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REVIEW ARTICLE

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Constructs in the Institutional E-Learning Readiness Models: A Literature Review

Donnalyn Blacer Bacolod [1*]

[1] Palawan State University, Philippines
* Corresponding author: dbacolod@psu.palawan.edu.ph

Abstract: Learning continuity amidst the COVID-19 pandemic is being advocated by many. As a result, many educational institutions worldwide are turning to e-learning or online learning as a solution. Nevertheless, many of them have never used e-learning before. Accordingly, this literature review aims to gather pertinent data about the constructs existing institutional e-learning readiness models. There were 42 models found in various databases between the year 2000 and January 2021, according to the search keywords "(institution or institutionalize) and readiness and (online learning or e-learning)." This review discusses the most frequently cited constructs in various models and other relevant information which are critical for the development of a new model and/or the adoption of an existing model to assess an institution's readiness for e-learning delivery.

Keywords: online learning, readiness models, e-learning constructs, higher education

INTRODUCTION

Distance education, such as e-learning or online education, was most frequently used as a mitigation strategy during the COVID-19 pandemic (Widodo et al., 2020). To combat this pandemic, the demand for an alternative method of educating learners increased dramatically. However, many educational institutions in developing countries encountered a variety of difficulties due to their unfamiliarity with e-learning, in comparison to more advanced schools. As a result, assessing an organization's readiness for e-learning is critical.

Even before the pandemic, many educational institutions were planning to implement e-learning. It is estimated that around 1,000 educational institutions in 50 countries are currently employing e-learning (Bhuasiri et al., 2012). Other researchers have also noted the widespread use of e-learning in higher education institutions all over the world (e.g., Kituyi & Tusubira, 2013; Tarus et al., 2015; Mosa et al., 2016). The use of e-learning also results in an increase in the number of students enrolled. In an e-learning environment, students can access a wide range of educational opportunities that were previously limited by factors such as age restrictions, availability of time, work schedules, and other cultural and socioeconomic constraints, among other things (Adebisi & Oyeleke, 2018). Some developing countries have expressed an interest in using e-learning, but they have been hampered by various issues such as inadequate infrastructure, cultural and policy frameworks, and a lack of resources (Usagawa, 2018). Such barriers continue to be a significant concern for many who are considering adopting e-learning now. The organization, including its stakeholders, must be prepared for the implementation of e-learning. When it comes to the adoption and effectiveness of e-learning, Zamani et al. (2016) found that readiness is a critical factor. Similarly, Albarrak (2010), Mosadegh et al. (2011) and Mirabolghasemi et al. (2019) emphasized the readiness of institutions for the adoption of e-learning.

In his definition of e-learning readiness, Bowles (2004) stated that it is the assessment of an institution's readiness to use and implement e-learning technologies. Similarly, Mirabolghasemi et al. (2019) stated that e-learning readiness refers to an organization's level of preparedness for various aspects of e-learning prior to its implementation. Alem et al. (2016) define e-learning readiness as a measure of a learner's readiness to participate in online courses. For Nwagwu (2020), e-learning readiness refers to the level of preparedness of stakeholders in terms of psychological, physical, and infrastructure factors that will result in a beneficial e-learning activity.

E-learning readiness assessment is crucial to the success of an institution that wants to embark on e-learning. When it comes to implementing e-learning programs successfully in higher education, Rohayani et al. (2015) identified readiness for e-learning as a critical component. It enables organizations to develop comprehensive strategies and achieve their ICT objectives (Kaur & Zoraini Wati, 2004). Organizations can also develop strategies to cater to specific learning groups because of their readiness to use e-learning technology (Nyoni, 2014). The e-readiness assessment assists developed countries, such as Saudi Arabia, in preparing for e-learning initiatives (Alshammari, 2019).

Institutional e-learning readiness should be carefully considered prior to implementation to avoid or at the very least mitigate the negative consequences. When it comes to implementing e-learning, Adiyarta et al. (2018) believe that an organization must have a sound strategy and plan in place to ensure that the desired result occurs. Unfortunately, some institutions that have implemented e-learning have failed to achieve their goals. Many organizations have failed in their attempts to implement e-learning. In higher education institutions, this is mainly due to the school's unpreparedness to implement e-learning (Al-araibi et al., 2019; Odunaike & Dehinbo, 2009). For Schreurs et al. (2012) this failure stems from the lack of an assessment of institutional e-learning preparedness. Through a readiness assessment, they said, the risk of failure could be reduced to a minimum.

This study recognizes the value and necessity of e-learning during this period of new normal of education. The available literature cautions against adopting and implementing such a program without first conducting a readiness assessment. As a result, it is critical to assess the level of preparedness; however, the availability of the instrument presents a new challenge for the institution. According to Hill et al. (2002), "borrowed models" are often not tailored to the specific needs of the educational setting, and as a result, become a source of difficulties. Even though most educational institutions are eager to implement e-learning technology, the criteria for determining whether they are ready for e-learning are still undefined (Omoda-Onyait & Lubega, 2011).

The purpose of this literature review is to gather relevant information about constructs of the institutional or organizational e-learning readiness models that can be used for future development of e-learning assessment instrument. As such, the following research questions were formulated:

1. What are the constructs used in each institutional or organizational e-learning readiness model?
2. What are the most cited constructs in the literature of institutional or organizational e-learning readiness models and in the previous studies from 2000-2021?

METHODS

The search words used in this literature review were "(institution or institutionalize) and readiness and (online learning or e-learning)." Most of the databases searched were Google Scholar, Science Direct-Elsevier, IEEE Xplore, ERIC, DOAJ, LearnTechLib, and Wiley. The following inclusion were observed in this search:

1. works published from year 2000 up to January 2021,
2. works published in English language,
3. thesis and dissertation manuscripts,
4. research articles, conference papers and other literature review papers,
5. works pertaining to institutional or organizational e-learning or online learning readiness, and
6. original or revised constructs of institutional e-learning or online learning readiness models.

Meanwhile, the exclusion observed were, as follows:

1. works that adopted or directly copied the constructs or models of institutional or organizational e-learning or online readiness,
2. repeated articles with the same versions, and
3. works that pertain to teacher, staff, or student e-learning readiness.

More than 400 works from various databases were discovered during the initial search; however, only 42 works fall within the scope of the current study. The Zotero application was used for data management. After finishing reading all the collected studies, data were analyzed and reported in paragraphs and tabular forms.

RESULTS

Description of 42 Institutional or Organizational E-Learning Readiness Models

Below are the brief descriptions of the 42 models from the literature searched. The description includes the constructs and other important information.

Chapnick (2000) developed a model for assessing an institution's readiness for e-learning. In the proposed model, eight constructs such as "psychological readiness, sociological readiness, environmental readiness, human resource readiness, financial readiness, technological skill readiness, equipment readiness, and content readiness" are used to examine the e-learning readiness. She used 66 factors written in question form and grouped them according to the said constructs. There are multiple-choice answers to every question, and managers should pick one of those that best represents their companies. At the end of each response, a point value is indicated in parenthesis. After responding to all questions in a section, managers are expected to add up the points for that section. According to Chapnick's model, the lower a user's grade, the more prepared their organization is for e-learning. The model does not only assist managers in determining whether their organizations are prepared for e-learning but also in determining which areas of their organizations require improvement and which areas are successful. Her model had been utilized by various institutions across the globe for e-learning readiness assessments.

Rosenberg (2000) was concerned with constant experimentation with regards to e-learning. He devised a set of 20 key-questions that were divided into seven categories such as "business or entrepreneurial readiness, changing nature of learning and e-learning, the value of teaching and information design, management of change, re-invention of educational organization, the industry of e-learning, and personal commitment." He created a tool to determine whether an institution is prepared to offer e-learning courses. This measurement tool was designed for non-educational organizations that intend to make a profit through their operations.

Engholm and McLean (2001) contended that organizations must analyze specific organizational and individual "readiness" criteria in order to achieve a seamless and effective transition to e-learning. Numerous elements associated with e-learning preparedness are discovered in the literature, and these factors are further studied using a qualitative multiple case study approach. A model of e-learning readiness is created based on the information found, which includes all the potential barriers discovered to be impediments to a successful e-learning experience in the future. This model may be useful to assist managers and trainers in their respective organizations in the determination of the readiness of their organization's e-learning systems. Their model is composed of five constructs, namely the organization's culture, learners, technology, organizational and industry factors, and learning content. They used three different organizations in Australia as the respondents of his study. There was a "charitable non- profit organization in the health sector, a government agency in the natural resources industry, and a private organization in the financial sector."

Anderson (2002) examined five critical success factors that will assist businesses in making sound e-learning decisions in the hope of avoiding failure. According to him, successful programs should adhere to these 5Cs: "culture, content, capability, cost, and clients." These 5Cs are the main determinants of e-learning readiness and success.

Haney (2002) studies the body of knowledge on organizational readiness for e-learning providing managers with directives and readiness tools for e-learning. Haney (2002) advised that managers should self-assess their organizational readiness using the 70 questions about organizational readiness. These questions were categorized into seven constructs such as human resources, learning management system, learners, content, information technology, finance, and vendor.

Khan (2002) identified the issues in the following areas: "pedagogical, institutional, technological, interface design, evaluation, management, resource support, and ethical considerations" to consider in assessing the e-learning readiness of any institution. Each dimension can be broken down into various subdimensions, and each subdimension is comprised of issues pertaining to a specific aspect of an e-learning environment.

Gachau (2003) aimed to measure the e-learning implementation readiness of Kenya Polytechnic in Nairobi, Kenya by indicating five dimensions namely students, administration, content, technical, and the future of e-learning. The results of her study revealed that factors such as learners' computer literacy, character, and motivation are the most important factors to consider for the readiness of students. For administration, the e-learning management support and e-learning culture are considered as the crucial determinants while the learning mechanisms and e-learning delivery methodology are for the content dimension. Technical support factor should be part of the technical readiness. Lastly, the future of e-learning must be planned as well.

Borotis and Poulymenakou (2004) proposed a model, which has seven components based on previous research and personal experience to confront the issue of incongruence in predefined components in readiness models of Rosenberg (2000), Chapnick (2000), and Haney (2002). He examined the aspects of "business, technology, content, training process, culture, human resources, and finances," respectively. Each construct is clearly defined in their paper. The Business dimension speaks to alignment of the e-learning strategy with the HEI's global strategy and goals, the external environment, and the degree of commitment level and support of the HEI's top-level administration. The Technology dimension examines the technological infrastructure of higher education institutions, as well as the extent to which students have access to that infrastructure and the Internet. The Content dimension is concerned with the availability of existing content, the format in which it is presented, the levels of interactivity, reusability, and interoperability with other systems. The Culture dimension encompasses the habits and perceptions of higher education institutions regarding the adoption and use of e-learning. The Human Resources dimension has to do with the number and skill sets of all of the stakeholders involved in the e-learning experience, such as faculty and students, administrative staff, and support personnel. The Financial Dimension examines the allocation of funds by the higher education institution to the e-learning strategy. According to them, this readiness model applies to any type of organization, but some adjustments are required when applied to a higher education institution.

Kaur and Zoraini Wati (2004) employed a study to determine the readiness of Open University Malaysia receivers (students) and enablers (tutors). The instrument consists of a 60-item questions for which 16 items asked about relevant demographic data and 44 items explored the 8 constructs of Kaur and Zoraini Wati (2004) e-learning readiness model. The said constructs are the "learner, management, personnel, content, technical, environmental, cultural and financial readiness." The e-learning readiness research tool was used to collect information from a sample of 93 receivers and 35 enablers who participated in the study. According to the findings of the study, policymakers and regulatory bodies must work together to improve the image of e-learning programs to encourage greater participation in a technology-driven teaching and learning environment.

Aydın and Tasci (2005) posited in their study that many tools are available in the market to assess a learning program's readiness for e-learning. However, most of these tools are designed for use in countries with an established human resource development sector. In particular, the available instruments cannot be used in institutions in emerging countries which just started to employ human resources. In their study, they devised an e-learning readiness tool suited for companies situated in such countries. While this has been developed to fit the cultural characteristics of Turkish companies, they believed that it can be easily customized to other emerging countries. Their study examines the readiness of the first 100 companies listed on the Istanbul Chamber of Industry's 2001 Turkey's Top 500 Major Industrial Enterprises List. They gathered their data from directors or managers involved in managing human resources departments in their respective companies. This tool is not devised for educational institutions. The instrument they used is divided into two sections: section 1 asked for the demographic characteristics and section two consisted of 30 items (in Likert scale) asking about their perceptions

of the company's readiness for e-learning. Aydın and Tasci (2005) proposed a model consisting of seven categories: "human resources, learning management system, learners, content, information technology, finance, and vendor". These constructs are supported by Roger's diffusion of innovation theory which has four factors namely technology, innovation, people, and self- development.

Psycharis (2005) proposed three broad categories: resources, education, and environment, each with its own set of criteria. These three variables emerge from previous studies. Within the category of "resources, technological readiness, economic readiness, and human resource readiness" are deemed to be the primary determinants while the education category entails both content readiness and educational readiness. Lastly, environmental readiness encompasses "entrepreneurial readiness, leadership readiness and readiness of culture." According to Psycharis (2005), researching the organization's preparedness in terms of e-learning probes both those who are eager to incorporate it into their educational strategy, as well as those who have already implemented e-learning and are seeking reasons for subpar results. In his paper, he attempted to establish a connection between the factors that are present in various e-learning models and those that pertain to an organization's readiness for e-learning adoption. He showed that these factors are constituent parts of the overall model of the organization. Thus, he concluded that the success of e-learning is inextricably linked to its resources, educational processes, and context. His model has been adopted in Greece.

So and Swatman (2006) noted that the models for e-learning readiness that have been proposed up to this point have primarily been proposed for higher education institutions, with the intent of filling a gap in the literature. They proposed a model for e-learning readiness that would apply to primary and secondary educational institutions. Under the model, the readiness for e-learning for primary and secondary schools is comprised of six dimensions: "students' preparedness, teachers' preparedness, IT infrastructure, management support, school culture, and preference to meet face to face."

Lopes (2007) presented an evaluation model for assessing a higher education institution's readiness for e-learning. She used six factors such as technology, content, culture, human resource, financial, and business in her model. The data were gathered through a review of documentation, observation, and the use of two questionnaires. The first questionnaire collected data on students' abilities, access to equipment, and attitudes toward e-learning. Students and professors served as the respondents of her study. Results revealed that the "business, content and culture, and human resource" dimensions are classified as being in the medium (3) level of e-learning readiness while a low (1) readiness for e-learning is assigned to the technology dimension. The financial aspect has a low (0) e-learning readiness.

Al-Osaimi et al. (2008) used STOPE-based approach to conduct practical e-readiness assessment case studies in their study. STOPE stands for "strategy, technology, organization, people, and environment" dimensions. Among the case studies considered are those of three Saudi organizations: a government-owned organization, an international bank, and a private sector company. Each dimension has sub-factors or issues to examine.

Mercado (2008) pointed out in her study that online learning success stems from understanding and meeting the needs and readiness of significant stakeholders in the online learning environment. Addressing and assessing first the educational problems are necessary for considering the e-learning solutions or tools. She further added that the likelihood of successfully implementing an online learning-ready environment increases by recognizing these critical factors that promote online learning. With these issues, she came up with her study attempting to compile a readiness assessment tool along with an examination of existing readiness levels to implement an e-learning environment effectively. The constructs she used for institutional readiness are administrative and resource support. Under administrative, 3 aspects are explored such as commitment, policies, and instructional while for resource support, factors like financial, human, and technical are included. She believes that institutional readiness should consider the existence of processes that support both students and teachers. Teachers, students, and administrators should all have access to instructional and technical resources as part of their support systems. Special support must be given because of the online environment's unique circumstances. All resources, including financial, human, infrastructure, and technical resources, must be included. The instrument consists of 30 descriptions, equally divided to the said constructs. Also, it is answerable by yes or no. One major drawback for her assessment tool is the lack of further validation and application.

Schreurs et al. (2008) set out to determine whether Dutch hospitals were ready for e-learning. They came up with a measurement tool comprising of "learner characteristics, organization and management of e-learning, availability of qualitative technological facilities for e-learning, and the e-learning process and solutions/courses dimensions." In the dimension of learner characteristics, various characteristics, such as motivation, internet experience, and information and communication technology (ICT) skills, are measured. The organizational and management dimension of e-learning entails adjusting work hours to accommodate e-learning as well as investing in physical and e-learning infrastructure. The availability of high-quality technology facilities is measured in terms of Internet connectivity, ICT infrastructure, and a flexible learning management system. The process and solutions/courses in e-learning embrace the use of e-learning systems and course design that is tailored to students' learning styles.

Odunaike and Dehinbo (2009) assessed the e-learning readiness of Tshwane University of Technology (TUT) using the following dimensions in their instrument: business readiness, stakeholders readiness, technology readiness, content management readiness, training process readiness, culture readiness, and financial readiness.

Srichanyachon (2010) identified technology, human resources, and culture as essential components for colleges and universities to consider prior to implementing online education. His constructs of institutional readiness have been discussed only in his article. No data collection has been done to report the validity and reliability of his instrument. Also, his research article is formulated according to Thailand's educational context of online education. He noted additionally the importance of having a proportional number of computers with internet access to students, the frequency of teacher training, and recommendation for the adoption of e-learning and face-to-face instruction in a single course to increase the learning effectiveness.

Darab and Montazer (2011), initially, proposed the e-learning readiness model aimed to develop an appropriate e-learning model that can be used to assess the Iranian higher education institution based on comparative studies and the perspectives of national experts. Their model consists of 14 constructs which are grouped into three dimensions. Hard readiness includes equipment and network infrastructures; Soft readiness include regulations, management, culture, content, human resources (professors, staff, and students), policy, security, standards, and finance; lastly, Coordination, Supervision, and Support readiness are composed of supervision, support, and assessment aspects. Two of the nine indicators listed under soft readiness (laws and regulations and management) were considered the most critical indicators for the implementation of e-learning systems in Iranian universities. Later, their model was applied to Tarbiat Modares University, one of the prestigious universities in Iran, to provide an accurate and comprehensive assessment of e-learning.

Omoda-Onyait and Lubega (2011) attempted to determine the e-learning readiness of higher education institutions in Uganda using their proposed model. They noted that existing models are geared toward developed countries; thus, they offered a model for emerging economies. Their model consists of five constructs such as content, pedagogy, technology, culture, and awareness which are arranged from top to bottom of the pyramid. They collected their data from the eight public and private universities in Uganda. The questionnaire was administered to students and staff.

Saekow and Samson (2011) reviewed success factors in e-learning adoptions derived from a survey conducted in Thailand and the USA. The five constructs they used for their model are "policy, technology, finance, human resources and infrastructure" dimensions. They adopted their e-learning readiness components from Borotis and Poulymenakou's (2004) model. According to them, to have successful online programs, administrative support (under the policy dimension) at the top level is essential for the success of online programs. They mentioned that the most frequently cited success factors included the allocation of support resources to online programs, the development of a clear, well-defined project plan, the careful selection of introductory curriculum offerings, and training and workshop sessions of teachers to assist in the development of effective teaching styles.

Djamaris et al. (2012) determined the e-learning system readiness of PT Petarmina, in Indonesia, by using the framework proposed by Aydın and Tasci (2005). Djamaris et al. also used technology, innovation, people, and self-development dimensions to achieve such a goal. Findings revealed that, in general, the said university demonstrated e-learning readiness, although the aspect of their human resources need some improvements.

Ojwang (2012) assessed the level of preparedness of public secondary schools in Kisumu County in Kenya for the implementation of e-learning to improve access, equity, and quality in secondary education. He used seven

constructs, namely infrastructure, electricity, computer resources, experienced personnel, internet connectivity, e-learning awareness, and level of computer literacy, in establishing his framework. The results of his study reported several inadequacies and challenges regarding e-learning implementation.

Schreurs and Al-Huneidi (2012) believed that numerous organizations have failed to implement e-learning successfully. One significant factor leading to this failure is the absence of assessment of the readiness of an organization for e-learning. Hence, they developed a model to assess whether an organization is prepared for e-learning. The model consists of five categories such as "facilities and infrastructure for e-learning, management, organization of e-learning function/department, learners' characteristic, and e-learning course and process." They used the model in KBC, a Belgian bank and insurances company, to assess the readiness of the company in implementing e-learning.

Azimi (2013) conducted a descriptive study to ascertain the readiness of university administrations for e-learning. He incorporated the factors of "ICT infrastructure, human resources, budget and finance, psychology, and content." A sample of 35 receivers and 31 university leaders from education institutions affiliated with the University of Mysore was surveyed using the enumerated factors.

Alshaher (2013) presented a new methodology for determining if an institution is ready to embark on an e-learning system project by incorporating fuzzy logic analysis into the McKinsey 7S model. He employed seven dimensions as a framework for examining the organization's current state prior to system installation to identify areas of vulnerability that could result in the project's failure. Seven dimensions are reviewed to assess the current condition of the organization before system adoption to identify possible weaknesses. These dimensions are strategy, structure, systems, style/culture, staff, skills, and shared values.

Oketch (2013) developed a model to measure the e-learning readiness of Kenya's higher education institutions. Specifically, his study investigated the e-learning readiness of the University of Nairobi's lecturers. He proposed a model with three primary constructs: technology, culture, and content. Each construct measures specific variables. Technological readiness is designed to measure the accessibility to eLearning resources, technological competencies, and attitude towards eLearning of the lecturers. Cultural readiness of the lectures assesses the attitude and management support towards e-learning. Content readiness asks about course material availability in the e-learning system, the need for training, and lecturers' satisfaction.

Okinda (2014) was able to determine the level of e-learning readiness at the Kenya Technical Teachers College (KTTC) by reviewing numerous models for assessing e-readiness using the ADDIE instructional design model and adopting Engholm and McLean's (2001) readiness framework. The five variables that he used were individual learners, content, ICT, organizational culture, and organization and industry.

Nisperos (2014) aimed to assess the e-learning readiness of some universities in Sudan. She proposed a model composing four dimensions: "perceived e-readiness of teachers and students, level of technology acceptance, the need for training, and the readiness of the technological infrastructure of the university to support e-learning". She administered her questionnaire to 60 faculty members and 200 students. Using such a readiness instrument, the results of her study indicated that, in general, Sudanese universities are not yet ready to implement e-learning. They need to improve the areas of training and technological infrastructure.

Sae-Khow (2014) aimed to create e-learning indicators that could be used as a baseline for higher education institutions' e-learning performance. In his model, he utilized seven institutional e-learning indicators such as "institute/organization, curricular program/teaching and instructional design, resource/technology/information technology, teaching/learning, learner, faculty and supporting personnel, and measurement/evaluation." The identified indicators were evaluated by specialists (university lecturers who are doctorate degree holders and have more than nine years of service) based on their content validity and their suitability for use in subsequent competency comparisons. All indicators were deemed appropriate by the experts to varying degrees, ranging from high to extremely high. According to them, all the indicators obtained could be used as criteria or benchmarks model in higher education institutions to evaluate the effectiveness of e-learning initiatives.

Demir and Yurdugül (2015) proposed models for e-learning readiness for institutions, students, and teachers by conducting a literature review. His study examined 30 models of readiness tools. Findings indicate that "finance, ICT infrastructure, human resources, management and leadership, content, culture, and competency of technology

use" have become key components of models of preparation for institutional e-learning readiness, and thus, become his constructs for his proposed model.

Wibowo and Laksitowening (2015) believed that the readiness of institutions for e-learning becomes the key to guiding them through the implementation preparation process. The maturity of all factors affecting the implementation of e-learning cannot be separated from its readiness. Hence, in their study, they identified the constructs for e-learning readiness and proposed a model for such a concern. The model classified e-learning readiness factors into five constructs and grouped these into three layers based on levels of importance for institutions. The five constructs are the organization, financial, content, academic, and technology. The three layers comprise of supporting layer, core layer, and presentation layer. First, the core layer of this model, which includes organizations and academic domains, was devoted to institutions and is known to be critical to e-learning readiness. Second, the supporting layer was used to be an enabler for both organizational and academic entities in the core layer. The supporting layer includes the financial aspect. Third, the next layer to be prepared by institutions in implementing e-learning is the presentation layer, as a result of preparation in the core layer and supporting layer. The presentation layer depicts an institution's readiness for e-learning from the perspective of external stakeholders who are directly involved in the use of e-learning in the learning process. Technology and content compose this layer. In a separate study, Laksitowening et al. (2016) implemented this model at Telkom University.

Doculan's (2016) paper entitled "E-learning readiness assessment tool for Philippine higher education" utilized 22 different studies for literature review. She patterned her questionnaire from Mercado (2008) and included some aspects found in other studies. She then came up with her own assessment instrument, which includes three main constructs: "student, teacher, and institution." Each construct contains sub-categories.

Thaufeega (2016) investigated the level of e-learning readiness among Maldivian college students and their respective institutions. The schools' readiness was determined through semi-structured interviews with the two senior staff members of each college. The model he proposed is composed of Student Readiness (SR), Institutional Readiness (IR), Facilitator Readiness (FR), Societal Readiness (SCR), and National Readiness (NR). As for institutional readiness, the factors considered were access, study habits and skills (independent and self-directed learning), lifestyle factors (e-learning awareness), teaching style (student-centered), infrastructure, and human resources.

Villarica (2016) conducted a study to determine the viability of eLearning readiness at the Laguna State Polytechnic University (LSPU) main campus by interviewing faculty and students. She used the Akaslan and Law's (2011) e-learning readiness model for teachers and devised a 62-item questionnaire for readiness assessment. She explored the dimensions of "e-learning readiness, acceptance, training, technological infrastructure, and tools awareness." The results revealed that the LSPU needs to prioritize critical success factors, including ICT applications in the academic environment, e-learning training and education for faculty, students, technical and administrative personnel, and for the development of on-campus technological infrastructure before moving forward with its expansion.

Abdullah and Toycan (2017) contribute significantly to theory and practice regarding the implementation of sustainable e-learning systems for private universities in Northern Iraq and other developing countries. The first contribution of their study is identifying sustainable e-learning application factors from education providers' perspectives. With this, they created a readiness model using six dimensions: technological, human resource, content, educational, leadership, and cultural. University staff was interviewed and investigated to learn about the readiness factors.

Adiyarta et al. (2018) devised an e-learning readiness model composed of 13 variables such as "psychological, sociological, environmental, human resource, financial, technological skill, equipment, content, innovation, institution, leadership, culture, and policy". Their model was implemented at an unnamed university. Results revealed that 3 out 13 factors (human resource, technology skill, and content) show unreadiness and need improvement in the university.

Alshammari and Adaileh (2018) established the e-readiness of Saudi Arabian higher education institutions for e-learning by using seven dimensions such as "policy, pedagogy, technology, interface design, management, administrative support, evaluation, and continual improvement." The research instrument was developed from items generated from literature and then confirmed with exploratory factor analysis, confirmatory factor analysis,

making its scale valid and reliable for e-readiness assessment. This research used various attributes of teachers, students, and administrators, to accomplish meaningful comparisons and show results with cross-group equivalence. The findings of the study reveal that five out of seven constructs ("technology, management, pedagogy, interface design and, administrative and resource support") are critical factors and should be considered for e-readiness measurement. Two variables in the scale were left unconfirmed. Additional emphasis should be placed on evaluation and continual improvement in the e-learning process, although previous research demonstrates the critical nature of policy and institutional business strategy development, and evaluation and continuous improvement in readiness assessment.

Irene and Zuva (2018) investigated the readiness of secondary schools in Gauteng, South Africa. They employed the STIPC model, which stands for strategy, technology, institution, people, and content. The STIPC model was derived from the STOPE model of Al-Osaimi et al. (2008). They collected the data from educators and students through a closed-ended survey questionnaire.

Alshammari (2019) assessed teachers, students, and administrators in institutions of higher education based on their individual characteristics. Seven dimensions were identified as e-readiness component factors: "policy and institutional business strategy, pedagogy, technology, interface design, management, administrative and resource support, and evaluation and continuous improvement." Included in his study are the components constituting e-learning success. These include "system, information and service qualities, use and user satisfaction, and net benefits."

Nwagwu (2020) examined the e-learning readiness of the University of Ibadan Nigeria by collecting the perceptions of the university lecturers. Believing that university lecturers are vital to the success of online learning at their respective institutions, the lecturers became his study's sole participants, with the findings restricted to the latter's perspectives. Nwagwu utilized eight components to assess the readiness of the premier university – i.e., "lecturers' readiness, public/society readiness, students' readiness, human resources readiness, financial readiness, training readiness, ICT equipment readiness, and e-learning materials/ content readiness".

Saintika et al. (2021) studied the advancement of information technology, which has permeated numerous sectors, including education. The development of e-learning is an example of how ICT is being used in education. Only 6% of the Indonesian universities have begun using e-learning systems. Implementing e-learning is still only moderately optimized. Other experts have warned all organizations that will adopt e-learning to prepare thoroughly to avoid costly overruns. Saintika et al. proposed an e-learning readiness framework for universities and colleges. The model is divided into two parts: the university's side and the students' side. The former contains four factors such as "lecturer's characteristics, e-learning facilities, learning environment, and learning management," while the latter consists of "self-learning, motivation, learner's control, and student's characteristic." They tested their framework to selected Indonesian tertiary institutions. Using their assessment tool, they found out that these institutions are level three ready but needing a few improvements in some areas.

The 42 institutional or organizational e-learning readiness models searched and collected from this study used different constructs. A total of 246 main constructs has been tallied from the 42 models; however, considering their sub-factors or sub-constructs, there are about 268 constructs all in all (**Table 1**). These constructs are mainly categorized into technological infrastructure, technical skills, human resources, students, content, culture, management, strategy, financial, psychological, and sociological aspects. A construct is a variable that is "abstract and latent rather than concrete and observable (such as the rating itself)" or "such a variable is literally something that scientists 'construct' (put together from their own imaginations) and which does not exist as an observable dimension of behavior..." (Nunnally & Bernstein, 1994). In other words, constructs are criteria, aspects or dimensions being assessed in an institution or university to indicate its level of readiness.

Table 2 reveals the most used or cited constructs from the different models. Among the categories, the infrastructure construct is the most cited. Infrastructure construct includes ICT, technology equipment and tools, internet connectivity, software, and electricity. The content construct is mentioned 42 times in the different models. The content is comprised of curricular programs, pedagogical, and e-learning processes among others. The management is mentioned 35 times while the human resources is 32 times. All in all, these are the constructs that constitute mostly the institutional or organizational e-learning readiness models.

Table 1. List of constructs used in institutional e-Learning readiness models

Model	Main constructs	Sub-constructs
Chapnick (2000)	1. Psychological readiness 2. Sociological readiness 3. Environmental readiness 4. Human resource readiness 5. Financial readiness 6. Technological skill readiness 7. Equipment readiness 8. Content readiness	None
Rosenberg (2000)	1. Business readiness 2. Changing nature of learning and e-learning 3. Value of instructional and informational design 4. Change management 5. Reinventing the training organization 6. E-learning industry 7. Personal commitment	None
Engholm and McLean (2001)	1. Organization's culture 2. Individual readiness 3. Technology 4. Content 5. Organizational and industrial factors	None
Anderson (2002)	1. Culture 2. Content 3. Capability 4. Cost 5. Clients	None
Haney (2002)	1. Human resources 2. Learning management system 3. Learners 4. Content 5. Information technology 6. Finance 7. Vendor	None
Khan (2002)	1. Pedagogical 2. Institutional 3. Technological 4. Interface design 5. Evaluation 6. Management 7. Resource support 8. Ethical considerations	None
Gachau (2003)	1. Students 2. Administration/organization 3. Content 4. Technical 5. The future of e-learning	None
Borotis and Poulymenakou (2004)	1. Business 2. Technology 3. Content 4. Training process 5. Culture 6. Human resources 7. Financial	None

Table 1 (Continued).

Model	Main constructs	Sub-constructs
Kaur and Zoraini Wati (2004)	1. Learner 2. Management 3. Personnel 4. Content 5. Technical 6. Environmental 7. Cultural 8. Financial readiness	None
Aydın and Tasci (2005)	1. Human resources 2. Learning management system 3. Learners 4. Content 5. Information technology 6. Finance 7. Vendor	None
Psycharis (2005)	1. Resource 2. Education 3. Environment	None
So and Swatman (2006)	1. Students' preparedness 2. Teachers' preparedness 3. IT infrastructure 4. Management support 5. School culture 6. Preference to meet face to face	None
Lopes (2007)	1. Technology 2. Content 3. Culture 4. Human resource 5. Financial 6. Business	None
Al-Osaimi et al. (2008)	1. Strategy 2. Technology 3. Organization 4. People 5. Environment	None
Mercado (2008)	1. Administrative 2. Resource support	1.1. Commitment 1.2. Policies 1.3. Instructional 2.1. Resource support 2.2. Financial 2.3. Human 2.4. Technical
Schreurs et al. (2008)	1. Learner characteristics 2. Organization and management of e-learning 3. Availability of qualitative technological facilities for e-learning 4. E-learning process and solutions/courses	None
Odunaike and Dehinbo (2009)	1. Business readiness 2. Stakeholders readiness 3. Technology readiness 4. Content management readiness 5. Training process readiness 6. Culture readiness 7. Financial readiness	None

Table 1 (Continued).

Model	Main constructs	Sub-constructs
Srichanyachon (2010)	1. Technology readiness 2. Human resources readiness (teachers and students) 3. Culture readiness	None
Darab and Montazer (2011)	1. Network 2. Equipment 3. Regulations 4. Standards 5. Financial 6. Security 7. Culture 8. Content 9. Policy 10. Human resources 11. Supervision 12. Support 13. Assessment 14. Management	None
Omoda-Onyait and Lubega (2011)	1. Awareness 2. Culture 3. Technology 4. Pedagogy 5. Content	None
Saekow and Samson (2011)	1. Policy 2. Technology 3. Financial 4. Human resource 5. Infrastructures	None
Djamaris et al. (2012)	1. Technology 2. Innovation 3. People 4. Self-development	None
Ojwang (2012)	1. Infrastructure 2. Electricity 3. Computer resources 4. Experienced personnel 5. Internet connectivity 6. E-learning awareness 7. Level of computer literacy	None
Schreurs and Al-Huneidi (2012)	1. Facilities and infrastructure for e-learning 2. Management 3. Organization of e-learning function/department 4. Learners' characteristic 5. E-learning course and process	None
Azimi (2013)	1. ICT infrastructure 2. Human resources 3. Budget and finance 4. Psychology 5. Content	None

Table 1 (Continued).

Model	Main constructs	Sub-constructs
Alshaher (2013)	1. Strategy 2. Structure 3. Systems 4. Style/Culture 5. Staff 6. Skills Shared values	None
Oketch (2013)	1. Technological 2. Culture 3. Content	None
Okinda (2014)	1. Individual learners 2. Content 3. ICT 4. Organizational culture 5. Organization and industry	None
Nisperos (2014)	1. E-readiness perception 2. Acceptance 3. Training 4. Infrastructure	None
Sae-Khow (2014)	1. Institute/organization 2. Curricular program/teaching and instructional design 3. Resource/technology/information technology 4. Teaching/learning 5. Learner 6. Faculty and supporting personnel 7. Measurement/evaluation	None
Wibowo and Laksitowening (2015)	1. Organization a. Policy b. Human resource c. Culture d. Management 2. Academic a. Curriculum b. Learning method c. Administration 3. Financial a. Budgeting b. Business 4. Technology a. Hardware b. Software c. Network 5. Content a. Learning content	1.1. Policy 1.2. Human resource 1.3. Culture 1.4. Management 2.1. Curriculum 2.2. Learning method 2.3. Administration 3.1. Budgeting 3.2. Business 4.1. Hardware 4.2. Software 4.3. Network 5.1. Learning content
Demir and Yurdugul (2015)	1. Finance 2. ICT infrastructure 3. Human resources 4. Management and leadership 5. Content 6. Culture 7. Competency of technology use	None

Table 1 (Continued).

Model	Main constructs	Sub-constructs
Doculan (2016)	1. Student 2. Teacher 3. Institution	1.1. Technology access 1.2. Technological confidence 1.3. Training 1.4. Social support 1.5. Study habits 1.6. Abilities 1.7. Motivation 1.8. Time management 1.9. Perceived usefulness 2.1. Technology access 2.2. Technological confidence 2.3. Training 2.4. Teaching styles and strategies 2.5. Abilities 2.6. Motivation 2.7. Time management 2.8. Perceived usefulness 3.1. ICT infrastructure 3.2. Administrative support (policies an commitment) 3.3. Human, financial and technological support
Thaufeega (2016)	1. Access 2. Study habits and skills (independent and self-directed learning) 3. Lifestyle factors (e-learning awareness) 4. Teaching style (student-centered) 5. Infrastructure 6. Human resources	None
Villarica (2016)	1. E-learning readiness 2. Acceptance 3. Training 4. Technological infrastructure 5. Tools awareness	None
Abdullah and Toycan (2017)	1. Technological 2. Human resource 3. Content 4. Educational 5. Leadership 6. Cultural	None
Adiyarta et al. (2018)	1. Psychological 2. Sociological 3. Environmental 4. Human resource 5. Financial 6. Technological skill 7. Equipment 8. Content 9. Innovation 10. Institution 11. Leadership 12. Culture 13. Policy	None
Alshammari and Adaileh (2018)	1. Pedagogy 2. Technology 3. Interface design 4. Management 5. Administrative support	None

Table 1 (Continued).

Model	Main constructs	Sub-constructs
Irene and Zuva (2018)	1. Strategy 2. Technology 3. Organization 4. People 5. Content	None
Alshammari (2019)	1. Policy and institutional business strategy 2. Pedagogy 3. Technology 4. Interface design 5. Management 6. Administrative and resource support 7. Evaluation and continual improvement	None
Nwagwu (2020)	1. Lecturers' readiness 2. Public/society readiness 3. Students' readiness 4. Human resources readiness 5. Financial readiness 6. Training readiness 7. ICT equipment readiness 8. E-learning materials/content readiness	None
Saintika et al. (2021)	1. University's side 2. Student's side	1.1. Lecturer's characteristic 1.2. E-learning facilities 1.3. Learning environment 1.4. Learning management 2.1. Self-learning 2.2. Motivation 2.3. Learner's control 2.4. Student's characteristic

Table 2. Frequently cited constructs in institutional e-Learning models

Constructs	Examples	Frequency of Mentions/Citations from Different Models
Infrastructure	ICT, Technology, Network, Internet connectivity, Electricity, and Software	46
Technical skills	Tool awareness, Technical skills, Computer literacy, and Capability	10
Students	Characteristics, Learning method, Learner's preparedness, Motivation, and Preference	21
Human resources	Teachers, Staff, Personnel, Their preparedness, and experiences	32
Content	Content, Content management, Curricular program, Pedagogical, and E-learning process and courses	42
Management	Management, Leadership, Administrative support and Training	35
Financial	Financial and Cost	16
Culture	Culture and Organization's culture	17
Strategy	Vision, Mission, and Policies	18

Different models are comprised of various constructs. Some of them only used 2 constructs (e.g., Saintika et al., 2021; Mercado, 2008). However, each of the constructs has sub-factors, for instance, the administrative construct of Mercado (2008) includes commitment, policies, and instructional. Saintika et al. (2021) used university's side and student's side as their main constructs. Under the student's side are the student's characteristics, learner control, motivation, and self-learning. Most of the models (n = 21) involve 4 to 6 constructs and common to them are the constructs pertaining to students, infrastructure (e.g., Engholm & McLean, 2001; So et al., 2006; Schreurs et al., 2012) Fourteen of the models have 7 to 9 constructs (e.g., Alshammari, 2019; Nwagwu, 2020; Odunaike & Dehinbo, 2009)

while there is no model containing 10 to 12. The models of Adiyarta et al. (2018) and Darab and Montazer (2011), have the greatest number of constructs, which are 13 and 14, respectively (**Table 2**).

CONCLUSION

Models of institutional or organizational readiness for e-learning are critical to the adoption and implementation of e-learning successfully. The pieces of literature provide valuable insight into how readiness is determined. Numerous constructs can be used to assess an organization's readiness level. Some institutions might require a different kind of readiness model from the rest. Because the model was developed in a different location or country, it may not work in the context of another school. It is possible that a model from a developed country may not be appropriate for an institution in a developing country, and vice versa. Hence, different models have different set of constructs.

During this period of pandemic, many institutions, particularly those in the educational sector, will be forced to shift their paradigm from face-to-face instruction to distance learning and flexible learning, and they will need to determine their level of e-learning readiness to make this transition. Thus, this research is critical for such initiatives to ensure the success of e-learning program delivery. However, while the pandemic has caused uncertainty and delays in the education sector, it has also paved the way to realize the need to transform the educational landscape of many institutions that continue to rely on traditional face-to-face classroom settings despite technological advancement, internet connectivity, and the introduction of new educational paradigms. The critical importance of institutional e-learning readiness models for assessment purposes has become apparent in recent years. This paper aspires for the development of additional institutional e-learning readiness models, as there are currently only a few available studies in the extant of literature.

REFERENCES

Abdullah, M. S., & Toycan, M. (2017). Analysis of the factors for the successful e-learning services adoption from education providers' and students' perspectives: A case study of private universities in Northern Iraq. *EURASIA Journal of Mathematics, Science and Technology Education, 14*(3), 1097-1109. https://doi.org/10.12973/ejmste/81554

Adebisi, T. A., & Oyeleke, O. (2018). Promoting effective teaching and learning in online environment: A blend of pedagogical and andragogical models. *Bulgarian Journal of Science & Education Policy, 12*(1), 153-172.

Adiyarta, K., Napitupulu, D., Rahim, R., Abdullah, D., & Setiawan, M. I. (2018). Analysis of e-learning implementation readiness based on integrated ELR model. *Journal of Physics: Conference Series, 1007*, 012041. https://doi.org/10.1088/1742-6596/1007/1/012041

Akaslan, D., & Law, E. L. (2011). Measuring teachers' readiness for e-learning in higher education institutions associated with the subject of electricity in Turkey. In *Proceedings of the 2011 IEEE Global Engineering Education Conference (EDUCON)* (pp. 481-490). IEEE. https://doi.org/10.1109/EDUCON.2011.5773180

Al-araibi, A. A. M., Naz'ri bin Mahrin, M., & Yusoff, R. C. M. (2019). Technological aspect factors of E-learning readiness in higher education institutions: Delphi technique. *Education and Information Technologies, 24*, 567-590. https://doi.org/10.1007/s10639-018-9780-9

Albarrak, A. I. (2010). Designing e-learning systems in medical education: A case study. *International Journal of Excellence in Healthcare Management, 3*(1).

Alem, F., Plaisent, M., Zuccaro, C., & Bernard, P. (2016). Measuring e-Learning readiness concept: Scale development and validation using structural equation modeling. *International Journal of e-Education, e-Business, e-Management and e-Learning, 6*(4), 193-207. https://doi.org/10.17706/ijeeee.2016.6.4.193-207

Al-Osaimi, K., Alheraish, A., & Bakry, S. H. (2008). STOPE-based approach for e-readiness assessment case studies. *International Journal of Network Management, 18*(1), 65-75. https://doi.org/10.1002/nem.657

Alshaher, A. A. F. (2013). The McKinsey 7S model framework for e-learning system readiness assessment. *International Journal of Advances in Engineering & Technology, 6*(5), 1948-1966.

Alshammari, A. (2019). *The impact of e-readiness on e-learning success in Saudi Arabian higher education institutions* [PhD thesis, De Montfort University].

Alshammari, A. F., & Adaileh, M. J. (2018). E-learning readiness: A scale development in Saudi higher education institutions. *International Journal of Economics & Management Sciences*, *7*(5), 1000553. https://doi.org/10.4172/2162-6359.1000553

Anderson, T. (2002). Is e-learning right for your organization? *Learning Circuits: ASTD's Online Magazine All About E-Learning*. http://www.learningcircuits.org/2002/jan2002/anderson.html

Aydın, C. H., & Tasci, D. (2005). Measuring readiness for e-learning: Reflections from an emerging country. *Journal of Educational Technology & Society*, *8*(4), 244-257.

Azimi, H. M. (2013). Readiness for implementation of e-learning in colleges of education. *Journal of Novel Applied Sciences*, *2*(12), 769-775.

Borotis, S., & Poulymenakou, A. (2004). E-learning readiness components: Key issues to consider before adopting e-learning interventions. In *Proceedings of the E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 1622-1629). Association for the Advancement of Computing in Education (AACE).

Bowles, M. S. (2004). *Relearning to e-learn: Strategies for electronic learning and knowledge*. Melbourne University Publishing.

Chapnick, S. (2000). Are you ready for e-learning. *Learning Circuits: ASTD's Online Magazine All About E-Learning*. https://nurhadiw.files.wordpress.com/2010/08/are_you_ready_for_elearning.pdf

Darab, B., & Montazer, G. A. (2011). An eclectic model for assessing e-learning readiness in the Iranian universities. *Computers & Education*, *56*(3), 900-910. https://doi.org/10.1016/j.compedu.2010.11.002

Demir, Ö., & Yurdugül, H. (2015). The exploration of models regarding e-learning readiness: Reference model suggestions. *International Journal of Progressive Education*, *11*(1), 173-194.

Djamaris, A., Priyanto, A. B., & Jie, F. (2012). Implementation of e-learning system readiness: Indonesia context. In *Proceedings of the 2012 IEEE International Conference on Management of Innovation & Technology (ICMIT)* (pp. 314-319). IEEE. https://doi.org/10.1109/ICMIT.2012.6225824

Doculan, J. A. D. (2016). E-learning readiness assessment tool for Philippine higher education institutions. *International Journal on Integrating Technology in Education*, *5*(2), 33-43. https://doi.org/10.5121/ijite.2016.5203

Đurek, V., & Reðep, N. B. (2016). Review on e-readiness assessment tools. In *Proceedings of the Central European Conference on Information and Intelligent Systems* (p. 161). Faculty of Organization and Informatics Varazdin.

Engholm, P., & McLean, J. (2001). *What determines an organisation's readiness for e-learning* [Bachelor thesis, Monash University].

Gachau, A. M. (2003). *A survey of e-learning readiness in tertiary institutions: A case study of Kenya polytechnic* [Doctoral dissertation, University of Nairobi].

Haney, D. (2002). Assessing organizational readiness for e-learning: 70 questions to ask. *Performance Improvement*, *41*(4), 8-13. https://doi.org/10.1002/pfi.4140410404

Hill, J. R., Raven, A., & Han, S. (2002). Connections in web-based learning environments: A research-based model for community building. *Quarterly Review of Distance Education*, *3*(4), 383-393.

Irene, K., & Zuva, T. (2018). Assessment of e-learning readiness in South African schools. In *Proceedings of the 2018 International Conference on Advances in Big Data, Computing and Data Communication Systems (icABCD)* (pp. 1-7). IEEE. https://doi.org/10.1109/ICABCD.2018.8465444

Kaur, K., & Zoraini Wati, A. (2004). An assessment of e-learning readiness at Open University Malaysia. *Open University Malaysia*. http://library.oum.edu.my/repository/115/1/an_assessment.pdf

Khan, B. H. (2002). Dimensions of e-learning. *Educational Technology*, *42*(1), 59-60.

Kituyi, G., & Tusubira, I. (2013). A framework for the integration of e-learning in higher education institutions in developing countries. *International Journal of Education and Development Using Information and Communication Technology*, *9*(2), 19-36.

Laksitowening, K. A., Wibowo, Y. F. A., & Hidayati, H. (2016). An assessment of e-learning readiness using multi-dimensional model. In *Proceedings of the 2016 IEEE Conference on e-Learning, e-Management and e-Services (IC3e)* (pp. 128-132). IEEE. https://doi.org/10.1109/IC3e.2016.8009053

Lopes, C. T. (2007). Evaluating e-learning readiness in a health sciences higher education institution. In *Proceedings of the IADIS International Conference E-Learning* (pp. 59-67). IADIS.

Mercado, C. (2008). Readiness assessment tool for an e-learning environment implementation. *International Journal of the Computer, the Internet and Management, 16*, 11-18.

Mirabolghasemi, M., Choshaly, S. H., & Iahad, N. A. (2019). Using the HOT-fit model to predict the determinants of e-learning readiness in higher education: A developing country's perspective. *Education and Information Technologies*, *24*(6), 3555-3576. https://doi.org/10.1007/s10639-019-09945-9

Mosa, A. A., Naz'ri bin Mahrin, M., & Ibrrahim, R. (2016). Technological aspects of e-learning readiness in higher education: A review of the literature. *Computer and Information Science, 9*(1), 113-127. https://doi.org/10.5539/cis.v9n1p113

Mosadegh, H., Kharazi, K., & Bazargan, A. (2011). Conducting feasibility of e-learning in gas companies in Yazd Province. *Journal of Science and Technology Information*, *26*(3), 547-569.

Nisperos, L. S. (2014). Assessing the e-learning readiness of selected Sudanese universities. *Asian Journal of Management Sciences & Education*, *3*(4), 45-59.

Nunnally, J., & Bernstein, I. (1994). *Psychometric theory*. McGraw-Hill.

Nwagwu, W. E. (2020). E-learning readiness of universities in Nigeria–What are the opinions of the academic staff of Nigeria's premier university? *Education and Information Technologies, 25*(2), 1343-1370. https://doi.org/10.1007/s10639-019-10026-0

Nyoni, J. (2014). E-readiness of open and distance learning (ODL) facilitators: Implications for effective mediation. *Perspectives in Education*, *32*(3), 78-91.

Odunaike, A., & Dehinbo, J. (2009). Institutional e-learning readiness (a case study of TUT). In *Proceedings of the Information Systems Education Conference*.

Ojwang, C. O. (2012). *E-learning readiness and e-learning adoption among public secondary schools in Kisumu County, Kenya* [Doctoral dissertation, University of Nairobi].

Oketch, H. A. (2013). *E-learning readiness assessment model in Kenya's higher education institutions: A case study of University of Nairobi* [Doctoral dissertation, University of Nairobi].

Okinda, R. A. (2014). Assessing e-learning readiness at the Kenya Technical Teachers College. *Journal of Learning for Development, 1*(3). https://doi.org/10.56059/jl4d.v1i3.32

Omoda-Onyait, G., & Lubega, J. T. (2011). E-learning readiness assessment model: A case study of higher institutions of learning in Uganda. In *Proceedings of the International Conference on Hybrid Learning* (pp. 200-211). Springer. https://doi.org/10.1007/978-3-642-22763-9_19

Psycharis, S. (2005). Presumptions and actions affecting an e-learning adoption by the educational system-Implementation using virtual private networks. *European Journal of Open, Distance and E-learning*, *8*(2).

Rohayani, A. H., Kurniabudi, & Sharippudin (2015). A literature review: Readiness factors to measuring e-learning readiness in higher education. *Procedia Computer Science, 59*, 230-234. https://doi.org/10.1016/j.procs.2015.07.564

Rosenberg, M. J. (2000). *The e-learning readiness survey: 20 key strategic questions you and your organisation must answer about the sustainability of your e-learning efforts*. http://www.books.mcgrawhill.com/training/elearning/elearning_survey.pdf

Sae-Khow, J. (2014). Developing of indicators of an e-learning benchmarking model for higher education institutions. *Turkish Online Journal of Educational Technology, 13*(2), 35-43.

Saekow, A., & Samson, D. (2011). E-learning readiness of Thailand's universities comparing to the USA's cases. *International Journal of e-Education, e-Business, e-Management and e-Learning, 1*(2), 126-131.

Saintika, Y., Astiti, S., Kusuma, D. J. A., & Muhammad, A. W. (2021). Analysis of e-learning readiness level of public and private universities in Central Java, Indonesia. *Register Jurnal Ilmiah Teknologi Sistem Informasi* [*Register of Information Systems Technology Scientific Journal*], *7*(1), 15-30. https://doi.org/10.26594/register.v7i1.2042

Schreurs, J., & Al-Huneidi, A. (2012). E-learning readiness in organizations. *International Journal of Advanced Corporate Learning, 5*(1), 4-7. https://doi.org/10.3991/ijac.v5i1.1885

Schreurs, J., Ehlers, U. D., & Sammour, G. (2008). E-learning readiness analysis (ERA): An e-health case study of e-learning readiness. *International Journal of Knowledge and Learning, 4*(5), 496-508. https://doi.org/10.1504/IJKL.2008.022066

So, T., & Swatman, P. M. C. (2006). e-learning readiness of Hong Kong teachers. *WordPress*. https://nurhadiw.files.wordpress.com/2010/08/swatman.pdf

Srichanyachon, N. (2010). Key components of e-learning readiness. *Bangkok University Academic Review, 9*(1), 55-61.

Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing e-learning in Kenya: A case of Kenyan public universities. *International Review of Research in Open and Distributed Learning, 16*(1), 120-141. https://doi.org/10.19173/irrodl.v16i1.1816

Thaufeega, F. (2016). *Institutional and learner readiness for e-learning in the Maldives* [Doctoral dissertation, Brunel University]. https://doi.org/10.21125/inted.2016.1417

Usagawa, T. (2018). A comparative study of students' readiness on e-learning education between Indonesia and Myanmar. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS), 40*(1), 113-124.

Villarica, M. V. (2016). Mining student academic performance on ITE subjects using descriptive model approach. *Research Journal of Computer and Information Technology Sciences, 4*(11), 1-15.

Wibowo, Y. F. A., & Laksitowening, K. A. (2015). Redefining e-learning readiness model. In *Proceedings of the 3rd International Conference on Information and Communication Technology (ICoICT)* (pp. 552-557). IEEE. https://doi.org/10.1109/ICoICT.2015.7231484

Widodo, S. F. A., Wibowo, Y. E., & Wagiran, W. (2020). Online learning readiness during the COVID-19 pandemic. *Journal of Physics: Conference Series, 1700*, 012033. https://doi.org/10.1088/1742-6596/1700/1/012033

Zamani, B. E., Esfijani, A., & Damaneh, S. M. A. (2016). Major barriers for participating in online teaching in developing countries from Iranian faculty members' perspectives. *Australasian Journal of Educational Technology, 32*(3), 38-49. https://doi.org/10.14742/ajet.2678

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