Readiness of Higher Education Instructors for E-learning: An Ethiopian Experience

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ABSTRACT

E-learning has gained increasing popularity in higher education over the past two decades due to its flexibility, accessibility, and cost-effectiveness. The purpose of this study was to examine the readiness of higher education instructors for e-learning in Ethiopia. To achieve this objective, a quantitative research design was employed. A total of 394 instructors were selected using stratified and simple random sampling techniques and participated in the study. A questionnaire was utilized to collect relevant data for the study. Descriptive data analysis techniques were employed to analyze the data. The overall results of the study revealed that instructors are ready (M=3.67 and SD=1.26) to engage in the e-learning system. However, it was found that they require some interventions to reach the required level of readiness. Instructors were found to be technically prepared and optimistic about the virtual learning approach. On the contrary, their access to reliable internet connections and electronic devices (such as laptops, tablets, and/or smartphones) was poor and below the expected level. The findings were discussed, and implications were suggested for further consideration.

***Key words**: E-learning; Higher Education; Readiness; E-readiness*

1. INTRODUCTION

Globalization and technological advancements are rendering traditional teaching methods outdated. Technology not only provides easy access to knowledge but also fosters a culture of learning. In recent years, teaching and learning have undergone significant changes that have the potential to disrupt the traditional education system. This transformation has been facilitated by the widespread adoption of e-learning methods (Adams et al., 2018; Ranganathan et al., 2021; Hung et al., 2010; Torun, 2020). Scholars (e.g., Ryan et al., 2016; Lucero et al., 2021) have

defined e-learning as electronically facilitated learning. Typically, e-learning takes place on the Internet, enabling students to access learning materials online from anywhere at any time. According to Dichev et al. (2013), e-learning involves the use of technological tools and resources for teacher-led instruction, research, assessment, and communication. Similarly, Oye, Sallah, and Iahad (2011) noted that e-learning utilizes information and communication technologies (ICTs) to enhance teaching and learning processes. In essence, e-learning delivers instructions through digital devices, making learning materials easily accessible and allowing learners to acquire knowledge in various subjects. Moreover, e-learning enables individuals worldwide to access educational opportunities that might otherwise be unavailable to them, thereby equipping them with the necessary knowledge and skills to thrive in the global knowledge economy (Oye et al., 2011; Kirmizi, 2015; Reisetter, Loralee & Korsuka, 2007). Furthermore, several studies (e.g., Graham, Allen & Ure, 2005; Osguthorpe & Graham, 2003; Doiron & Asselin, 2011; Fong et al., 2005; Wakefield et al., 2008; Vaughan, 2007) have demonstrated that e-learning yields improved pedagogy, increased access and flexibility, as well as enhanced cost-effectiveness. Harris et al. (2009) also emphasized that e-learning is a resource-effective methodology with the potential to enhance teaching and enrich the student learning experience.

Recognizing its significance, many countries are embracing the e-learning approach to ensure that individuals, regardless of their origin or financial status, have access to high-quality education (Mather and Sarkans, 2018). The number of online university and college courses has experienced a significant surge in the past decade, highlighting the internet's pivotal role in higher education (Hogg & Lomicky, 2012; Usagawa, 2018; Torun, 2020; Ranganathan et al., 2021; Adams et al., 2018; Taskin and Erzuruml, 2021; Bhagat, Wu, Chang, 2016). These changes, as indicated by various studies (e.g., Ozerbas & Erdogen, 2016; Bhagat, Wu, & Chang, 2016; Renes, 2015), are responses to technological, societal, and economic transformations. Despite the implementation of e-learning in many countries, universities face numerous challenges in terms of delivery, effectiveness, and acceptance of this approach (Liaw, Chen, and Huang, 2008; Park, 2009). Wang and Wang (2009) discovered that the growth of online learners is not as rapid as anticipated, and universities are not fully capitalizing on their efforts. For example, dropout rates in e-learning, particularly in developed countries, are often higher than

those in traditional classroom-based teaching (Andersson, 2008). Dropout percentages for course units offered in e-learning environments range from 20% to 40% (Sun et al., 2008; Levy, 2007).

To address these challenges, scholars (e.g., Aydin and Tasci, 2005; Palloff & Pratt, 2000; Wang, Zhu, Chen, & Yan, 2009; İlhan & Çetin, 2013; Harun, and Yildirim, 2014; Geng et al., 2019) strongly emphasize readiness, encompassing students', teachers', and organizational readiness, as a critical determinant of e-learning success. Learners, teachers, and organizations must be prepared to ensure effective e-learning practices (Bowles, 2004). Simonson et al. (2009) and Palloff and Pratt (2000) further argue that access to and familiarity with the technology being used are essential for achieving success in e-learning. Readiness, sometimes referred to as e-readiness, encompasses aspects such as the ability and confidence to utilize e-learning resources and multimedia technologies, attitudes towards and perceptions of e-learning, preference for e-learning over face-to-face instruction, and the availability of necessary infrastructure. Instructors' readiness plays a crucial role in transitioning from conventional to e-learning environments, as they serve as the primary link between administrators and students in fulfilling the mission of universities

A careful review of global literature on e-learning shows that, in the context of developing countries, readiness to engage in e-learning is a significant area of concern. Studies conducted in the Western have emphasized the importance of assessing readiness for e-learning (Smith, 2005; Watkins, Leigh, & Triner, 2004). This is because, as argued by various scholars (e.g., Azimi, 2013; Akaslan & Law, 2011; Baldwin-Evans, 2006; Harris et al., 2009; Mafenya, 2013; Oketch, 2013; Sadik, 2007; Saekow and Samson, 2011), it is crucial to ensure the readiness of students, teachers, and the overall systems before investing scarce resources and time into e-learning infrastructure. The readiness of these stakeholders is a powerful factor in successfully implementing e-learning (Rasouli, Rahbania & Attaran, 2016; Mosadegh, Kharazi & Bazargan, 2011). Bernard et al. (2004) and Kerr et al. (2006) also highlighted that readiness has a significant impact on student academic achievement within e-learning environments.

E-learning is still in its infancy in developing countries. Several developing countries face obstacles such as infrastructure limitations, resource constraints, limited information access (Raab, Ellis, & Abdon, 2002), personal characteristics, lack of institutional support (Brinkerhoff,

2006), technology and connectivity issues, and instructors' technological competence (Hussein, Aditiawarman, & Mohamed, 2007). In the case of Ethiopian higher education institutions, the adoption of e-learning seems to be in the planning stages. According to Ketema and Nirmala (2015), Adama Science and Technology University (ASTU) is considered a pioneer in e-learning in Ethiopia, having used an e-learning system to support its teaching and learning processes since 2009. However, the effective implementation and sustainable usage of e-learning at ASTU have fallen below expectations. Poor ICT infrastructure and resistance from teachers and students have significantly affected the success of e-learning. Similar findings were also reported by Sangeetha, Korath, and Dawit (2016). It can be argued that the global pandemic has recently necessitated the introduction of e-learning approaches, at least in higher education. Consequently, many higher education institutions have aggressively shifted to e-learning approaches, particularly in their postgraduate programs. With this in mind, the present study aims to assess the readiness of Ethiopian higher education instructors for e-learning. To achieve this, the following basic research questions were formulated:

1. To what extent are instructors ready for e-learning?
2. How do instructors perceive the readiness of Ethiopian higher education institutions for e-learning?

Context of the Study

Ethiopia, like other countries, has its own context that may have implications for the use of ICT in higher education. The current education sector development roadmap (MOE, 2017) emphasizes access, relevance, equity, and quality of higher education as major challenges to be addressed during the implementation period (2018–2030). Information Communication Technology is a relatively new phenomenon in Ethiopia (Alemu, 2017), and its integration into the education sector has been found to be very slow (Tibebu et al., 2009).

As stated by Lixi & Dahan (2014), the government has embarked on ICT-enabled transformation in all sectors, including education, to enhance performance and deliver better public services with the ultimate goal of improving the lives of its citizens. Accordingly, the fifth Education Sector Development Program (ESDP V), implemented in the 2015/16-2019/20 academic year, plans to expand the integration of ICT at all levels of the education system. The document

emphasizes the ratification of an ICT in education policy, provision of ICT and internet connections to all higher education institutions, integration of pedagogy, technology, and content, mainstreaming of ICT across core subjects, development of digital content, and implementation of Learning Management Systems (LMS) at all levels of education to support teaching and learning activities (MoE, 2016).

Moreover, the Ministry of Education has shown its commitment to integrating ICT in higher education to the extent of making research universities paper-free in the long term (MoE, 2018). However, local studies (e.g., Amanuel, Amare, and Mehta, 2022; Bati and Workneh, 2020; Bekalu et al., 2022; Hailye, 2019; Ketema and Nirmala, 2015; Woreta et al., 2013) conducted so far on ICT infrastructures have identified problems such as an insufficient number of computers, inadequate bandwidth, lack of digital skills among teachers and students, resistance from teachers and students, absence of policies for using ICT in pedagogical practices, and frequent system failures. Amanuel, Amare, and Mehta (2022) found that not only are ICT resources limited in Ethiopian higher education institutions, but these limited resources are also not effectively utilized. Moreover, the study revealed that insufficient ICT infrastructure, lack of skills to use ICT, resistance, and absence of ICT policies are the major problems observed in the institutions.

Very recently, it could be argued that the global pandemic has necessitated the introduction of e-learning approaches, at least in higher education. Consequently, most higher education institutions are investing tremendously in strengthening and expanding their ICT infrastructures. Despite this, however, the state of e-learning remains limited. Currently, no public university offers accredited online degrees at the undergraduate or postgraduate levels. The absence of online education as an alternative modality has compromised the quality, affordability, and accessibility of education, and has also made the sector vulnerable to external shocks. This vulnerability was particularly pronounced during the COVID-19 pandemic when all higher education institutions were closed and unable to reach their students.

2. REVIEW OF RELATED LITERATURE

2.1.Concepts of E-learning

In today's digital age, e-learning in higher education is becoming increasingly popular. With advancements in technology and access to online resources, students are empowered to learn at their own pace and on their own time. E-learning offers several benefits, such as flexibility and accessibility, and it can be tailored to suit individual learning styles. E-learning in higher education is a mode of education that allows students to connect with their educators and peers without the need for physical presence in the classroom. It leverages technology to provide a better learning experience, making education accessible to a broader audience. This mode of learning is gaining popularity globally, and higher education institutions are investing more in e-learning infrastructure and resources (Batista et al., 2021; Ulum, 2022; Masrom, 2007). Experts from ICT, computer science, education and educational technology have contributed to defining the concept of E-learning. E-learning is claimed to be the new generation's mode of learning and education and also considered as a new pattern to deliver information in the educational field (Bhuasiri et al., 2012). According to Govindasamy (2002), e-learning is instruction delivered electronically, including via the internet, intranets, extranets, audio/video tapes, interactive TV, and CD-ROM.

Similarly, Ozkan and Koseler (2009) contends that e-learning is the use of technologies like the internet, audio and video, satellite broadcast, interactive TV, and CD-ROM for learning. Khan (2005) described e-learning as a convenient, interactive, and facilitated way of learning that uses digital technologies and other materials for open and distributed learning. Mbarek and Zaddem (2013) defined it as an educational and learning instruction supported by ICT, allowing learners to acquire new knowledge and skills electronically from any place. Vrana et al. (2006) said it is interactive learning with online content and feedback. Odunaike, Olugbara, & Ojo (2013) added that it includes features like live chats, online assignments, discussion boards, and email support, giving learners the flexibility to study at their own time and pace. E-learning can be fully online or a mix of online and face-to-face interactions - known as blended learning.

In sum, in the above definitions of E-learning, some of the definitions focus on the use of ICT for delivering learning processes (technical perspective), while others focus on the role of technology to support learning and the process of learning, and the benefit of implementing E-learning (learning perspective). In the context of this study, E-learning is conceptualized as teaching and learning instruction supported by the use of information communication technology

tools and applications which allow learners to acquire new knowledge and skills, and support teaching and learning processes, deliver content and enhance interactive learning among students and teachers.

2.2.Readiness for E-learning

Technically, readiness is defined as being fully prepared for some experience or action (Webster's New Collegiate Dictionary, Oxford Dictionary Online). E-learning readiness is referred as the mental and physical preparation of an organization for e-teaching experience or action (Borotis & Poulymenakou, 2004). E-readiness is recognized as one of the most significant aspects for the success of implementing e-learning programs in higher education (Rohayani, Kurniabudi & Sharipuddin, 2015; Phan and dang, 2017; Penna &Stara, 2008). According to Penna and Stara (2008), the e-readiness score can reveal "a learning institution's strengths and weaknesses in technology acquisition and training to inform policy decisions, to position the institution technologically in the competitive global market, and to apply limited resources wisely across institutional boundaries".

Academic staff's readiness plays an important role in the process of transferring from conventional to e-learning environment as they are the major driving force connecting the administrators and the students to help carry out the universities' mission. The instructors' readiness including attitude, technological competence, and behavior is described as one of the most influencing factors on student e-learning experience (Alsobhi et al., 2021; Ali, 2020; Arifianto at al., 2020; Ate et al., 2021; Banji et al., 2021). Rohayani, Kurniabudi and Sharipuddin (2015) found that technological skills and attitudes are the most critical factors influencing instructors' readiness to e-learning. Teacher's attitude was found to have positive impacts on the success of the implementation of e-learning in the sector of higher education (Al-aka &Alnawas, 2011; Alabdullaziz, Alanazy, Alayahya & Gall, 2010).

3. METHODS AND MATERIALS

The purpose of this study was to examine the readiness of higher education instructors for e-learning. To achieve this objective, a quantitative descriptive research approach was employed. The study population consisted of instructors from public higher education institutions. Six universities, two from each generation, were selected using a combination of stratified and purposive sampling techniques. The criteria for classifying the universities into strata were based on their generations. The decision to choose two universities from each generation was driven by the geographical proximity of the universities and the researcher's access to data.

Consequently, the following universities were selected: Haramaya and Addis Ababa from the first generation, Dire Dawa and Jigjiga from the second generation, and Addis Ababa Science and Technology and Wolkite from the third generation. In terms of selecting the instructors, a systematic random sampling method was employed. The researcher determined the sample size based on the rule of thumb principle of sampling. Four streams were randomly chosen: Social Science, Natural and Computational Science, Technology, and Business and Economics. According to several scholars in the field of social science research (e.g., Janet, 2005; Lawrence, 2007; and Schreiber & Asner-Self, 2011), a sample size of 30% is considered representative for smaller populations (under 1000), 10% for moderately larger populations (10,000), and 1% for large populations (over 150,000). Applying this principle, a sample of 406 instructors (30% of the total population of 1354 teachers) teaching in the postgraduate programs of the selected universities was randomly selected.

For data collection, a questionnaire was utilized based on existing literature and previous research. The questionnaire aimed to assess instructors' readiness in terms of technological competence (technical skills), perceived infrastructural readiness, attitude towards e-learning, and technology usage. The questionnaire consisted of 39 items, with 8 items measuring technical skills, 7 items evaluating technology usage, 4 items assessing attitude towards e-learning, 7 items examining perceived support from top management for e-learning, 3 items gauging perceived infrastructural readiness, and the remaining 10 items measuring access. Some sample items from the instructors' questionnaire include: *"I believe that e-learning is more effective than traditional learning," "I use the internet as an information source," and "I am familiar with at least one*

synchronous online teaching platform, like Zoom, Microsoft Teams, Canvas, etc." The scaling of these instruments utilized a Likert-type scale, ranging from 5 (Strongly Agree) to 1 (Strongly Disagree). As recommended by Cohen et al. (2007), piloting data collection instruments is crucial to enhance their validity and reliability. Consequently, the instruments were pilot tested on a separate group of respondents who were not part of the sample. The overall reliability of the questionnaire, as assessed by Cronbach's alpha, was found to be .72, indicating a high level of reliability. Furthermore, the Cronbach's alpha values for technical skills, technology usage, attitude, perceived management support, access, and perceived infrastructural readiness were .71, .74, .72, .74, .71, and .73, respectively.

During the actual data collection, a total of 425 questionnaires were distributed. Out of these, 394 questionnaires (318 Male and 76 female) were returned fully completed, while the remaining questionnaires were either incomplete or not returned. The return rate was considered good and sufficient for conducting statistical analysis and drawing conclusions from the results. The collected data were analyzed using frequency, percentage, mean, and standard deviation.

3.1.E-learning readiness index

The level of 'expected e-learning readiness' was measured on the standard mean score of 3.41 which was developed by Aydın and Tasci (2005). This e-learning readiness index has now become primarily used index by researchers (Abinew and Worku, 2020; Soydal et al., 2011; Ouma et al., 2013; Mon & Usagawa, 2018; Nisperos, 2014; Sutiah and Supriyatno, 2020; Ünal et al., 2014). The E-readiness index level of 1 – 2.6 indicated that the institutions are not ready and needs a lot of work to get ready while the readiness index level of 2.6 – 3.4 showed that the institutions are not ready and needs some work to get ready. The readiness index cut point that ranges between 3.4 – 4.2 indicate that the institutions are ready but needs few improvements to implement e-learning. Whereas the readiness index that fall between 4.2 and 5.0 showed that the institution is ready to go ahead in implementing e-learning. The 3.41 mean average was determined after identifying the critical level: 4 intervals/5 categories = 0.8 as depicted in Fig. 1 below. In other words, the average score of 3.41 is the minimum score for the readiness level to implement e-learning, so a score with an average value below 3.41 is considered unprepared for implementing e-learning.

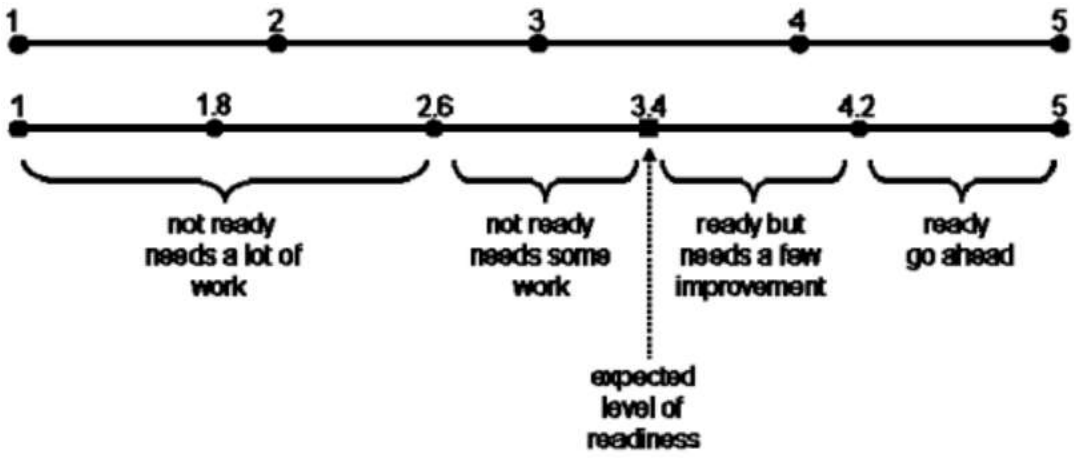

Figure 1: E-readiness index adopted by Aydın and Tasci (2005)

4. RESULTS

Table 1: Background of respondents in terms of Sex and University

Category	Alternatives	Results	
		frequency	%
Sex	Male	318	80.71
	Female	76	19.29
	Total	394	100
University	Dire Dawa	46	11.68
	Haramaya	83	21.07
	Addis Ababa	151	38.32
	Science & Technology	57	14.47
	Wolkite	30	7.61
	Jigjiga	27	6.85
	Total	394	100

Table 1 presents the distribution of respondents based on sex and university. The majority of participants in the study were male, accounting for 80.71% of the total, while the remaining 19.29% were female. This gender disparity among instructors reflects the long-standing underrepresentation of female instructors in Ethiopian higher education institutions.

Regarding the university distribution of the 394 instructors who participated in the study, 151 of them (38.32%) were affiliated with Addis Ababa University. The remaining instructors were distributed as follows: 83 (21.07%) from Haramaya University, 57 (14.47%) from Addis Ababa Science and Technology University, 46 (11.68%) from Dire Dawa University, 30 (7.61%) from Wolkite University and 27 (6.85%) from Jigjiga University.

Table 2: Background of respondents in terms of bands (streams)

Category	**Alternatives**	**Instructors**	
		frequency	%
Bands	Social Science	109	27.66
	Natural science	54	13.72
	Technology	154	39.08
	Business	77	19.54
	Total	394	100

Table 2 displays the distribution of instructors across different streams. The majority of instructors, comprising 39.08% of the total, were affiliated with the Technology stream, commonly referred to as the Institute of Technology in most Ethiopian universities. One hundred nine respondents (27.66%) were categorized in the Social Science band, while 77 (19.54%) and 54 (13.72%) were from the Business and Economics, and Natural Science bands, respectively.

Table 3: Instructors' readiness in terms of technological skills

No.	**Items**	**Results**	
		Mean	SD
1	I can use Microsoft Office tools such as Word and PPT to create documents and presentations	4.22	0.99
2	I can perform file management on my computer, such as copying, moving, renaming, and deleting files or folders	4.16	1.08
3	I can send and receive emails, including opening and sending email attachments	4.07	1.08
4	I can use Internet browsers, such as Google Chrome, Firefox, or Safari, to locate resources for teaching	4.08	1.15
5	I am familiar with at least one synchronous online teaching platform, like Zoom, Microsoft Teams, Canvas… etc.	4.16	1.83
6	I can encrypt (lock with passwords) files on my personal computer to protect important data	4.03	1.17

7	I can record audio/video using phone, tablet or computer	4.06	1.11
8	I can add audio/video files to my presentations	4.06	1.02
	Grand Mean and SD	4.11	1.43

Key: the rating scale: 5 strongly agree to 1 strongly disagree, N= 394, M= Mean, SD= Standard deviation

According to the data presented in Table 3, instructors exhibited a high level of technical skills, indicating their readiness to engage in e-learning. The grand mean score of 4.11 suggests that instructors possess the necessary competence in basic computer operations required for e-learning. This readiness level falls within the third interval (3.41-4.20) of Aydin and Tasci's (2005) E-readiness index, which signifies that instructors are ready to participate in online teaching and learning processes with some additional support. Furthermore, the mean score of 4.22 for the item *"I can use Microsoft Office tools such as Word and PPT to create documents and presentations*" indicates that instructors are fully prepared in this aspect, according to the e-readiness index. These findings imply that instructors have the technical skills required for e-learning, but some areas may still require improvement and support to enhance their overall readiness.

Table 4: Instructors' readiness in terms of technology usage

No.	**Items**	**Results**	
		Mean	SD
1	I use internet as information source	4.17	1.01
2	I use email as the main communication tools with my students/teachers and colleagues/classmates	3.99	2.83
3	I use social network sites (e.g., Facebook, twitter, telegram etc.)	3.81	1.21
4	I use instant messages (e.g., google talk, Skype etc.)	3.93	1.09
5	I use file hosting services (e.g., google documents, drobox etc.)	3.95	1.11
6	I use online forums and chat to communicate with my colleagues	3.96	1.09
7	I use mobile technologies (e.g., smartphone, tablet etc.)	3.84	1.06
	Grand Mean and SD	3.95	1.34

Key: The rating scale: 5 strongly agree to 1 strongly disagree, N= 394, M= Mean, SD= Standard deviation

The instructors in the selected universities were surveyed about their experience in using technology, and the summarized responses are presented in Table 4. The data indicates that instructors have a positive level of experience in utilizing technology, which contributes to their

readiness for implementing e-learning. The grand mean score of 3.95 exceeds the minimum threshold of the E-readiness index (3.41). Furthermore, when examining the mean scores of instructors across all indicators of technology usage, as shown in Table 4, it is evident that they fall within the category of "ready but needs few improvements" according to the e-readiness index developed by Aydin and Tasci (2005). This suggests that instructors are well-prepared in terms of technology usage, with some areas that could benefit from further enhancement.

Table 5: Instructors' attitude towards e-learning

No.	Items	Results	
		Mean	SD
1	I believe that e-learning can enhance the quality of education	4.06	0.94
2	I believe that e-learning is more effective than traditional learning	3.86	1.12
3	I believe that e-learning enables learners and instructors to communicate and interact better with one another	3.83	1.12
4	I support implementation of e-learning	3.96	1.09
	Grand Mean and SD	3.93	1.07

Key: the rating scale: 5 strongly agree to 1 strongly disagree, N= 394, M= Mean, SD= Standard deviation

One of the significant factors influencing the effectiveness of e-learning is the attitude of instructors towards it. In this study, respondents were asked questions that reflected their attitude towards e-learning. As presented in Table 5, instructors demonstrated positive attitudes towards e-learning, with a grand mean score of 3.93 and a standard deviation of 1.07. This indicates that instructors possess the minimum required level of readiness, as suggested by Aydin and Tasci (2005), in terms of their attitude towards e-learning. The data collected from instructors reveals that they believe e-learning enhances the quality of education, as indicated by a mean score of 4.06 and a standard deviation of 0.94. Additionally, instructors expressed support for the implementation of e-learning, with a mean score of 3.96 and a standard deviation of 1.09. Moreover, they even indicated a preference for e-learning over traditional methods in terms of effectiveness, with a mean score of 3.86 and a standard deviation of 1.12. The grand mean score of 3.93 in the attitude indicators, according to Aydin and Tasci, implies that higher education institutions only require minimal efforts to bring instructors to the perfect level of readiness in terms of attitude towards e-learning.

Table 6: Infrastructural readiness of the institution as perceived by instructors

No	Items	Results	
		Mean	SD
1	There is sufficient access to wireless and/or wired internet	2.62	1.22
2	There is sufficient internet speed to use e-learning	2.77	1.27
3	The university have the necessary resources to use e-learning	2.73	1.31
	Grand Mean and SD	2.71	1.27

Key: the rating scale: 5 strongly agree to 1 strongly disagree, N= 394, M= Mean, SD= Standard deviation

The study also examined the infrastructural readiness of the organization, as perceived by the instructors. As shown in Table 6 above, the instructors expressed the belief that their university lacked sufficient internet access, speed, and resources necessary for e-learning. The grand mean scores for instructors were 2.71 (SD= 1.27). In other words, Ethiopian higher education institutions, as perceived by the instructors, are considered to be "not ready" for implementing e-learning.

Table 7: Top management support as perceived by instructors

No	Items	Results	
		Mean	SD
1	The top management is interested in the e-learning function	3.76	1.18
2	The top management understand the importance & opportunities of e-learning	3.83	1.19
3	The top management support & encourage me to use the e-learning system	3.54	1.3
4	The top management consider e-learning as a strategic resource	3.28	1.36
5	The top management puts pressure on departments to use e-learning	3.53	1.31
6	The top management of my institute owns e-learning as a core task	3.8	1.17
7	The top management has a strong commitment to implement e-learning	3.8	1.11
	Grand Mean and SD	3.65	1.23

Key: the rating scale: 5 strongly agree to 1 strongly disagree, N= 394, M= Mean, SD= Standard deviation

Table 7 above presents the instructors' perception of the readiness of top management for e-learning. The data indicates that instructors perceived their universities to be ready for implementing e-learning programs, with a grand mean score of 3.65. This suggests that the top

management of Ethiopian universities are considered to be at a level of "ready but in need of further improvements" according to their academic staff.

The instructors believed that members of the top management understood the importance and opportunities of e-learning (M= 3.83 and SD= 1.19) and demonstrated interest in it (M= 3.76 and SD= 1.18). They also reported receiving support and encouragement from the top management (M= 3.54 and SD= 1.3) and noted that there was pressure on departments to utilize e-learning (M= 3.53 and SD= 1.31). Furthermore, the instructors felt that the top management prioritized e-learning within the university (M= 3.8 and SD= 1.17) and exhibited a genuine sense of ownership and commitment (M= 3.8 and SD= 1.11).

Table 8**:** Instructors' Access Electronic Devices and Internet

No	**Descriptions**	**Yes**	**No**
1	I have my own computer/laptop/tablet/smartphones	251 (63.7%)	130 (36.3%)
2	I have convenient access to computer/laptop/tablet/smartphones at home	237 (60.2%)	157 (39.8%)
3	I have convenient access to computer/laptop/tablet/smartphones at workplace	241 (61.2%)	153 (38.8%)
4	I have access to reliable internet connection at home	43 (10.9%)	351 (89.1%)
5	I have access to reliable internet connection at workplace	123 (31.2%)	271 (68.8%)
6	I can get access to internet multiple time a week	99 (25.1%)	295 (74.9%)
7	I use my mobile phone to access internet	321 (81.5%)	73 (18.5%)
8	I can connect to internet whenever I need	40 (10.2%)	354 (89.8%)
9	I have access to a computer whenever I need	157 (39.8%)	242 (60.2%)
10	The speed of the internet is satisfactory	188 (47.7%)	206 (52.3%)

Instructors' access to electronic devices (laptops, computers, smartphones, and/or tablets) and the internet was measured using a dichotomous yes/no response type of item. Table 8 illustrates that more than half of the instructors (63.7%) had their own laptops/computers/smartphones, and a similar percentage (60.2% and 61.2%) reported easy access to these gadgets at home and the workplace, respectively. However, a significant proportion of instructors (approximately 39%) still lacked access to these electronic tools, which are crucial for ensuring the effectiveness of e-learning. Furthermore, the majority (89.1%) stated that they did not have a dependable internet connection at home, and about three-quarters of them expressed unreliability in their workplace connections. Thus, it appears that the internet connections at home and the workplace were not the most reliable.

Table 8 also documented that among the surveyed instructors, only a quarter reported having access to the internet multiple times a week. Most of them relied on their phones to connect online, and more than half of them considered the connection speed to be poor. Additionally, 10% and 40% of the instructors stated that they could access and use computers whenever they desired.

5. DISCUSSIONS

This study has demonstrated that instructors are ready in most dimensions of e-readiness to engage in e-learning, albeit with some areas requiring improvement. The findings revealed that instructors possessed the minimum technological skills necessary for transitioning to an e-learning system. This has the potential to catalyze the adoption of virtual learning across Ethiopian higher education institutions, which is already underway. Technologically prepared instructors can serve as role models for their students, inspiring them to develop their own digital literacy skills as they witness their professors' proficiency with technology. However, the lack of relevant technical skills in e-learning and e-content development among instructors hampers the implementation of e-learning. As suggested by Darabi et al. (2006) and Varvel (2007), online teachers and students need to be proficient in utilizing current educational technologies and troubleshooting technological tools. Espiritu (2016) further recommended that instructors should learn how to select, manage, use, and produce videos for course lectures, welcome videos, and demonstrations. The technical expertise of instructors not only enhances the effectiveness of e-learning in the short term but also cultivates a digitally literate and capable learning community.

Furthermore, this study found that instructors perceived the top management as supportive of e-learning. However, a recent study conducted by Bekalu et al. (2022) in other higher education institutions documented that the top management exhibited unwillingness to support educational ICT initiatives and were unresponsive to information technology requirements. Moreover, several other studies (Al-Azawei et al., 2016; Esterhuyse & Scholtz, 2015; Eltahir, 2019; Moakofhi et al., 2017) have highlighted the lack of managerial support from governments in developing countries regarding ICT and e-learning development and implementation. The variation in findings may be attributed to differences in perception and actual practice. The positive perception of instructors regarding managerial support plays a crucial role in determining the success and effectiveness of e-learning initiatives in Ethiopian higher education. When instructors feel genuine support and prioritization from their leaders, it creates a positive environment and motivates them to invest more time and effort into creating high-quality online courses (Daniel & Uvalic-Trumbic, 2013; Pedro and Kumar, 2020). In other words, if top management demonstrates a clear commitment to e-learning, instructors feel more confident and empowered. They view e-learning as an integral part of the organization's overall strategy rather than a mere optional addition. This perception fosters increased motivation among instructors to embrace innovative teaching methods, integrate technology into their pedagogy, and experiment with new online tools, ultimately enhancing the learning experience for students.

Furthermore, instructors' perceptions of top management support for e-learning significantly influence their willingness to undergo professional development and training in digital teaching techniques (Kibaru, 2018; Orr et al., 2009). When instructors know that the organization values and invests in their growth as e-learning educators, they are more likely to actively participate in workshops and webinars aimed at enhancing their online teaching skills. Conversely, a perceived lack of top management support can lead to frustration and demotivation among instructors. If they believe that e-learning is merely a superficial effort or a secondary priority for the organization, they may become disheartened and less inclined to invest in the development of engaging online content. This, as noted by Hunt et al. (2014) and Martin & Parker (2014), could adversely affect the quality of e-learning offerings and impede the organization's overall e-learning strategy.

Moreover, the study has revealed that instructors hold optimistic views about e-learning, which is promising for Ethiopian higher education institutions. It has been observed that instructors' attitudes have positive impacts on the success of e-learning implementation in higher education (Al-aka & Alnawas, 2011; Alabdullaziz, Alanazy, Alayahya & Gall, 2010). Instructors who are open to using e-learning and its innovative methods and technologies are more likely to be successful. As e-learning progresses, instructors with positive mindsets are more likely to embrace new tools that enhance the online learning experience. Approaching e-learning with enthusiasm and optimism creates a motivating environment for leaders at the national and institutional levels working towards digitizing Ethiopian higher education. It could even be argued that the impact of positive instructors extends beyond the virtual classroom. For example, a positive e-learning experience can leave a lasting impression on students, influencing their overall attitude towards education and personal growth. When students witness their instructors' enthusiasm for e-learning, they are more likely to develop a positive mindset, leading to improved learning outcomes (Volery, 2000).

Regarding the infrastructural readiness of universities, the study findings indicate that they are not adequately prepared. Instructors expressed concerns about limited internet access and slow speed within their universities, as well as a lack of resources necessary for an e-learning system. This situation can be justified by the low internet connectivity at the national level. According to Gaceri (2021), internet coverage in Ethiopia currently reaches only 40% of the population, and only a few universities have well-developed information technology facilities and technical personnel. A recent study by Bekalu and colleagues (2022) also reported limited internet access and speed in Ethiopian higher education institutions. Teachers often have to spend long hours in offices searching for teaching and learning resources, while shortages of computers and other technology equipment are prevalent manifestations of inadequate ICT infrastructure in HEIs. Emphasizing the importance of infrastructural readiness, several studies (e.g., Ali et al., 2018; Ayele & Birhanie, 2018; Barakabitze et al., 2019; Bridget, 2016; Raphael & Mtebe, 2016; Kisanga & Ireson, 2015) highlight information technology infrastructures as crucial determinants in developing countries. Insufficient ICT infrastructures, as noted by Bekalu et al. (2022), can lead to instructors' frustration in utilizing technology. Infrastructure plays a pivotal role in the

success or failure of an e-learning system (Asuman & Clement, 2018; Barakabitze et al., 2019; Bridget, 2016).

6. CONCLUSIONS AND IMPLICATION

In conclusion, the findings of this study indicate that Ethiopian higher education instructors possess the necessary attributes and preparedness to engage in e-learning systems. They demonstrate positive views towards e-learning and possess the required technological skills and familiarity with technology. This presents a favorable opportunity for the Ministry of Education to facilitate the full-scale implementation of e-learning in all public higher education institutions. However, additional support is still needed to ensure that instructors are fully ready and comfortable with the virtual learning environment.

Access to electronic devices and reliable internet is crucial for instructors to develop interactive materials, stay connected with the e-learning platform, and engage in continuous professional development. It enables them to participate in webinars, join online communities, and attend virtual workshops to enhance their teaching methodologies and content delivery skills. Furthermore, reliable internet access allows instructors to provide timely feedback, address student queries, and offer additional support outside of traditional class hours, fostering a sense of community and engagement in the e-learning environment. Moreover, having access to electronic devices and the internet empowers instructors to adapt to unforeseen circumstances, ensuring the continuity of education during challenging times.

Reforming teachers' continuous professional development (CPD) to incorporate e-learning is an urgent need. By doing so, teachers can stay updated with the latest developments in virtual teaching and learning processes, equipping them to deliver quality education to their students. Introducing a blended learning approach that combines face-to-face and online training can provide teachers with convenient and flexible access to training materials and resources. It also offers opportunities for interaction and collaboration with peers and experts worldwide. Personalized formats that cater to individual needs can be integrated into CPD through e-learning platforms, allowing teachers to follow customized learning paths based on their expertise and

interests. This approach promotes engagement and ensures that teachers can learn at their own pace.

Providing teachers with the necessary technical support and training as part of CPD will also improve their readiness for e-learning. This includes offering access to appropriate hardware and software and effectively training them on their usage. Additionally, ongoing technical support should be provided to help teachers troubleshoot any issues that may arise. Scholars such as Bao (2020) and Rapanta et al. (2020) have emphasized the importance of institutions providing academic staff with technical and pedagogical support. Furthermore, conducting regular evaluations of the effectiveness of e-learning in CPD programs is crucial. This can be achieved through assessments and feedback from teachers, enabling the identification of areas for improvement and ensuring that the CPD program meets the needs of both teachers and students.

Effective e-learning implementation heavily relies on the support received from top-level management. It is essential for leaders to invest in the deployment of e-learning programs and foster a culture of learning within their organizations. They should support and encourage teachers and students to utilize technology and provide adequate infrastructure and ongoing support. Scholars such as Naylor and Nyanjom (2020) argue that institutional support is vital for teachers in higher education when transitioning to an e-learning system. Establishing a dedicated IT support team that assists teachers in setting up digital classrooms, troubleshooting technological issues, and offering guidance on software and hardware requirements is a way for leadership to positively impact the successful implementation of e-learning. Therefore, it is the responsibility of the leadership to ensure the existence of such a team and the availability of the required expertise. Teachers must have access to technical support whenever they encounter challenges during the e-learning process.

Leadership should also contribute to teachers' readiness by promoting experimentation. Teachers should be encouraged to explore the use of e-learning technologies in their classrooms, as such experimentation can lead to innovation and the discovery of new ways to engage students using digital tools. Institutions should provide resources and support to help teachers experiment with different tools and techniques. Lastly, institutions should establish a community of e-learning experts by identifying teachers who have excelled in digital teaching and learning. These

teachers can be given opportunities to share their experiences, mentor other faculty members, and offer guidance to those in need. Mentoring is a successful approach to supporting teachers' professional development in e-learning, as noted by Baran and Correia (2014). Institutions can facilitate collaborative learning among staff members by providing discussion forums, chat rooms, and online communities for faculty members.

7. LIMITATION OF THE STUDY AND FUTURE DIRECTIONS

This study has some limitations that should be acknowledged. Firstly, it relied solely on self-reported data from instructors, which introduces a potential bias and limits the ability to make accurate predictions about their actual performance. Research has demonstrated that there can be a discrepancy between individuals' perceptions of their abilities and their actual abilities (Bradlow, Hoch, & Hutchinson, 2002; Litt, 2013). Therefore, the readiness levels reported in this study may not fully reflect the instructors' true performance levels. Secondly, the study focused primarily on measuring readiness in terms of technical skills, attitude, perceived top management support, infrastructure, technology usage, and access. While these factors are important, they do not provide a comprehensive view of instructors' readiness or the overall preparedness of the organization. Future studies should consider incorporating additional components to provide a more holistic understanding of instructors' readiness for e-learning and the extent to which the organization supports and facilitates effective implementation.

It is important to recognize these limitations as they provide opportunities for future research to address these gaps and further enhance our understanding of instructors' readiness for e-learning in the context of higher education.

Availability of Data and Materials

The Survey responses from the 394 participants are accessible in Excel and SPSS V.16 software and can be shared upon reasonable request.

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