competitive in a global workforce, students require new pathways to learn unique expertise and skills. This learning journey starts with the foundation skills and abilities that can be upgraded and augmented throughout our lives. Automation can be used as a powerful instrument to relive the moments of learning. If we look back at history, the conventional methods of learning always led towards the limited educational opportunities.

The fast change and development of technology and its daily use by the children motivates parents to understand the behavior of their children who are part of online learning. As per Radesky et al (2015), automation is enhancing and is changing day by day. There are few parents who are unable to understand the significance of automation and this carelessness makes them understand that the same is not beneficial for their children. Parents should be driven towards letting children imbibe automation from a very early age. As per De Wit (2009), children grab and feel delighted by gaining knowledge through playing. Children comprehend and relish the new ways of gaining knowledge through fun. As and when children start studying, they develop bodily, analytical, community based and passionate skills (Nikolopoulos et al., 2010). Children are seeking knowledge while having fun without even perceiving it. There are two main points of discussion: certain studies show that there are some parents who are still hesitant about adoption of technology and do not want to use it for their own purpose. There are certain other research studies which show that the parents are absolutely positive about the use of automation and understand well that it will have a pragmatic influence on their young offspring. (O'Conner et al., 2015).

There are views in support and as well as opposition of online teaching. Some researchers opine that the ease of operating from any location, reachability, inexpensiveness and self-discipline are the important energies of virtual learning. On the other hand, there are scholars who are of the view that lack of approach, lack of not being within the budget, lack of integrity and workability Whereas, there is a class of scholars who believe lack of access and affordability, equity and flexibility, lack of virtual caliber are the powerful warning signals towards the virtual mode of instruction and gaining knowledge. India stands second in the list of nations after USA in terms of the market for virtual learning. Virtual learning business is US$2.8bn and is expected to reach US$10.4bn by 2025 (Statista). Virtual market in India is expected to register a growth of 11% in between 2016-2020. Monaghan et al. (2011) also enunciated the growing acceptance of virtual learning which meant enhanced use of automation and a better source of information.

II. LITERATURE REVIEW

Virtual implies that one can study the concerned course from any geographical location. (Kumar et.al, 2020). If one sets out to define as something virtual it simply means having the Thus, defining a term virtual means having the choice of enrollment without any charge, accompanied with a study program, method of teach having an option of free & open registration, along with a shared curriculum & pedagogy with different ways of evaluating the performance (Macleod et.al, 2014 & McAuley et.al, 2010).

Virtual education is evolved form of distance learning. It is a way of learning from anywhere enabled by a computer-based instruction and internet connectivity. It is not only restricted to providing study notes, but is involved in every level of education from management to implementation. Synchronous learning focuses on the content focused, to be governed by instructions, one to one learning, very less communication with the resource person and no cooperation with the other participants (Khanchandani, Kumar, & Kumar, Rohtas, 2015).

A learning enabled by technology is a method of instruction where there is lot of communication with the resource person and has efficacy too. If the person can ensure connectivity at his / her end then he/she can conveniently obtain the knowledge.

After seeing many reviews of their information success model, DeLone and Mclean modified their initial model of 1992 and included one important factor of service quality and replaced constructs like individual impact and organizational impact with Net Benefits and shows the relationships amongst various constructs. The new model of DeLone and Mclean was found extremely useful for evaluating the success of different e-business, e-government and e-banking and now it is seeing more application in the field of virtual learning.

As per Yengin et al. (2011), they came up with a new model which was actually an extension of DeLone and McLean (2003), whereby they clarified DeLone and McLean model and segregated system delivery from system outcome. As we know that e learning involves use of state-of-the-art technology to provide

knowledge, but one needs to consider if adopted automation is adopted by ultimate learners or not.

Virtual education has the following attributes:[1]

- Connecting with the lecture and at least 50 other students at the same time, via video interactive conference.

- In the case of online lectures, lecturers may need to use discussion to make the teaching process more organic and realistic.

- For students, that do not have access to high-speed internet connections, the streams have to be recorded and uploaded.

- The online lectures should be accessible not only by computers but mobile phones.

- Should have the option to watch recorded lectures that they missed with the capability of rewind.

- The ability for students to complete/hand in online homework, quizzes and tests.

Challenges in Pursuing Online Learning:[1]

- Low internet connectivity.

- Inadequate learning engagement.

- Deficit in completion rates of the courses.

- Low level of retention amongst online learners.

System Quality

System quality refers to the class of the e learning platform through which the learners can gain understanding and study. The more a portal is easy to use, better is the caliber of that particular system (Zheng et al., 2013). System quality as per DeLone and McLean means easy to operate, reliability, the act of performing a process, and being trusted upon. As per Wang et al. (2007), there are certain criterion of a system with quality and effectiveness and such a system

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[1] Bhat, R. A., Kumar, S., Najar, A. A., & Deshpande, A. A Systematic Review of Online Learning during COVID-19 Crisis: An Indian Experience.

should be convenient to use and should have those features which help people to get occupied and are also enticing to users of the product and the service. Ozkan and Koseler (2009) are of the view that the standard of a system depends on its convenience to use, being engaging, trustworthy, systematic and sound. As per Islam (2012), the standard of a system depends upon approach, convenience to use and its trustworthiness.

Dobbs (2000) and Fabianic (2002) tested the level of knowledge and understanding of the knowledge seeking platform on the basis of display of the content, examined the standard of a knowledge seeking platform on the basis of exhibition of the content, ease of use and ability to browse from one page to another, pace of the website, speed and response of the site, design of the entrance of the passage, any special services and the trust which a learner can develop over time. Safety and exchange of ideas are two other points of review apart from system quality as mentioned in the study by Büyüközkan et al. (2007).

Learning effectiveness

E-learning efficacy can be measured by two variables viz. user satisfaction and net benefits (Yengin et al., 2011). DeLone and Mclean were the ones who introduced the system power and described three individualistic parameters viz. system quality, service quality and information quality.

User Satisfaction

Verdegem and Verleye (2009) illustrated that the user satisfaction can be judged in terms of the quality of the subject matter, how far it is useful to the user and its scientific aspects. Reynolds (2012) described that the satisfied subscribers are those who find upscaling in their activities.

Net benefits

As per Chou and Liu (2005), net benefits mean the degree to refer to the extent to which the ultimate aim in terms of proficiency ultimate objective in terms of proficiency and abilities are accomplished by the mentee. DeLone and McLean (2003) have illustrated that net benefits include the ability to regain knowledge , information recall, prowess and conviction in terms of controlling , upgradation

in terms of efficacy and standard of managerial capacity , conviction in terms of providing resolution , upgraded yield of the user (like job related abilities or higher grades in examination), exactness of resolution (like what are the chances open in the market) and keenness of a customer to pay for the designated details.

Segments in case of Indian Ed Tech products:

There are three segments in case of Indian Ed Tech products

- School Education
- Higher Education
- Competitive Exams

III. METHODOLOGY

The study is based on the exploratory research design. The study is conducted to understand the background knowledge of Ed Tech education system, to find out the key variables playing important role in the acceptance Ed Tech education and to understand the challenges, products and market players offering in Ed Tech education. The study is based on the secondary data. The secondary data is collected from the different research papers, books and web-sites Articles.

IV   CONCLUSION

Ed Tech education portals is helping the learners in enhancing their academic and professional skills. It has the immense potential growth in the future. The E-learning market is growing at a rapid pace and is expected to reach at a shouting figure of $375 billion by 2026. The Automation has proved as powerful instrument to relive the moment of learning. The fast change and development of technology and its daily use by the children motivates parents to understand the behavior of their children who are part of online learning. Parents should be driven towards letting children imbibe automation from a very early age.

There are views in support and as well as opposition of online teaching. Some researchers opine that the ease of operating from any location, reachability, inexpensiveness and self-discipline are the important energies of virtual learning. India stands second in the list of nations after USA in terms of the market for virtual learning. Virtual learning business is US$2.8bn and is expected to reach US$10.4bn by 2025.

Low internet connectivity, inadequate learning engagement, deficit in completion of the course a low level of retention amongst online learners re the

key challenges in ed Tech education. The system quality, service quality, information quality, learning effectiveness, user satisfaction, net benefits, are the key variables playing important role in Ed Tech education.

The BYJU's, Vedantu are offering the popular Indian ed Tech products to assist in school education. The INFLIBNET, IGNOU, NPTEL, upGrade are the popular Ed Tech products to assist in pursuing higher education. The BYJU's, Unacademy and Gradeup are providing the assistance in preparing for competitive exams.

References

Bagozzi, R. P. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. Journal of the association for information systems, 8(4), 3.

Bhat, R. A., Kumar, S., Najar, A. A., & Deshpande, A. A Systematic Review of Online Learning during COVID-19 Crisis: An Indian Experience.

Benbasat, I., & Barki, H. (2007). Quo vadis TAM. Journal of the association for information systems, 8(4), 7.

Büyüközkan, G., Ruan, D., & Feyzioğlu, O. (2007). Evaluating e-learning web site quality in a fuzzy environment. International Journal of Intelligent Systems, 22(5), 567-586.

Chopra, G., Madan, P., Jaisingh, P., & Bhaskar, P. (2019). Effectiveness of e-learning portal from students' perspective: A structural equation model (SEM) approach. Interactive Technology and Smart Education.

Chou, S. W., & Liu, C. H. (2005). Learning effectiveness in a Web-based virtual learning environment: a learner control perspective. Journal of computer assisted learning, 21(1), 65-76.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. Journal of management information systems, 19(4), 9-30.

Fabianic, D. (2002). Online instruction and site assessment. Journal of Criminal Justice Education, 13(1), 173-186.

Gudigantala, N., & Bicen, P. (2011). Gray market for information technology (IT) products: status, implications, and strategies to address the IT gray market threat. Communications of the Association for Information Systems, 29(1), 10.

Jauhari, K. (2020). A Study of Factors Effecting Learner Satisfaction in Massive Open Online Courses (MOOCS) In The Indian Context. International Journal of Management (IJM), 11(10).

Khanchandani, V., Kumar, M., & Kumar, R. (2015). E-learning Initiatives in India and Libraries. In International Conference on Grey to Green (pp. 517-527).

McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice.

Mishra, D., & Dangwa, K. L. Web-based Education: History and Scope in India.

Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. Computers & Education, 53(4), 1285-1296.

Radesky, J. S., Schumacher, J., & Zuckerman, B. (2015). Mobile and interactive media use by young children: the good, the bad, and the unknown. Pediatrics, 135(1), 1-3.

Ross, J., Sinclair, C., Knox, J., Bayne, S., & Macleod, H. (2014). Teacher experiences and academic identity: The missing components of MOOC pedagogy. MERLOT Journal of Online Learning and Teaching, 10(1), 57-69.

Santos, J. (2003). E-service quality: a model of virtual service quality dimensions. Managing Service Quality: An International Journal.

Singh, V., & Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018). American Journal of Distance Education, 33(4), 289-306.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. MIS quarterly, 157-178.

Verdegem, P., & Verleye, G. (2009). User-centered E-Government in practice: A comprehensive model for measuring user satisfaction. Government information quarterly, 26(3), 487-497.

Yengin, I., Karahoca, A., & Karahoca, D. (2011). E-learning success model for instructors' satisfactions in perspective of interaction and usability outcomes. Procedia Computer Science, 3, 1396-1403.

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List of Tables

Table: 1 Indian Ed Tech Products to assist in School Education:

	Indian Ed Tech Products to assist while pursuing School education	
1	BYJU's	Helps in doubt clarification and by providing coaching during the school education.
2	Vedantu	Online tuitions for the school children.
3	Whitehat education	Helps kids learn coding.
4	doubtnut	Provides doubt solving classes from 6th – 12th std.
5	Humbleschool	Helps 7-12 years children to develop scientific thinking through entertaining short films.
6	Flipclass	An online tutoring platform
7	Levelapp	Provides online tutoring.
8	Kamp k12	Online coding bootcamp for kids.
9	Cuemath	Focuses on teaching math and coding skills to children.
10	Logiqids	Helps children enhance logical reasoning skills.

Table 2: Indian Ed Tech Products to assist in Higher Education:

Indian Ed Tech Products to assist in pursuing Higher Education		
Sl.No.	Name of the e learning portal	Purpose it serves
1	Information and library network (INFLIBNET) – https://www.inflibnet.ac.in/	Worked towards the rejuvenation of the university libraries and connecting them thorough a proper and a stable network.
2	GNOU Online http://www.ignouonline.ac.in/	Provides link to various channels like Gyan Dhara , Gyan Vani .
3	eGyankosh http://egyankosh.ac.in/	A national level of storage to store, indicate and maintain virtual learning origin.
4	NPTEL (National Project on Technology Enhanced Learning) https://nptel.ac.in/	It ensures virtual knowledge seeking amongst students and faculty members and to work towards providing internet-based content to engineering students.
5	E - Granthalaya https://egranthalaya.nic.in/	An internet-based library management software developed which brings together.
6	Shodhganga http://shodhganga.inflibnet.ac.in/	Is a collection of the research thesis.
7	ePathsala http://epathshala.nic.in Developed by NCERT,	It facilitates e-resources viz. textbooks, audio, video, periodical through the website and mobile app.
8	SWAYAM (Study Webs of Active learning for Young Aspiring Minds) https://swayam.gov.in/ Massive Open	Provides eBooks, eNotes, lectures and online Self-assessments quizzes.
9	upGrad	Helps students to get degrees from the top universities across the world.
10	Great learning	Provides courses on data science, artificial intelligence, machine learning, cloud computing, cybersecurity, software
11	EduKart	Provides Indian and International courses from top institutes across the world viz. MBA, MCA, BBA, B.Sc. etc.
12	Eruditus	Provides many courses on leadership and management, data science and technology, banking and finance and digital transformation.

Table: 3 Indian Ed Tech Product to assist in Competitive Exams:

Indian Ed Tech Products to assist in preparing for Competitive Exams		
1	BYJU's	Their services are enabled by 3D technology. Provide preparatory material for IIT JEE, NEET and Civil Services Examinations.
2	Unacademy	Helps students to prepare for exams like UPSC, IIT JEE, NEET, GATE, ESE, Bank.
3	doubtnut	Provides assistance in terms of coaching classes for IIT JEE and NEET.
4	askIITians	Helps prepare for IIT JEE and NEET.
5	Gradeup	Helps prepare for competitive and government exams.

Authors Profile

Jatin Pande has completed PGDBM from Dr. Gaur Hari Singhania Institute of Management & Research, Kanpur in 1999. He has an industry experience of 17 yrs across various FMCG companies into sales function (from 1999 to 2016). He is currently employed with Pranveer Singh Institute of Technology, Kanpur (Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow) as an Assistant Professor and teaching subjects like Marketing management, Operations management, Sales and Retail management and Strategic Management. He enrolled into the PhD program of AIMA-AMU in the area of Consumer research – IT enabled Services and Services. He has attended five conferences and five webinars. He has published a paper in a UGC Approved journal.

Dr. Anurag Pandey is working as Associate Professor with Pranveer Singh Institute of Technology, Kanpur. He is having total 12+ Years' experience in industry as well as academics. He is awarded with Ph.D. in management from UKA Tarsadia University, Surat Gujarat, He has attended 29 FDP and workshops on various topics. He has also completed 13 courses from NPTEL/SWAYAM Portal, Coursera and Globsyn etc. He has published 7 Research Papers in national, international journals and ISBN Book chapter. He has attended and presented research papers in 17 national and international conferences. He is also awarded with the Best Research Paper award in the international conference. He is teaching Research Methodology, Marketing Analytics, Digital Marketing, Computer Fundaments, Marketing Management and Organizational Behavior.