
A LITERATURE REVIEW ON INSTITUTIONAL E-LEARNING READINESS MODELS***Donnalyn Blacer-Bacolod**

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Abstract

With issues on learning continuity during the pandemic, e-learning is viewed as a viable solution by many schools worldwide. However, the institution's readiness must be determined before considering the adoption of e-learning to increase the likelihood of its success. This paper aims to determine the institutional e-learning readiness models constructed from 2000-2021. Using the keywords “(institution or institutionalize) and readiness and (online learning or e-learning),” this study has retrieved 42 relevant literatures about institutional e-readiness models from different journals and conference articles available in the databases of Google Scholar, Science Direct, and others. Although the earliest models are intended for non-educational organizations, most of them measure the e-learning readiness of academic institutions. Likewise, it reveals that most of the models are from developed countries and cannot be used for developing countries or institutions with diverse cultures and varying needs and capabilities. Such gaps call for the creation of suitable instruments for every institution. Accordingly, this literature review provides information on the most cited constructs for e-learning readiness, such as infrastructure, human resources, content, culture, and student. Moreover, the participants and methods identified in other research are discussed in this paper. This information is crucial for the readiness assessment tool.

Keywords: Online learning, Organization readiness, University, Literature review.

INTRODUCTION

The coronavirus Covid-19 has infected 219 countries and territories (Worldometer, 2021). The outbreak started in Wuhan, China, and has quickly spread across international boundaries, infecting humans, and bringing suffering to everyone worldwide (Desai & Patel, 2020). This global health crisis has led to an economic crisis and a negative impact on the education sector worldwide. Mandatory lockdowns, stringent health protocols, and tight restrictions to prevent the transmission of the virus were placed in effect by governments and health authorities (Kummitha, 2020). While these non-pharmaceutical strategies are implemented, the learning continuity at all levels is at stake. As of the beginning of March 2020, several educational institutions have closed and shifted to a new normal of education, going from face-to-face interaction in the classroom towards distance learning that impacted billions of learners worldwide. Around the globe, different countries have implemented various measures to assist in the continuing education process during the pandemic (Cahyadi, 2020). Higher educational institutions worldwide have accepted and practiced online learning (Allen & Seaman, 2015). For nearly two decades, it has been a part of the curriculum in higher education (Singh & Thurman, 2019). During the COVID-19 pandemic, universities were forced to alter their teaching approaches (Küsel *et al.*, 2020). Distance learning, particularly online learning or e-learning is the most frequently pursued solution for learning mitigation (Widodo *et al.*, 2020). The pandemic compelled colleges and universities worldwide to shift to online teaching and learning (Hodges *et al.*, 2020), requiring teachers to adapt regardless of their preparedness (Scherer *et al.*, 2021). Many stakeholders are voicing their concern for the higher educational institution to implement the online learning mode during the pandemic.

The problem is that no instrument model will assess the institutional readiness of the school to implement online education fully. The literature on E-Learning Readiness (ELR) has been defined by many researchers. Mirabolghasemi *et al.* (2019) indicated that e-learning readiness is an organization's level of preparedness for various aspects of e-learning before its implementation. In the definition of Alem *et al.* (2016), the authors describe e-learning readiness as a measure of learners' readiness to participate in online courses. Meanwhile, Borotis *et al.* (2004) defined online learning readiness as being physically and mentally ready for multiple online learning activities and experiences. In parallel, ELR denotes the readiness of stakeholders in psychological, physical, and infrastructure aspects that will result in a beneficial e-learning activity (Nwagwu, 2019). At present times, e-learning readiness is a significant concern for many that are considering embarking on the online learning paradigm shift. Demir *et al.* (2015) agreed that institutions, including teachers and students, must be prepared for e-learning prior to its adoption. While many factors might influence the adoption and effectiveness of e-learning, Zamani *et al.* (2016) found that readiness is a significant determinant of success. Likewise, Albarrak (2010), Mosadegh *et al.* (2011), and Mirabolghasemi *et al.* (2019) considered readiness in higher education institutions as the most critical aspect of e-learning adoption. Assessment of e-learning readiness assists organizations in developing comprehensive strategies and achieving their ICT objectives (Kaur *et al.*, 2004). Furthermore, e-learning readiness enables organizations to develop strategies tailored to the unique needs of various learning groups (Nyoni, 2014). For Al-araibi *et al.* (2019), measuring e-learning readiness can help the universities in developing countries identify its shortcomings and devise a new e-learning strategy to encourage its adoption. In addition, Rohayani *et al.* (2015) identified e-readiness as a vital factor in ensuring the successful deployment of e-learning programs in higher education. The assessment of e-readiness is a good starting point for developing countries like Saudi

Arabia since it establishes the groundwork for implementing e-learning methodologies (Alshammari, 2019). Irene *et al.* (2018) also agreed on the necessity of e-learning readiness in South African schools. Hence, recognizing the function of this aspect may assist university administration in the successful implementation of e-learning programs. Several studies prove that institutional readiness should be highly considered before its implementation to avoid or at least lessen the adverse outcomes. Adiyatra (2018) believed that an organization must have a sound strategy and plan to ensure that the desired result occurs in implementing e-learning but regrettably, some institutions that adopted it failed to meet their objectives. He further noted its necessity to understand the current state and appropriateness of institutional strategy compared to the ideal state anticipated. Similarly, Sun *et al.* (2008) revealed that several institutions that implemented e-learning did not see the outcomes they were hoping for despite the numerous advantages of e-learning. Numerous organizations have been unsuccessful in their efforts to adopt e-learning. A key reason for this in higher education institutions is that the school is unprepared to undertake e-learning (Al-araibi *et al.*, 2019; Odunaike *et al.*, 2013). According to Schreurs *et al.* (2012), this failure stems from the lack of institutional e-learning readiness assessment. They indicated that through readiness assessment, the possibility of failure could be minimized.

Purpose of the study

This study aims to conduct a literature review of the existing e-learning readiness models. Such models are crucial in today's educational hiatus since many universities are shifting to online learning modality. Likewise, the possibility of permanently adopting it even after the pandemic cannot be ignored. Hence, e-learning readiness assessment must be considered by educational institutions in taking such actions. Conducting literature reviews help in the formulation of readiness instrument by identifying critical areas to be assessed like the dimensions to be included and the methods to be used.

METHODS

Using the keywords “(institution or institutionalize) and readiness and (online learning or e-learning),” the researcher has been able to map relevant literature about organizational e-readiness models. The AND operator was “used to link the different search terms into a single search string,” while the OR operator was “used to group the various forms” (Al-Araibi *et al.*, 2016). Demir *et al.* (2015) used the keywords pertaining to e-learning/online learning readiness to carry out their literature search while Đurek & Ređep (2016) used “e-readiness, e-readiness assessment tools, e-learning, higher education” keywords for their literature search of e-learning readiness models. Through initial inspection, about 400 research studies and literature review articles are retrieved from different journals and conference articles available in the databases of Google Scholar, Science Direct, and others. All organizational models for measuring readiness for e-learning/online learning, as well as theoretical models and classifications, are identified through further literature scoping and systematic review. A total of 42 institutional readiness models that fall within the scope of the current study have been considered. Some studies which directly adopted and tested an existing model are excluded from the list. Only the studies that proposed a new model are being considered.

FINDINGS

The earliest identified institutional e-learning readiness models belong to Chapnick (2000) and Rosenberg (2000), while the most recent is attributed to Saintika *et al.* (2021). Many organizations and institutions have adopted the use of e-learning. It is being used for education and training purposes in many corporate settings (Hashim & Tapir, 2014). These earliest readiness models are intended for non-educational institutions. This may imply that non-educational institutions responded to the evolution of the web by considering the adoption of e-learning. Aside from Chapnick (2000) and Rosenberg (2000), there are other succeeding proponents who have similar intentions — e.g., Engholm *et al.* (2001), Aydin *et al.* (2005), Al-Osaimi *et al.* (2007), Schreurs *et al.* (2008), Djamaris *et al.* (2012) and Schreurs *et al.* (2012). All these 8 frameworks are applied in banks, hospitals, the government sector, and other corporate organizations. On the other hand, the models of Anderson (2002), Haney (2002), Borotis *et al.* (2004), and Demir *et al.* (2015) do not disclose a particular institution to where their models apply. There are institutional e-learning readiness models specifically intended for educational institutions. A total of 27 models are applied in tertiary institutions namely Khan (2002); Gachau (2003); Kaur *et al.* (2004); Psycharis (2005); Lopes (2007); Mercado (2008); Odunaike (2009); Srichanyachon (2010); Darab *et al.* (2011); Omoda-Onyait *et al.* (2011); Saekow *et al.* (2011); Azimi (2013); Alshaher (2013); Oketch (2013); Okinda (2014); Nisperos (2014); Sae-kow (2015); Wibowo *et al.* (2015); Doculan (2016); Thaufeega (2016); Villarica (2016); Abdullah *et al.* (2017); Adiyatra *et al.* (2018); Alshammari *et al.* (2018); Alshammari (2019); Nwagwu (2019); and Saintika *et al.* (2021). The model of So *et al.* (2016) is used for primary and secondary schools, while the models of Ojwang (2012) and Irene *et al.* (2018) are utilized for secondary schools only. Each model constitutes a set of constructs or dimensions indicating the parameter of areas measured for institutional e-learning readiness.

The fewest constructs recorded are found in the models of Mercado (2008) and Saintika *et al.* (2021); however, these consist of sub-categories. On the other hand, the models of Psycharis (2005), Srichanyachon (2010); and Oketch (2013) have 3 dimensions only, in contrast to Darab *et al.* (2011) model that has 14 factors (without sub-categories), making the latter the most number of dimensions. In terms of the number of sub-categories, Doculan (2016) has the most number with 20 recorded sub-categories. The extant literature on organizational readiness offers relevant information for assessing the readiness of an institution in implementing e-learning and online learning. According to Aydin *et al.* (2005), institutional e-learning readiness includes questions, guidelines, strategies, models, and instruments for such readiness assessments. Table 1 summarizes the constructs or factors used in every model for institutional readiness in terms of e-learning from the year 2000 up to 2021.

Mapping of Institutional E-Learning Readiness Models across countries

The available institutional e-learning readiness models are created or applied in different countries. Most of them can be traced down to Africa, Southeast Asia, and other Asian countries. Nine out of 41 models are from Nigeria, South Africa, Sudan, Kenya, and Uganda in the African continent.

Table 1. Institutional E-learning Readiness Models (2000-2021)

Proponent	Focus	Constructs/Dimensions
Chapnick (2000)	Institution-Non-educational (managers)	<ul style="list-style-type: none"> • Psychological readiness • Sociological readiness • Environmental readiness • Human resource readiness • Financial readiness • Technological skill readiness • Equipment readiness • Content readiness
Rosenberg (2000)	Institution-Corporate organization and other types of organization	<ul style="list-style-type: none"> • Business readiness • Changing nature of learning and e-learning • Value of instructional and informational design • Change management • Reinventing the training organization • E-learning industry • Personal commitment
Engholm et al. (2001)	Institution-Non-educational organizations	<ul style="list-style-type: none"> • Organization's culture • Individual readiness • Technology • Content • Organizational and Industrial factors
Anderson (2002)	Institution	<ul style="list-style-type: none"> • Culture • Content • Capability • Cost • Clients
Haney (2002)	Institution	<ul style="list-style-type: none"> • Human resources • Learning management system • Learners • Content • Information Technology • Finance • Vendor
Khan (2002)	Institution-University	<ul style="list-style-type: none"> • Pedagogical • Institutional • Technological • Interface design • Evaluation • Management • Resource support • Ethical considerations
Gachau (2003)	Institution-University	<ul style="list-style-type: none"> • Students • Administration/organization • Content • Technical • The Future of E-Learning
Borotis et al. (2004)	Institution	<ul style="list-style-type: none"> • Business • Technology • Content • Training process • Culture • Human resources • Financial
Kaur et al. (2004)	Institution-University	<ul style="list-style-type: none"> • Learner • Management • Personnel • Content • Technical • Environmental • Cultural • Financial readiness
Aydin et al. (2005)	Institution-Non-educational	<ul style="list-style-type: none"> • Human resources • Learning management system • Learners • Content • Information technology • Finance • Vendor
Psycharis (2005)	Institution-University	<ul style="list-style-type: none"> • Resource • Education • Environment

.....Continue

So et al. (2006)	Institution-Primary and secondary schools	<ul style="list-style-type: none"> • Students' preparedness • Teachers' preparedness • IT infrastructure • Management support • School culture • Preference to meet face to face
Lopes (2007)	Institution-University	<ul style="list-style-type: none"> • Technology • Content • Culture • Human resource • Financial • Business
Al-Osaimi et al. (2008)	Institution-Non educational	<ul style="list-style-type: none"> • Strategy • Technology • Organization • People • Environment
Mercado (2008)	Institution-University	<ul style="list-style-type: none"> • Administrative • Commitment • Policies • Instructional • Resource support • Financial • Human • Technical
Schreurs, Ehlers et al. (2008)	Institution-Hospital	<ul style="list-style-type: none"> • Learner characteristics • Organization and management of e-learning • Availability of qualitative technological facilities for e-learning • E-learning process and solutions/courses
Odunaike et al. (2009)	Institution-University	<ul style="list-style-type: none"> • Business readiness • Stakeholders Readiness • Technology Readiness • Content Management Readiness • Training Process Readiness • Culture Readiness • Financial Readiness
Srichanyachon (2010)	Institution-University	<ul style="list-style-type: none"> • Technology readiness • Human resources readiness (Teachers and Students) • Culture readiness
Darab et al. (2011)	Institution-University	<ul style="list-style-type: none"> • Network • Equipment • Regulations • Standards • Financial • Security • Culture • Content • Policy • Human resources • Supervision • Support • Assessment • Management
Omoda-Onyait et al. (2011)	Institution-University	<ul style="list-style-type: none"> • Awareness • Culture • Technology • Pedagogy • Content
Saekow et al. (2011)	Institution-University	<ul style="list-style-type: none"> • Policy • Technology • Financial • Human Resource • Infrastructures
Djamaris et al. (2012)	Institution-Enterprise	<ul style="list-style-type: none"> • Technology • Innovation • People • Self-development
Ojwang (2012)	Institution- Secondary schools	<ul style="list-style-type: none"> • Infrastructure • Electricity • Computer resources • Experienced personnel • Internet connectivity • E-learning awareness • Level of computer literacy

Schreurs and Al-Huneidi (2012)	Institution-Bank	<ul style="list-style-type: none"> • Facilities and infrastructure for e-learning • Management • Organization of e-learning function/department • Learners' characteristic • E-learning course and process
Azimi (2013)	Institution-University	<ul style="list-style-type: none"> • ICT infrastructure • Human resources • Budget and Finance • Psychology • Content
Alshaher (2013)	Institution-University	<ul style="list-style-type: none"> • Strategy • Structure • Systems • Style/Culture • Staff • Skills • Shared values
Oketch (2013)	Institution-University	<ul style="list-style-type: none"> • Technological • Culture • Content
Okinda (2014)	Institution-College	<ul style="list-style-type: none"> • Individual learners • Content • Information and Communication Technologies • Organizational culture • Organization and Industry
Nisperos (2014)	Institution-University	<ul style="list-style-type: none"> • E-readiness perception • Acceptance • Training • Infrastructure
Sae-kow (2014)	Institution-University	<ul style="list-style-type: none"> • Institute/organization • Curricular program/teaching and instructional design • Resource/technology/information technology • Teaching/learning • Learner • Faculty and supporting personnel • Measurement/evaluation
Wibobo et al. (2015)	Institution	<ul style="list-style-type: none"> • Organization • Policy • Human resource • Culture • Management • Academic • Curriculum • Learning method • Administration • Financial • Budgeting • Business • Technology • Hardware • Software • Network • Content • Learning content
Demir et al. (2015)	Institution	<ul style="list-style-type: none"> • Finance • ICT infrastructure • Human resources • Management and Leadership • Content • Culture • Competency of technology use
Doculan (2016)	Institution-University	<ul style="list-style-type: none"> • Student • Technology Access • Tech. Confidence • Training • Social Support • Study Habits • Abilities • Motivation • Time Management • Perceived Usefulness • Teacher • Technology Access • Technological Confidence • Training • Teaching Styles and Strategies • Abilities • Motivation • Time Management • Perceived Usefulness • Institution • ICT Infrastructure • Administrative Support (policies and commitment) • Human, Financial and Tech. Support

Thaufeega (2016)	Institution-University	<ul style="list-style-type: none"> • Access • Study habits and skills (Independent and self-directed learning) • Lifestyle factors (e-learning awareness) • Teaching style (student-centered) • Infrastructure • Human resources
Villarica (2016)	Institution-University	<ul style="list-style-type: none"> • E-learning readiness • Acceptance • Training • Technological infrastructure • Tools awareness
Abdullah et al. (2017)	Institution-University	<ul style="list-style-type: none"> • Technological • Human resource • Content • Educational • Leadership • Cultural
Adiyatra et al. (2018)	Institution-University	<ul style="list-style-type: none"> • Psychological • Sociological • Environmental • Human Resource • Financial • Technological Skill • Equipment • Content • Innovation • Institution • Leadership • Culture • Policy
Alshammari and Adaileh (2018)	Institution-University	<ul style="list-style-type: none"> • Pedagogy • Technology • Interface Design • Management • Administrative Support
Irene et al. (2018)	Institution-High Schools	<ul style="list-style-type: none"> • Strategy • Technology • Organization • People • Content
Alshammari (2019)	Institution-University	<ul style="list-style-type: none"> • Policy and institutional business strategy • Pedagogy • Technology • Interface design • Management • Administrative and resource support • Evaluation and continual improvement
Nwagwu (2019)	Institution-University	<ul style="list-style-type: none"> • Lecturers' readiness • Public/society readiness • Students' readiness • Human resources readiness • Financial readiness • Training readiness • ICT equipment readiness • E-learning materials/ content readiness
Saintika et al. (2021)	Institution-University	<ul style="list-style-type: none"> • University's side • Lecturer's characteristic • E-learning facilities • Learning environment • Learning management • Student's side • Self-learning • Motivation • Learner's control • Student's characteristic

Most of the models (n=10) listed in Southeast Asia are from Indonesia (n=4), followed by Thailand (n=3), the Philippines (n=3), and Malaysia, respectively. Other Asian countries such as India, KSA, Iraq, and China (Hong Kong) have a fair share of frameworks as well. These countries that have implemented e-readiness have diverse cultures and varying needs, resources, and capabilities (Rohayani *et al.*, 2015); needless to say, such available models may not be suited for a particular country.

The study of Omoda-Onyait *et al.* (2011) mentioned the unavailability of models for developing countries. According to them, most of the institutional e-readiness frameworks were suited for developed countries; therefore, they established a model for emerging countries like Uganda. The same claim is mentioned by Machado (2007); Bwalya & Mutula (2014), and Durek & Redep (2016). According to Machado (2007), a large proportion of the tools for e-readiness were derived from more developed western nations.

Table 2. Mapping of Institutional E-Learning Readiness Models across countries

	Africa	Australia	Central America	Europe	Other Asian Countries	Southeast Asia	No Country mentioned/ Literature review
Chapnick (2000)							✓
Rosenberg (2000)							✓
Engholm et al. (2001)		✓					
Anderson (2002)							✓
Haney (2002)							✓
Khan (2002)							✓
Gachau (2003)	✓						
Borotis et al. (2004)				✓			
Kaur et al. (2004)						✓	
Aydin et al. (2005)				✓			
Psycharis (2005)				✓			
So et al. (2006)					✓		
Lopes (2007)				✓			
Al-Osaimi et al. (2008)					✓		
Mercado (2008)							✓
Schreurs, Ehlers et al. (2008)				✓			
Odunaike et al. (2009)	✓						
Srichanyachon (2010)						✓	
Darab et al. (2011)					✓		
Omoda-Onyait et al. (2011)	✓						
Saekow et al. (2011)						✓	
Djamaris et al. (2012)						✓	
Ojwang (2012)	✓						
Schreurs and Al-Huneidi (2012)				✓			
Azimi (2013)					✓		
Alshaher (2013)					✓		
Oketch (2013)	✓						
Okinda (2014)	✓						
Nisperos (2014)	✓						
Sae-kow (2014)						✓	
Wibowo et al. (2015)						✓	
Demir et al. (2015)					✓		
Doculan (2016)						✓	
Thaufeega (2016)			✓				
Villarica (2016)						✓	
Abdullah et al. (2017)					✓		
Adiyatra et al. (2018)						✓	
Alshammari and Adaileh (2018)					✓		
Irene et al. (2018)	✓						
Alshammari (2019)					✓		
Nwagwu (2019)	✓						
Saintika et al. (2021)						✓	
Total	9	1	1	6	9	10	6

Table 3. Distribution of Participants in Institutional E-Learning Readiness Studies

	Employees	Teachers, Lecturers, Professors, Tutor	Non-teaching Staff, Staff	Administrator, Planners, managers, principals	Students	No respondents disclosed	Literature Review/ Article	Non-Education respondents
Chapnick (2000)								✓
Rosenberg (2000)							✓	
Engholm et al. (2001)								✓
Anderson (2002)							✓	
Haney (2002)							✓	
Khan (2002)							✓	
Gachau (2003)		✓	✓	✓				
Borotis et al. (2004)						✓		
Kaur et al. (2004)		✓			✓			
Aydin et al. (2005)								✓
Psycharis (2005)							✓	
So et al. (2006)		✓						
Lopes (2007)								✓
Al-Osaimi et al. (2008)		✓			✓			
Mercado (2008)							✓	
Schreurs, Ehlers et al. (2008)								✓
Odunaike et al. (2009)						✓		
Srichanyachon (2010)							✓	
Darab et al. (2011)		✓		✓				
Omoda-Onyait et al. (2011)			✓		✓			
Saekow et al. (2011)							✓	
Djamaris et al. (2012)	✓							
Ojwang (2012)		✓		✓				
Schreurs and Al-Huneidi (2012)								✓
Azimi (2013)				✓				
Alshaher (2013)						✓		
Oketch (2013)		✓						
Okinda (2014)		✓			✓			
Nisperos (2014)		✓			✓			
Sae-kow (2014)		✓						
Wibowo et al. (2015)		✓	✓					
Demir et al. (2015)							✓	
Doculan (2016)		✓		✓	✓			
Thaufeega (2016)			✓					
Villarica (2016)		✓			✓			
Abdullah et al. (2017)			✓					
Adiyatra et al. (2018)						✓		
Alshammari and Adayleh (2018)		✓		✓	✓			
Irene et al. (2018)		✓			✓			
Alshammari (2019)		✓		✓	✓			
Nwagwu (2019)		✓						
Saintika et al. (2021)		✓		✓	✓			
Total	1	18	5	8	11	4	9	6

Since e-learning was still in the infancy stage in developing countries, their institutional e-readiness was not established yet. Oketch (2013) proposed that various assessment models should be employed in response to these differences. As seen in the table below, most of the earlier models have been devised in Australia and the European continents (e.g., Turkey, Greece, Netherlands). Hence, to address this gap, a significant number of frameworks have been formulated that target developing countries like Thailand, the Philippines, Kenya, and Uganda, to name a few.

Several organizations, academic institutions, and researchers have proposed various assessment models to determine the e-learning readiness assessment because there are different constructs like “institutional management support, ICT infrastructure, web content availability, and skilled human resources,” which are crucial for such a readiness (Đurek *et al.*, 2016). There are 246 constructs used in 42 models. In general, most of the constructs include infrastructure, human resources, content, management, culture, financial, and students. Infrastructure, which includes ICT infrastructure, technology, Learning Management System (LMS), network, Internet connectivity, and other equipment, are incorporated in 32 institutional models, while the human resources are mentioned in 29 models. Human resources are composed of staff, personnel, teachers, and stakeholders. Meanwhile, the content dimension is incorporated 32 times in the frameworks, whereas management component is included 24 times. The culture and student constructs are used 17 times in the institutional models. Lastly, the financial category is found in 16 models. These constructs (e.g., management, infrastructure, human resources) are all important factors in determining readiness for e-learning (Oketch, 2013), whereas Srichanyachon (2010) believed that institutions should focus on assessing the capabilities of their technologies, human resources, and organizational culture prior to making the transition to online education.

Participants Involved in Institutional E-Learning Readiness Studies

Analyzing the pieces of literature in terms of their participants, it can be seen that teachers, students, and administration play a significant part in the formulation of institutional readiness as they are identified as participants 18 times, 8 times, and 11 times, respectively, in different studies. The majority of the literature encompassing institutional e-readiness has focused on three primary groups of stakeholders (Alshammari, 2019). These stakeholders are considered vital in the establishment of institutional e-learning readiness.

The models of Gachau (2003), Doculan (2016), Alshammari *et al.* (2018), Alshammari (2019), and Saintika *et al.* (2021) chose students, teachers, administration, or non-teaching staff to build the organization’s readiness. On the other hand, Kaur *et al.* (2004); Lopes (2007); Villarica (2016); and Irene *et al.* (2018) focused on teachers and students in determining the e-readiness of their respective institutions. Nine of the institutional e-readiness studies conducted a literature review to form their models. In summary, this analysis shows that stakeholders are key contributors to the readiness of an organization. Their participation cannot be disregarded in determining the readiness of the institution. In the same manner, they are included in the constructs or determinants of the institutional readiness models.

Method and Instruments used in Establishing the Institutional Readiness Models

The e-learning readiness assessment may employ a different number of instruments (Hashim *et al.*, 2014). He further added that the appropriate and relevant selection of the instrument is essential in identifying crucial findings. The established models have used a specific or a combination of methods. Mercado (2008), Odunaike (2009), Srichanyachon (2010), Saekow *et al.* (2011) did literature reviews. The literature review is an indispensable method in establishing the existing knowledge, gaps, frameworks in the field of study. It gives ideas of what has been discovered about the research interest. Other studies employed structured and close-ended questionnaires (e.g., Nwagwu, 2019; Doculan, 2016; Oketch, 2013), contrary to Thaufeega (2016), used a semi-structured questionnaire. Omoda-Onyait *et al.* (2011); Villarica (2016); Abdullah *et al.* (2017); and Adiyatra *et al.* (2018) specified the use of a 5-point Likert questionnaire for data collection. On the other hand, Gachau used both open and close-ended questionnaires. Alshammari *et al.* (2018); Alshammari (2019); and Saintika *et al.* (2021) used structured interviews for their methods of data collection. However, the use of interviews alone has limitations — e.g., incongruency in the answers (Kane *et al.*, 2002) and respondent’s bias (Robson, 2002). Other studies are specific to their collection methods and utilized a combination of methods to establish and collect reliable data. For instance, Alshammari (2019) used a pool of items culled from the literature and structured interviews for his instrument and data collection. Meanwhile, Lopes (2007) gathered information through documentation review, observations, and surveys via questionnaires. Like them, Darab *et al.* (2011) conducted a literature review to identify the relevant constructs and criteria for institutional readiness before constructing their questionnaires. What is good about their method is that their questionnaire is evaluated by experts before its administration. An instrument developed by the researcher should be validated by experts familiar with such concepts (Hashim *et al.*, 2014). Kaur *et al.* (2004) also drawn their questionnaire from surveying a panel of experts. Saintika *et al.* (2021) developed their questionnaire by establishing the indicators of readiness and interviewing the respondents. The questionnaire underwent testing just like that of Thaufeega (2016). Then, Saintika *et al.* (2021) used interviews to get more information. The findings of the above analysis suggest instruments that use both quantitative and qualitative methods. The use of questionnaires and interviews are necessary data collection methods for assessing institutional readiness. The participation of experts in the fields is also crucial. Likewise, the literature review is equally important in the initial stage of assessment models. Creswell (2003) posited that researchers recognize the limitations of some methods; thus, they used mixed methods instead.

DISCUSSIONS AND CONCLUSION

The review points out that e-learning readiness has been studied by many researchers beginning the 21st century. With the need to upgrade the services of different institutions, they started adopting e-learning in their systems. Hence, additional studies sprouted about institutional e-learning readiness. Various models have been formulated to measure such readiness of corporate companies, hospitals, government offices, and educational institutions. Each model possesses a set of constructs that serve as criteria for assessment. The most

mentioned constructs from all the models consist of infrastructure, human resources, content, management, culture, financial, and students. This signifies that these areas must be taken into consideration in exploring the readiness of an organization. The literature review shows that the institutional e-learning readiness models are already determined and well-researched in other countries. However, while several models are already available, most of these are suitable for developed countries. Although some of the existing models were tailored for developing countries, some models originated from developing countries may not be used because of the differences in norms or culture and other factors. For instance, there is a limited study indicated for the institutional e-readiness in the context of Philippine higher education. Likewise, important stakeholders of an organization have been identified from the systematic literature review. It was pointed out that the administration, faculty members, and students are vital in the construction of readiness instruments. In terms of instruments and methods, the plethora of literature provided numerous information. Some research used either quantitative or qualitative approaches, while others utilized a mixed method. Combinations of literature review, interview, validation from the experts, and Likert questionnaire are very useful methods in establishing the institutional online learning readiness. The constructed instruments may be conclusive to them, yet it is not generalizable. This implies the necessity to formulate own instrument that fits the university being assessed. The context from which the available instruments had been applied may not be suitable to others. There are factors that set the limits for such adoption —e.g., the status of the technological infrastructure of the university, level of technological skills of the stakeholders. This gap must be addressed by the universities that would like to adopt online learning program.

The literature, therefore, can serve as a guide to institutions in developing readiness assessment tools particularly to those which considers the adoption and implementation of e-learning nowadays. Based on the results of this review, the most mentioned constructs from all the models consist of infrastructure, human resources, content, culture, and student. This signifies that these areas must be taken into consideration in exploring the readiness of an organization. Such constructs are crucial to arrive at a good instrument for institutional readiness and successful online learning implementation.

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