

UGC-CARE Approved Refereed-Peer Reviewed Journal  
ISSN-0970-7603



# भारतीय शिक्षा शोध पत्रिका

**BHARATIYA SHIKSHA SHODH PATRIKA**

वर्ष 41, अंक 1, जनवरी-जून 2022

Vol. 41, No. 1, January-June 2022



**भारतीय शिक्षा शोध संस्थान**

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# Factors to Measure E-learning Readiness among Academic Staff

*\*Ishfaq Majid, \*\*Dr. Y. Vijaya Lakshmi*

## सारांश

यह आलेख उन विशिष्ट कारकों के विषय में है जो लघु स्तरीय साहित्य समीक्षा के आधार पर ई-लर्निंग के प्रति संकाय सदस्यों के अध्ययन को निर्धारित करते हैं। समीक्षा का मूल उद्देश्य उन प्रमुख कारकों की पहचान करना था जो ई-लर्निंग के प्रति संकाय सदस्यों के अध्ययन को निर्धारित करते हैं। उक्त संदर्भ में शोध-प्रश्न हैं कि ई-लर्निंग के संदर्भ में अध्ययन करने के लिए सबसे अधिक उपयोग किए जाने वाले कारक कौन से हैं? प्रत्येक कारकों के अंतर्गत किन घटकों का अध्ययन किया जाता है? प्रस्तुत समीक्षा उन कारकों की विवेचना करती है जो संकाय सदस्यों की ई-लर्निंग अध्ययन को निर्धारित करते हैं और ई-लर्निंग अध्ययन पर पिछले शोधों में उपयोग की जाने वाली कार्यप्रणाली, नमूने, उपकरण, डेटा विश्लेषण भी शामिल है। निष्कर्ष बताते हैं कि संकाय सदस्यों के ई-लर्निंग अध्ययन को निर्धारित करने वाले विविध कारक एवं घटक हैं। यद्यपि तकनीकी, मनोवैज्ञानिक तथा शैक्षणिक दृष्टिकोण से यह अध्ययन ई-लर्निंग के प्रति संकाय सदस्यों की तत्परता का विस्तृत रूप निर्धारित करता है।

## Introduction

The Indian higher education systems has grown rapidly in last five decades to meet the demands of quality education for all and information communication and technology (ICT) has added further momentum to these advancements (Mondal & Metti, 2012). ICT is the main factor that has transformed many aspects of the higher education system. The effective use of technology can motivate students and has the power in making our classrooms more interesting and dynamic. It also renews the enthusiasm of the teachers as it empowers them to acquire new skills and techniques (Habib, 2017). ICT can improve the quality of Higher Education in a number of ways like enhancing the student's enthusiasm and commitment making possible the attainment of fundamental skills and improving the teacher training (Saikia, 2017). ICT in higher education is being used in various aspects like curriculum designing, curriculum transaction, development of course material, assessment and evaluation etc. It helps the teachers in all possible ways of delivering and sharing the content and maintaining a proper communication between the learners, teachers and the outside world. When applying ICT in higher education, the learning becomes no longer confined to schedules and timetables (Hattangdi & Ghosh, 2008). The role of ICT in higher Education is better understood for bringing enhancement with respect to quality and improving the access and proficiency of all stake holders that are related to Higher Educational sector in one or

the other way and in creating of a novel dynamic in Higher Education at both Macro and Micro levels (Krishnaveni & Meenakumari, 2010). The development of information communication technologies and multimedia and the use of internet as a new practice of teaching has brought lot of radical changes in the traditional process of teaching and learning. The development in ICT has created more choices for today's education and E-learning is one among them. Educational institutions have recognized E-learning as the powerful instrument that can transform the people's knowledge, skills and performance (Henry, 2001).

Also, the role of distance education in Indian Higher Education is increasing day by day and with the advent of E-learning, it is innovating rapidly. This gives a boost to E-learning as a means of delivering media for the purpose of providing education and training. It provides an opportunity to learn with the help of technology with exciting prospect of providing training even to learners were having little access to computer-based training previously (Contreras & Hilles, 2015). With the impact of technology, the learners are now given lot of opportunities to explore the different aspects of E-learning. E-learning under the aegis of ICT is an integral part of an effort for improving the educational system of our country (Adams & Ngampornchai, 2016). To provide teachers a new approach to expand the learning opportunities and enhancing the learning outcomes, E-learning has emerged as one of the important approach in today's era. Significantly to involve ourselves in

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practicing the approach of E-learning, the factor that determines our preparedness is E-learning readiness, which can be interpreted as the ability to make use of E-learning resources and multimedia technologies to improve the quality of learning. There is a need of investment in ICT by the higher educational institutions so that they can develop appropriate machinery to advance E-learning readiness of their faculty members besides developing a full fledged policy framework to promote E-learning (Navani & Ansari, 2017).

## **E-learning**

The letter 'E' in the word E-learning stands for Electronic, so E-learning can be referred to learning that happens with the use of information communication and technologies (Dangwal, 2018; Homavazir, 2015). However, most of the instructors/educators agree on that E-learning is basically an instruction that is both synchronous as well as asynchronous that is delivered to learners over technology. Etymologically, E-learning covers learning that is electronic mediated (Panda & Mishra, 2007; Ragusa, 2017). E-learning involves related terms or components like learning that is online based, virtual and Web-based (Azimi, 2013; Clover, 2017; Dangwal, 2018; Karmakar & Nath, 2014; Rusman, 2016). It can also be defined as the learning method that makes use of electronic based instructional content that is presented with the help of the Internet (Trombley & Lee, 2002). In many countries, E-learning developed as one of the main components of the importance of the lifelong learning strategy. E-learning is a concept that encompasses students, faculty and E-learning managers (Persico, Manca & Pozzi, 2014). It provides greater benefits to learners as well as teachers by sharing of resources and promoting collaborative learning (Wheeler, 2001). The main objectives/advantages of E-learning is to increase accessibility with respect to education and reducing its cost (Doculan, 2016; Arkorful & Abaidoo, 2014). Thus, it can be concluded that E-learning is a teaching learning system where the process of interaction between teachers as instructors/facilitators and students happens with the help of technology.

## **E-learning Readiness**

E-learning has already entered into Indian higher education system. However, the success of it depends on the readiness to adopt it by various stakeholders of higher education i.e., teachers, students, administration etc. In the process of effective teaching and learning, the utilization of resources of ICT by instructors and

learners' is very much essential to facilitate the learning. The readiness of an organization to adopt E-learning can be well defined as the mental and physical preparedness of the organization itself (Rohayani, *et al.*, 2015; Saekow & Samson, 2011; Borotis & Poulymenakou, 2004). Technically speaking, E-learning readiness is the ability and attitude of potential E-learning users to use a new learning environment and accept alternative technologies to improve the quality of teaching-learning process (Kaur & Abas, 2004; Hashim & Tasir, 2014). E-learning readiness ensures that users are able to use the E-learning environment in the best possible way. As E-learning gains popularity across educational institutions in developing countries among the users as well as the providers, factors that determine readiness towards E-learning have become an important point of discussion (Navani & Ansari, 2017; Ansong *et al.*, 2016).

## **Methodology**

In the present paper an attempt is made to do an in-depth study about the factors that determine E-learning readiness. Based on our review of the existing studies, it has been observed that the factors that determine the E-learning readiness differ among students, faculty, administrators and institution as a whole. They also differ from country to country and also depend upon the type of institution. To select the past literature regarding E-learning readiness the following criteria was adopted:

**Topic/keyword search:** E-learning readiness

**Population:** Studies conducted on E-learning readiness retrieved through various sources like Google Scholar, Shodganga, ERIC, JStore and other publication house websites like Sage, Routledge, Emerald and Wiley Online. On publication house websites, we searched for e-learning related journals first with the help of the journal search option. From these journals, we identified the studies by surfing the 'current issue' and 'archives' option available on these journal websites.

**Period:** From 2010 to 2019

**Country:** Within and Outside India

Thus, with these criteria's in mind, we were able to collect around 62 research papers published in the time span between 2010 and 2019, out of which 27 were related to students, 06 were related to administrators, 10 were related to faculty members, 12 were related to institution, 05 were related to E-learning readiness with respect to medicine, manufacturing industry & Public health facility and 03 were review papers for determining E-learning readiness in Higher Education.

Keeping in mind the aim and objective of our study, we limited our study to faculty E-learning readiness and hence a detailed discussion is made about total 10 studies related to faculty E-learning readiness. Among these 10 studies reviewed, 09 are International based and one is India based. Thus, it is observed that majority of e-learning

readiness studies were carried outside India and even though higher education in India is expanding at a rapid rate very few studies regarding e-learning readiness were carried out in India.

The following section presents details about the title of the studies reviewed:

**Table 1.1: Faculty Members E-learning Readiness Studies**

Year	Researcher	Title
2010	Eslaminejad <i>et al.</i>	Assessment of instructors' readiness for implementing E-learning in continuing medical education in Iran
2013	Azimi, H.M.	Readiness for implementation of E-learning in Colleges of Education
2013	Red <i>et al.</i>	An assessment of the E-learning Readiness State of Faculty Members and Students at Malayan Colleges Laguna
2014	Okinda, R.A.	Assessing E-learning Readiness at the Kenya Technical Teachers College
2014	Ncube <i>et al.</i>	E-learning Readiness among Academic Staff in the Department of Information Science at the University of South Africa
2015	Kurniabudi <i>et al.</i>	Identification E-Learning Readiness in the Faculty of Agricultural Technology Jambi University
2015	Sharma <i>et al.</i>	Assessing E-learning Readiness of Instructors in Turkey
2015	Contreras & Hilles	Assessment in E-learning Environment Readiness of Teaching Staff, Administrators, and Students of Faculty of Nursing-Benghazi University
2018	Elsaadani & Alzahrani	Higher Education Faculty Staff E-readiness in Institutions of The Royal Commission in Jubail
2019	Nwagwu, W.E.	E-learning readiness of universities in Nigeria- what are the opinions of the academic staff of Nigeria's premier university?

A summary of research methodology followed in the above mentioned 10 studies is presented in table 1.2. With respect to aims/objective of conducting the study,

the sample of the study, tool/s used for collection of data, procedure for collection of data from the respondents and the technique/s used for the analysis of data.

**Table 1.2: Summary of Research methodology adopted in studies assessing the E-learning Readiness of faculty members**

Aim/Objectives	Sample	Tool	Data Collection	Data Analysis
The aim and objective of the studies were to measure and assess e-learning readiness among instructors. Out of 10 identified studies, 02 studies measured the e-learning readiness through various readiness factors like technical skill, learning skill, time management	As far as the sample of the studies is concerned, the highest sample size was 399 and the lowest was 60. The sample consisted of students, faculties and administrators.	For the purpose of collection of data, Self-Administered Questionnaire has been used by most of the researchers. 5 Points Likert scale was employed by most the researchers. The 5-point likert scale also varied from study to study. Some studies	With respect to collection of data, maximum number of studies used in person method to collect the data from the responds. Out of 10 studies, only one study targeted the sample group with email.	For the purpose of analysis of data, the researchers used Frequency, Mean, Standard Deviation, T-test, Factor Analysis, Correlation, ANOVA, Contingency Coefficient, Regression Analysis, and Univariate analysis of variance (F-test). Further, it was seen that some of

behaviour, technology, attitude and content, 06 studies assessed the e-learning readiness among instructors, Head/Principals, administration and faculties, 05 studies were carried out to examine/determine/identify the readiness level for e-learning among faculty.		employed the verbal interpretation type items, items from strongly agree to disagree, Yes/No items, Complete disagree to complete agree, items like 'not ready needs a lot of work' to 'ready go ahead', always to never and No Experience to Expert.		the studies utilized Document analysis, in-depth interview and observation for seeking the desired results from the collected data. Out of 10 studies, One-way analysis of variance (ANOVA) and T-Test have been largely used for analysis of data.
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Table 1.2 provides detailed summary of all the 10 faculty E-learning readiness studies. The studies have been carried out in Malaysia, India, Philippines, Kenya, South Africa, Indonesia, Istanbul, Saudi Arabia and Nigeria. From above table, it can be interpreted that the aim and objectives of the studies was to measure the E-learning readiness of faculty members. As far as the sample of the studies is concerned, the highest sample size is 399 and the lowest is 60. Some studies out of mentioned 10 studies also focused on students and institutional E-learning readiness. The sample in the studies consisted of faculty members from medical sciences, public schools, colleges, agricultural university etc. The studies employed various tools which include questionnaire and rating scale for the collection of data but the frequency of employing self-made questionnaire is higher as compared to other studies. The questionnaire were open ended. Some studies utilized rating scale (5 point) as well and the scale remained same in all factors.

Before employing questionnaire, the validity and reliability of the questionnaires has been ensured. While analyzing the method of data collection, it was seen that the researchers majorly collected the data through in person mode. There are few studies which collected the data through email as well. As far as the technique of data analysis is concerned, ANOVA and T-test have been used on a larger scale. The researchers employed ANOVA to determine whether set of scores have different means or not and T-test was employed to determine whether means of two sets of scores are significantly different from each other or not.

### Discussion

The discussion section presents about the factors and its components that were used by researchers to study the E-learning readiness of faculty members with respect to the studies mentioned in table 1.1.

**Table 1.3: Factors for assessing the E-learning readiness of faculty members**

Year	Researcher	Title	Factors
2010	Tahereh Eslaminejad, Mona Masood & Nor Azilah Ngah	Assessment of instructors' readiness for implementing E-learning in continuing medical education in Iran	Knowledge, attitude, skills, and habits
2013	Hamid Mohammad Azimi	Readiness for Implementation of E-learning in Colleges of Education	ICT infrastructure, Human Resources, Budget and finance, Psychological and Content
2013	Ellenita R. Red, Hanna Grace S. Borlongan, Tesalonica T. Briagas and Ma. Jonessa M. Mendoza	An Assessment of the e-Learning Readiness State of Faculty Members and Students at Malayan Colleges Laguna	Demographic Profile, Technology Access, Attitude Towards E-learning,
2014	Robert Alfred Okinda	Assessing E-learning Readiness at the Kenya Technical Teachers College	Individual learners, Content, ICT infrastructure, Culture, Organization and industry

2014	Siphamandla Ncube, Luyanda Dube & Patrick Ngulube	E-learning readiness among Academic Staff in the Department of Information Science at the University of South Africa	Web-based technologies, infrastructure
2015	Kurniabudi, Setiawan Assegaff, Sharipuddin	Identification E - Learning Readiness in the Faculty of Agricultural Technology, Jambi University	Demographic, Cultural, Content, Technological
2015	Sushil K. Sharma, Sevinç GÜLSEÇEN, Zeki Özen and Elif Kartal	Assessing E-learning Readiness of Instructors in Turkey	Technology, Attitude and Content
2015	Jennifer O. Contreras & Shadi M.S. Hilles	Assessment in E-learning Environment Readiness of Teaching Staff, Administrators and Students of Faculty of Nursing-Benghazi University	Technology Access, Attitude Towards E-learning
2018	Mohamed Elsaadani and Saleh Alzahrani	Higher Education Faculty Staff E-readiness in Institutions of The Royal Commission in Jubail	Demographic information, technology
2019	Williams Ezinwa Nwagwu	E-learning readiness of universities in Nigeria- what are the opinions of the academic staff of Nigeria's premier University?	Content, financial, human resources & ICT-equipment

**Table 1.4: Frequency of E-learning readiness factors as used by researchers**

Factors	Frequency										
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	
Technology & Infrastructure	1	1	1	1	1	1	1	1	1	1	<b>10</b>
Attitude, Habits and Psychological	1	1	1				1	1			<b>5</b>
Content		1		1		1	1			1	<b>5</b>
Human resource		1								1	<b>2</b>
Finance, Budget and Culture		1		1		1				1	<b>4</b>
<b>Number of factors</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	

Table 1.4 provides an overview of the frequency of the factors as appeared in our small-scale literature review conducted on 10 studies. From the above table it can be interpreted that Technology & Infrastructure and Attitude and Psychological are factors used largely by the researchers while identifying the E-learning readiness of Academic staff.

## Factor Wise Analysis

### (I) Technology and Infrastructure

As far as the Technology as a factor for E-learning readiness is concerned, 10 studies used this factor to assess the E-learning readiness. Eslaminejad (2010) used technical domain for studying the E-learning readiness

of faculty. The 5-point scale employed in the study consisted of the items related to Technical Knowledge, attitude, skills and habits. The items were the familiarity with online education and LMS. Azimi (2013) considered ICT infrastructure readiness as an important factor for implementation of E-learning. The items in questionnaire determining the technology factor varied from presence of official college website to installations of servers in colleges. The questionnaire further analyzed the availability of Learning Management System in colleges and adequate equipment to support the initiative of E-learning. Red *et al.* (2013), Kurniabudi *et al.* (2015) & Contreras (2015) analyzed the access to technology with respect to computer and internet connection. Red *et al.*

(2013) employed 5-Point likert scale with a proper range and verbal interpretation. The researchers with the help of the questionnaire further analyzed the technology skills among faculty members by knowing their computer skills, basic internet skills and literacy on software applications. Eslaminejad *et al.* (2010) studied technological knowledge as a factor for E-learning readiness. The researcher employed a 5-point Likert scale on a sample of 70 faculty members. The scale included items like whether the faculty members are familiar with online education and learning management system or not.

Okinda (2014) with the help of a questionnaire analyzed the ICT infrastructure in a college. The items included accessibility to internet & computers, availability of reliable internet connection, internet connectivity band width and access to ICT department. Sharma (2015) with the help of a questionnaire consisting of 26 items accessed the technological competence of the faculty. The items in the questionnaire include competence in using computer/internet, using social media for courses, answering students queries through email and awareness about online courses. Elsaadani (2018) studied the technological factor through a questionnaire. The items in the questionnaire include accessibility to computers at work and home, accessibility to internet at work and home and ICT workshop or course related awareness among respondents. Nwagwu (2019) studied the ICT infrastructure to study the opinion of academic staff. The researcher employed a questionnaire that included items like availability of computers and IT infrastructure.

Even though technology is considered as an important factor in e-learning readiness, there seemed to be a great variation in the items included in the tools to measure technological readiness. Technology factor included various aspects like ICT skills/competencies, infrastructure, ICT facilities, etc.

## **(II) Attitude, Habits and Psychological**

Eslaminejad *et al.* (2010) accessed the attitude factor by employing a 5-point likert scale with attitude and habits as the subdomain of the questionnaire. The items in the questionnaire that studied these factor include the faculties willingness to teach by adopting new technology, innovation in instruction and instructors being accustomed to the virtual environment and willingness of instructors for developing e-material. Red *et al.* (2013) studied the attitude factor by employing a questionnaire on academic staff which included items like faculties teaching styles and strategies, abilities, motivation and time management. Sharma *et al.* (2015) conducted his study with

questionnaire as a tool for data collection. The researcher examined Attitude as a factor for readiness in E-learning included items like whether faculty prefer online exams and whether E-learning is better than face to face learning. Contreras and Hilles (2015) included the faculty teaching style and strategies, their abilities, motivation and time management while addressing attitude as a factor for readiness in E-learning. Azimi (2013) studied Psychological factor for E-learning readiness. The researcher with the help of self-developed questionnaire sort information from academic staff whether they are ready for implementation of E-learning or not. Eslaminejad *et al.* (2010) studied habit as a factor for E-learning readiness. With respect to habit, the scale used for data collection attempted to know whether academic staff is familiar with the virtual environment or not.

Attitude as a factor for readiness in E-learning is of utmost importance. From the above studies, it can be interpreted that attitudinal readiness included factors like their abilities, motivation and time management. Furthermore, their attitude can be further understood by knowing whether they prefer the E-education.

With respect to Psychological and Habits as a factor for E-learning readiness includes knowing readiness with regard to virtual environment.

## **(III) Content**

Azimi (2013) studied content as a factor for E-learning readiness among academic staff. The questionnaire used by the researcher included the items like whether there is a need of competency assessment after completion of instruction, whether there is need of motor skills in desired competency goals, whether the subject matter is multi media format or not, whether the subject matter is changed in online mode and if changed then on what frequency, it is being changed. Sharipuddin *et al.* (2015) determined the content readiness with the help of a questionnaire consisting of 47 items of open and closed ended items. The items include whether the teaching material on E-learning system is made available or not, whether the academic staff fee they need training with respect to E-learning on campus etc. Sharma *et al.* (2015) conducted their study with the help of a questionnaire on 144 instructors. With respect to content readiness as a factor for E-learning readiness, the questionnaire included items like whether E-learning course content is different with face to face course content, whether the courses are appropriate for E-learning or not. Okinda (2014) studied the content readiness for E-learning with the help of a self-



administered questionnaire. The questionnaire included the items like whether the E-learning content is interactive or not, whether it accommodates different learning styles and whether the content is feasible enough to be taught over the computer etc.

Content as a factor for E-learning readiness include various aspects related to the content being provided on E-platform. Aspects like whether the faculty is capable enough to deliver the content through online mode and knowing their preference for keeping the content on E-platform.

#### (IV) Finance, Budget and Culture

Okinda (2014) studied the cultural readiness for E-learning with the help of a self-administered questionnaire. The questionnaire included the items like whether the management support the use of internet for the purpose of learning or not, whether the learners are provided time and opportunities to learn or not, whether the learning using the internet is accepted and communicated at all levels or not etc. Kurniabudi *et al.* (2015) studied the cultural readiness factor with the help of a 5 Point likert scale questionnaire consisting of 47 items. The item in the questionnaire were whether the faculty is ready for implementation of E-learning, whether the academic staff finds it easy to use E-learning tools. The other items in the scale were in regard to policies and regulations with respect to intellectual property rights.

Azimi (2013) & Nwagwu (2019) studied finance and budget as a factor for E-learning readiness. The researcher used a self-made questionnaire for the

purpose of data collection. With respect to finance and budget factor, the questionnaire included the item like whether there is availability of budget for implementing E-learning or not. Furthermore, the questionnaire used by Nwagwu (2019) sort information on whether the academic staff is willing to purchase computers for E-learning or not and are willing to spend extra money E-learning.

Finance, Budget and Culture has been studied by various researchers and the items chosen for examining it are varying from study to study. Finance, Budget and Culture as a factor for E-learning readiness mean management support, availability of budget, providing opportunities to learn through internet, availability of budget, willingness to purchase computers.

#### (V) Human Resource

Azimi (2013) with the help of a self-developed E-learning readiness tool studied the human resource factor for E-learning readiness. The tool contained items like as whether there is any plan for training the academic staff for new technological skill and whether the institution have motivated staff to implement E-learning or not. Nwagwu (2019) conducted a study with the help of a questionnaire from 240 academic staff. The items in the questionnaire included whether the University has adequate support to make use of computers and whether IT coordinator have sufficient competency for supporting E-learning.

Human resource as a factor for E-learning readiness means providing training to faculties and providing adequate support for use of computers.

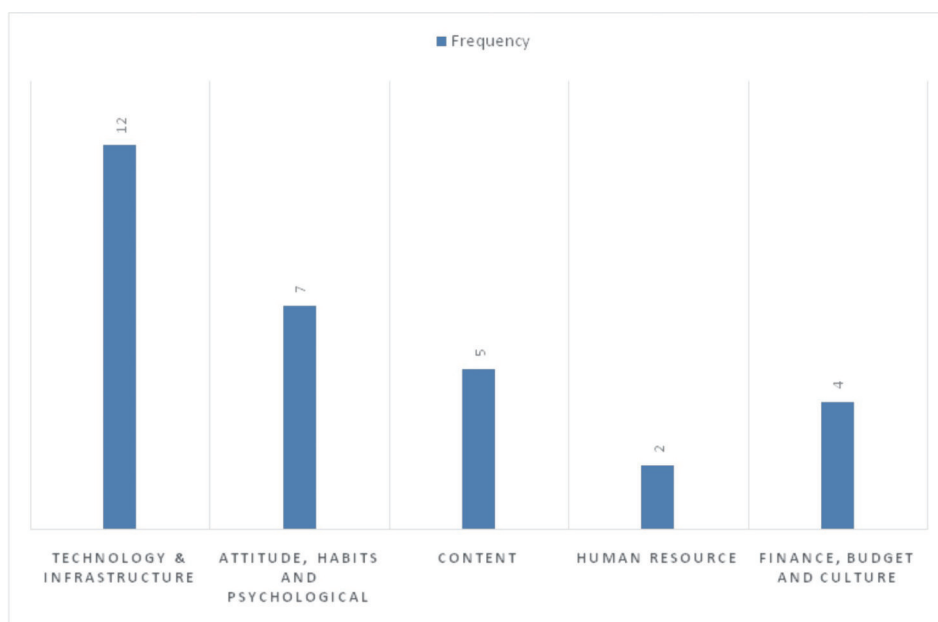


Fig 1.1: Frequency of factors as used by researchers

Fig. 1.1 also shows the frequency of the factors as were used by researchers. From the figure, it is clear that researchers have used Technology & Infrastructure and Attitude, Habits and Psychological factors for identifying the E-learning readiness among academic staff.

## Conclusion

Based on small scale literature review on E-learning readiness among faculty members wherethe studies carried out between 2010 to 2019 were focused, the studies on a larger scale used a separate section for knowing Demographic information of the faculty members. The studies analyzed technical, pedagogical, ICT infrastructure, Human Resource, Budget and finance, Psychological, Content, Attitude, Organizational culture, Organization and industry, Budget and Finance and Human Resource. After the small-scale literature review, it was found that technological readiness, attitudinal readiness and content/pedagogical readiness were the most frequent factors that were studied to know about the faculty members readiness towards E-learning.

## Future Research

Since the aim and objective of the present study was to analyze the factors that determine the readiness of academic staff towards E-learning. Future research can be carried out by analyzing the factors that determine the students and institutional readiness towards E-learning.

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