ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES
SCHOOL OF INFORMATION SCIENCE

Assessing Readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers and Students Perspective

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A Thesis Submitted to School of Graduate Studies of Addis Ababa University in Partial Fulfilment of the Requirements for the Degree of Master of Science in Information Science and Systems (Information Science Specialization)

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Declaration

This thesis has not previously been accepted for any degree and is not being concurrently submitted in candidature for any degree in any university. I declare that this thesis entitled "***Assessing Readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers and Students Perspective***" this research is the outcome of my own investigation. I conducted the research on my own, with the encouragement and assistance of my research advisor. Other sources are accepted by citations that include clear references. A list of references is included at the end.

Signature: _____

Fanuel Zegeye

This thesis has been submitted for examination with my approval as university advisor.

Signature: _____

Temtim Assefa (Ph.D)

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Abstract

As the importance of e-learning for higher educational institutions grows, assessing the readiness of these institutions is crucial. The general objective of this study is to evaluate the e-learning readiness of five Ethiopian Public Resource Center (Cluster Lead) Universities from the perspectives of both teachers and students. Utilizing a descriptive research design, the study gathered information on the level of e-learning readiness through random and purposive sampling to ensure a representative subset from various departments and levels of experience. A total of 350 combined online and printed questionnaires were distributed to teachers and students, with 328 returned, yielding a response rate of 93.71%. The findings indicated that instructors showed greater readiness than students in areas such as technology, individual, and organizational e-learning readiness aspects necessary for successful implementation. While students demonstrated some readiness in individual technological skills essential for effective e-learning, they were not prepared in other critical readiness factors. Several areas were identified as lacking readiness and requiring additional improvement. In conclusion, despite some encouraging readiness factors that support the implementation of e-learning, significant challenges remain. This thesis recommends that the management of the five Ethiopian Public Resource Center (Cluster Lead) Universities actively enhance the areas that are ready but need improvement, as well as address those that are not prepared and require more attention. Additionally, it is crucial for the government to prioritize e-learning readiness to address the challenges encountered in this domain.

Keywords: Readiness, E-Learning, Higher Education and Resource Center

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List of Acronyms

HEI ---------- Higher Education Institution

ICT---------- Information Communication Technology

E-Learning---------- Electronic Learning

ELR ---------- Electronic Learning Readiness

LMS---------- Learning Management System

SPSS---------- Statistical Package for Social Sciences

DOI ---------- Diffusion of Innovations

Chapter One

1.1 Background of the Study

Academic institutions are integrating new information systems into their teaching, research and administrative operations to take advantage of new technologies. Higher education institutions are introducing e-learning in different modes to provide a combination of face-to-face learning, online learning, self-paced e-learning and adaptive learning. (Aguti, 2015). To successfully achieve the goals of an academic institution and compete with other similar institutions, it seems essential to use ICT (such as e-learning systems) in the daily work of an academic institution.

The use of technology in learning is called electronic learning (e-learning) and includes a wide range of applications and processes designed to deliver instruction electronically. E-learning signals a paradigm shift in education and its significant impact on education cannot be underestimated. (Voogt & Knezek, 2008) argue that e-learning is strategically important and an effective method that should be integrated into the school learning mix.

Given the rapid development of technology, teachers and students must be equipped with the technical skills to cope with the e-learning environment. These skills are best acquired by learning with technology, rather than learning about technology (Broadley, 2012). Learning with technology not only requires technical skills, but technology users also need to have the desire to use technology as a medium for learning and teaching.

The implementation of e-learning requires physical infrastructure, technical expertise, and psychological readiness. E-learning platforms can only be managed and used by those with a certain level of technical skills. According to (Broadley, 2012), in addition to teachers' ICT skills, teachers' perceptions and attitudes towards e-learning also play an important role in the implementation of e-learning. However, for some students and teachers, e-learning is too casual and foreign, and some teachers feel that technology takes away a lot of control (Mansour & Mupinga, 2007).

Therefore, to determine the level of readiness for e-learning, users' technical skills and perceptions towards technology must be investigated. To implement e-learning, an institution must achieve a certain level of physical infrastructure development, while e-learning users must have the necessary technical competencies and a positive attitude and perception towards e-learning.

To reap the benefits of e-learning, an analysis must be performed to assess the institution's readiness for future e-learning implementation (Aydın & Tasci, 2005). The implementation of e-learning in any institution can be achieved using one of three approaches: the use of technology to support or complement traditional face-to-face courses, the integration of online activities into traditional courses to enhance the learning experience, and the course being conducted entirely online (Karim & Hashim, 2004).

The implementation approach that an institution chooses depends on its budget, infrastructure, and the level of readiness of its human resources, such as experience, skills, knowledge, and attitudes (Karim & Hashim, 2004). Borotis and Poulymenakou (2008) defined e-learning readiness as "the mental or physical preparedness of an organization for some e-learning experience or action". Assessing e-learning readiness can help an organization develop a comprehensive e-learning strategy and effectively execute ICT objectives (Kaur & Abas, 2004). Also, learners need to be e-enabled to implement a consistent and actionable strategy tailored to their needs.

E-learning readiness assessment provides important information to organizations who want to provide e-learning solutions that can meet the specific needs of each learning group (McConnell, 2008). Olatokun and Opesade (2008) suggested that the parameters to be considered when assessing an institution's e-readiness are infrastructure availability, access to infrastructure, human resource availability, and policy and regulatory framework.

Tubaishat and Lansari (2011) identified the key elements of e-learning readiness as technology, use of the Internet, a general understanding of e-learning and the culture of the educational institution.

Measuring and assessing an academic institution's e-learning readiness should be a top priority before implementing and investing in digital technologies. Furthermore, identifying these factors as determinants of e-learning readiness is essential for successful implementation of e-learning as a platform in the learning environment. To achieve maximum success in implementing e-learning

in academic institutions, the level of e-learning readiness must be assessed and understood (Rohayani, 2015). Hence, academic institutions need to have a clear and comprehensive understanding of their e-learning readiness level before implementation.

The adoption of e-learning in academic institutions follows one of three approaches: The first approach uses e-learning technologies to enhance or complement traditional face-to-face courses. The second approach involves creating fully online courses that provide a flexible learning environment, allowing students to access materials and participate in discussions at their own pace. This approach can cater to diverse learning styles and schedules, promoting greater accessibility. The third approach integrates e-learning technologies into blended learning environments, combining online and in-person instruction to create a more dynamic educational experience. However, e-learning can be disruptive and intrusive to the learning environment if not implemented with proper advance planning and management. Assessing an institution's current readiness for technological innovations can help minimize the risk of failure post-implementation (Demiris et al., 2004).

In terms of experience, knowledge, skills, awareness and attitudes. (Rais et al., 2004) An e-health readiness assessment framework for public health services–pandemic perspective. More specifically, the adoption of e-learning highly requires physical infrastructure preparation, technical expertise, psychological motivation, and cultural change, and management support and commitment McColl et al., (2001).

Managing and administering an e-learning platform requires individuals with a certain level of psychological motivation and technical skills (Borotis & Poulymenakou, 2008). E-learning refers to learning that is primarily made possible through electronic media such as the Internet. Ouma et al., (2013), with reference to the European Commission (2001), explained that e-learning uses the Internet and state-of-the-art multimedia technologies to improve the quality of learning by making it easily accessible; improving services and facilities. E-learning has been proven to be able to improve collaboration between educators, administrators and learners in academic institutions (Ouma et al., (2013).

An e-learning system involves a systematic process of planning, designing, evaluating and implementing an eLearning environment where learning is actively encouraged and supported. Implementing a learning-focused system requires that all stakeholders, including teachers, support

staff and educational institutions, are prepared to provide learners with the most meaningful learning environment possible, supported by well-designed learning materials. For e-learning to be successful, there is an urgent need for a comprehensive understanding of the issues surrounding the various aspects of e-learning and the needs, skills, interests and motivations of all key stakeholders, including teachers and students (Chapnick, 2005; Morrison, 2003).

Although many organizations are inclined to embrace e-learning technology and reap its benefits, many are hesitant due to the investment required and the high failure rate. Hence, there is a need to ascertain how ready an organization is to adopt the technology. The assessment should be done from various perspectives like organization, technology infrastructure, attitude etc.

E-learning readiness is a key factor that influences the success of e-learning technology adoption, but organizational culture plays a key role in the successful adoption of technology (Lea, 2003). According to Kinuthia (2007), culture influences employees' acceptance of the learning process, and a common barrier in educational institutions is users' willingness to use information technology for learning (Micheni, 2015). Similarly, Arkorful and Abaidoo (2015) defined e-learning readiness as "the mental or physical readiness of an academic institution for e-learning experiences or actions. Therefore, the mental and physical readiness of an academic institution for the use of e-learning should be assessed before the implementation and implementation of e-learning.

Measuring the extent of e-learning implementation readiness in higher education institutions needs clear understanding of the key e-learning platform and their interactions. The main e-learning implementation components that need to be examined are the people in the organization and the organization itself. Among the people component, the teachers are the ones whose preparedness to accept and use e-learning should be measured. Anderson, (2008).Moreover, the organization’s infrastructure, technology, policy, culture and top management readiness to use e-learning systems should also be evaluated. The following framework shows the different levels of readiness cut points in an e-learning environment (Aydin & Tasci, 2005)

Various e-learning initiatives are available to help higher education institutions with their online training and education needs. Overall, LMS platforms offer higher educational institutions a robust infrastructure for delivering quality e-learning experiences, promoting student engagement, and facilitating effective teaching and learning outcomes.

There is a knowledge gap regarding the readiness of e-learning in all public universities in general and five resource center universities in particular motivate me to conduct this research work. Thus, this study will assess the Technological, Organizational and Environmental readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers and Students Perspective

1.2 Problem Statement

E-learning can be disruptive and intrusive to the learning environment if not implemented with proper planning and management in advance (Demiris et al., 2004). Assessing your organization's readiness for current technological innovations can help minimize the risk of post-implementation failure, (Demiris et al., 2004).

Therefore, assessing e-learning readiness before implementation can save money, time, and energy by identifying barriers that limit the implementation process and communities that cannot support it (Jennett et al., 2005; Weiner & Lee, 2008).

Among the various studies on e-learning readiness, the study measuring e-learning readiness considered five factors: motivation, self-competence, economics, self-directed learning, and usefulness (Alem et al., 2016). Similarly, a study conducted in Malaysia looked at the readiness of students, lecturers, technology, and the environment for e-learning implementation, with a special focus on technological readiness, which is the most important factor for e-learning implementation (Mosa et al., 2016).

While both studies aim to evaluate the readiness for e-learning, which is crucial for successful implementation in higher education institutions, Alem et al. (2016) focus on a set of individual and economic factors like motivation, self-competence, economics, self-directed learning, and usefulness, whereas Mosa et al. (2016) provides a more comprehensive evaluation looks at the readiness of students, lecturers, technology, and the environment, with a special emphasis on technological readiness to the Malaysian context.

The study by Ngampornchai et al. (2016) delves into what makes students in Northeast Thailand ready for e-learning and how they accept it. It highlights that several key factors influence this readiness, such as the quality of technological infrastructure, internet access, and students'

technical skills. The effectiveness of e-learning largely depends on how available and reliable the technology and internet are. Additionally, the study points out that student readiness is significantly impacted by the level of support and training provided by instructors. For e-learning to be successful, higher educational institutions play a vital role. They need to invest in the necessary technology, offer training for both students and faculty, and create an environment that supports e-learning (Ngampornchai et al., 2016).

Moreover, many other studies have shown that organizational and teacher readiness is one of the most important e-learning readiness factors that affect the success of the implementation (Schreurs et al., 2008).

From the perspective of infrastructure, policies and culture (Weiner and Lee, 2008), the ability of students, teachers and university management to utilize e-learning systems depends on their technical capabilities, awareness and attitude towards the use of new information and communication technologies (Ouma et al., 2013; Darab & Montazer, 2011). E-learning is used in various areas of higher education like curriculum design, curriculum implementation, course material development, assessment and evaluation etc. It helps teachers in every way to convey and share content and maintain proper communication between learners; teachers as well as the outside world. According to these experts, implementing e-learning without careful planning is likely to lead to cost overruns, an unattractive training product, and failure. Therefore, one of the most important tasks prior to any e-learning initiative is to conduct a comprehensive assessment of organizational and individual readiness factors (Hattangdi & Ghosh, 2008).

In the context of higher education in Ethiopia, the implementation of e-learning faces several challenges. These challenges include limited infrastructure and access to technology, inadequate internet connectivity and disparities in digital literacy among students and faculty, and the need for localized content that aligns with the cultural and linguistic diversity of the Ethiopian context (Nuredin, 2019). Additionally, financial constraints and insufficient institutional support for e-learning initiatives pose significant barriers to its widespread adoption and effectiveness in Ethiopian higher education institutions. Addressing these challenges requires comprehensive strategies that encompass infrastructure development, capacity building, curriculum adaptation, and policy reforms to ensure equitable access and quality in e-learning delivery.

The main challenge in eLearning in Ethiopian Public Universities is a lack of understanding of eLearning. Information technology (IT) should be developed as much as possible in carrying out eLearning. Viewed from educational institutions, educational institutions are still not ready to adopt an eLearning system because in each public university the usage of eLearning is very low. Various reports indicate that eLearning is quite limited in Ethiopian public universities due to several key challenges. These include inadequate infrastructure, insufficient IT skills among students and staff, and a lack of training and support. Additionally, there is often a deficiency in organizational culture and support from top management, which further hampers the implementation and effectiveness of eLearning initiatives. A common obstacle in educational institutions is the readiness of users to utilize information technology in learning (Micheni, 2015). The obstacles can be the internet network, lacking IT Skills, the absence of digital libraries, and unavailable technology infrastructure. Obstacles in adopting learning systems needs are barriers in IT-related issues, such as the preparedness of the educational institutions and students (Bowen et al., 2012; Jordan & Mitchell, 2015; Mukred et al., 2019; Panigrahi et al., 2018).

This study aims to analyze the barriers in adopting eLearning; based on technological, individual, and organizational factor. This is therefore, this study will attempt to investigate readiness of E-Learning in five Ethiopian Resource Center (cluster Lead) universities from teachers and students perspective.

1.3 Research Questions

The main research question is to explore factors that influence organizational readiness for eLearning adoption in Ethiopian higher institutions

The specific research questions are:

1. What is the status of technological infrastructure for assessing readiness for e-learning implementation?
2. What factors measure organizational readiness for e-learning?
3. What is the level of individual technological skills for implementing e-learning?

1.4 Objectives of the Study

1.4.1 General Objective

The general objective of the study is to assess the readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers' and Students' Perspectives.

1.4.2 Specific Objectives

Specific objectives of the study will be the following:

1. What is the status of technological infrastructure for assessing readiness for e-learning implementation?
2. What factors measure organizational readiness for e-learning?
3. What is the level of individual technological skills for implementing e-learning?

1.5 Significance of the Study

Fundamentally, research is an important tool for decision-making. If decisions at various organizational levels are not supported by proper research and evaluation, their practicality and applicability may not be realistic and effective or may lead to incorrect decisions. Therefore, it is strongly believed that this research activity is essential and contributes significantly to:

- ✓ The study reports the results of an e-learning readiness assessment that will be intended to assess level of technological infrastructure, To investigate the factors that measure organizational readiness and To analyze the level of organizational maturity for adopting e-learning for e-learning implementation on organizational and individual factors of the two major stakeholder groups (teachers and students) in the five Resource Center (Cluster Lead) Universities of Ethiopia.
- ✓ The study will identify some factors at the initial stage of e-learning introduction that can have tremendous impact on the later stages of the process.
- ✓ The finding of the study has become an instrumental for developing successful e-learning strategies for the sample cluster universities in Ethiopia and also will benefit e-learning initiatives in similar institutions in other public universities across regions.

- ✓ The information which will be gathered and analysed in the process of this study provides empirical findings on readiness of E-Learning in contributing to a better understanding of the real identity, purpose and duties of public universities in Ethiopia in Ethiopia in general and five Resource Centre (Cluster Lead) universities in particular.
- ✓ Finally, the study could also be used as a reference for further studies to be undertaken in the future.

1.6 Scope of the Study

The researcher has found that it is very important to delimit the scope of the study to a manageable size in order to investigate the issue thoroughly. The research will be conducted only in five Resource Center (Cluster Lead) public universities in Ethiopia for the sake of in-depth analysis with genuine investigation on the sample size.

Secondly, it is impossible and difficult to research the readiness of E-Learning in All public universities in Ethiopia from Teachers' and Students' perspectives within such a short period together with limited financial resources owned by student researcher.

1.7 Organization of the Study

This research paper will be organized in different components or categories and contains five basic chapters.

Chapter One

Contains background of the study, statement of the problem, basic research questions and objectives of the study, definition of terms, and significance of the study and delimitation/scope of the study.

Chapter Two

Consists review of related literature deals with previous studies and literatures relevant to the study and it also includes theoretical and the conceptual framework adapted from previous studies.

Chapter Three

Presents methods of the study contains, the type and design of the research paper, analysis of participants of the study, the sources of the data, the data collection tools or instruments employed, the procedures of data collection and the methods of data analysis will be.

Chapter Four

Depicts analysis and presentation section summarizes the results or findings of the study and it also interprets and discusses the findings by extensive use of the literature review and finally,

Chapter Five

Presents the summary of findings, conclusions, and possible recommendations will be described precisely.

Chapter Two

2. Literature Review

2.1. Introduction

The literature review examines deeply into the current research on e-learning readiness in higher education institutions. It traces how academic views have evolved regarding how colleges and universities prepare for and implement e-learning, focusing on key areas like technological infrastructure, faculty readiness, and student engagement. By reviewing significant studies and theoretical approaches, the review sheds light on both the achievements and hurdles faced in creating effective e-learning environments. It also identifies gaps in the existing research, such as differences in readiness among various institutions or regions, and situates these findings within larger trends in educational technology. This review not only positions the research within the broader academic conversation but also emphasizes why e-learning readiness is crucial for the successful implementation of digital education strategies. Ultimately, it lays the groundwork for further research aimed at improving e-learning readiness and its impact on educational outcomes.

2.2. Education's Role in Country Development

Education plays a pivotal role in fostering national development by equipping individuals with the skills and knowledge necessary for economic growth and social advancement. A well-educated workforce is essential for innovation, productivity, and competitiveness in the global market. According to Schultz (1961), investment in human capital, through education and training, directly contributes to economic development by enhancing individual capabilities and increasing overall productivity. As nations invest in education, they not only improve the immediate prospects of their citizens but also lay the foundation for long-term economic stability and growth. Countries with higher educational attainment levels tend to experience more rapid economic development, as educated populations are better positioned to drive technological advancements and entrepreneurial activities (Becker, 1993).

Moreover, education impacts country's development by fostering social cohesion and promoting democratic governance. An educated populace is better equipped to participate in civic activities and make informed decisions that contribute to effective governance and societal well-being. As noted by Sen (1999), education enhances individuals' capabilities, leading to greater political stability and social equity. Countries with strong educational systems often exhibit lower levels of inequality and better health outcomes, reflecting the broad benefits of education beyond mere economic metrics. Thus, the relationship between education and country development is multifaceted, involving economic, social, and political dimensions that collectively drive progress and improve quality of life (Psacharopoulos & Patrinos, 2004).

2.3. Learning

Learning is an ongoing process that takes place as knowledge is consumed, regardless of the place and time. Thus, learning does not have to be a formal instructional course; many can learn without attending courses. Learners prefer to share experiences rather than constantly sit in a classroom. British Prime Minister Winston Churchill once said, “I am always ready to learn, although I do not always like being taught” (Waller, 2005). In a globalized and knowledge-based information society, every community is trying to transform itself into an information society. Advancement of information technology has great potential for education and training. Academic institutions, corporations, and government agencies worldwide are increasingly using the Internet and digital technologies to deliver instruction and training.

Educational methods refer to various approaches and techniques used to facilitate learning and teaching. Here are some widely recognized types of educational methods:

Traditional Lecture-Based Learning

Traditional lecture-based learning is a conventional educational method where instructors deliver content through verbal presentations in a structured format. This method is commonly used in many educational settings, from primary schools to universities. The lecture typically involves a teacher presenting information to a group of students, often supplemented by visual aids like slides or whiteboards. This approach is efficient for covering a large amount of material in a relatively short period and can be particularly effective for delivering factual knowledge and theoretical concepts (Biggs & Tang, 2011). However, it often results in passive learning, where students may

engage less actively with the material, leading to potential issues with retention and application (Freeman et al., 2014).

Project-Based Learning (PBL)

Project-Based Learning (PBL) is an instructional method that centers on students working on a project over an extended period. This method emphasizes student engagement through hands-on, real-world challenges that require critical thinking and problem-solving. In PBL, students collaborate on projects that involve complex questions or problems, such as designing a sustainable solution for a local issue or developing a marketing strategy for a new product. This approach fosters deeper learning and allows students to apply their knowledge in practical contexts (Thomas, 2000). Research has shown that PBL not only enhances student motivation but also improves understanding and retention by making learning more relevant and interactive (Bell, 2010).

Flipped Classroom

The flipped classroom is a modern pedagogical approach that inverts traditional teaching methods. In this model, instructional content is delivered outside the classroom through online videos or readings, allowing class time to be used for interactive activities such as discussions, problem-solving, and hands-on exercises. This method shifts the focus from passive reception of information to active engagement with the material during class. The flipped classroom model aims to enhance the effectiveness of face-to-face interactions and provides opportunities for personalized learning and immediate feedback (Bergmann & Sams, 2012). Studies have indicated that the flipped classroom can lead to improved student outcomes and higher levels of satisfaction when well implemented (O'Flaherty & Phillips, 2015).

Experiential Learning

Experiential learning is an educational approach that emphasizes learning through experience and reflection. This method involves students actively participating in activities that simulate real-world experiences, followed by reflection and analysis to deepen understanding. Experiential learning can take various forms, including internships, field trips, simulations, and role-playing.

By engaging students in practical, hands-on experiences, this method promotes active learning and helps bridge the gap between theoretical knowledge and practical application (Kolb, 1984). Research supports that experiential learning enhances skills such as critical thinking, problem-solving, and decision-making by providing students with opportunities to apply their knowledge in realistic settings (Smith & Boyer, 1996).

2.4. E-learning

E-learning is one of the educational processes developed with the help of ICT. The general concept includes teaching in a modern way using electronic resources such as computers, mobile phones and the Internet. Lessons can take place outside the classroom, but e-learning allows learners and teachers to do so anywhere, anytime.

There are two types of e-learning methods: Asynchronous e-learning is a learner might be able to teach themselves, the learners taking the course on their own; asynchronous learning environment encourages self-directed learning and accommodates diverse learning styles, as learners have the freedom to explore materials at their own pace and depth (Ozkul & McLoughlin, 2010). This can lead to greater learner satisfaction and engagement (Ozkul & McLoughlin, 2010) Synchronous e-learning it's more likely referred to as live online training or virtual classroom training. Synchronous e-learning fosters immediacy and interactivity, allowing for dynamic discussions, real-time feedback, and collaborative activities (Dixson, 2010). This can enhance social presence and create a sense of community among learners, leading to increased motivation and engagement (Dixson, 2010). As mentioned above the e-learning can be taken anywhere and e-learning can be taken anywhere and anytime so it reduces its time away from the traditional classroom.

In developing countries like Ethiopia, e-learning may face many economic, technological and social factors. The willingness of students, teachers, school administrators and government plays a key role in finding solutions to these problems. E-learning has multiple definitions by multiple authors and no single definition. Clark et al. (2003) defined e-learning as computer-based training designed to support individual learning or organizational performance goals.

An e-learning system is a type of open distance education or web-based learning designed to enable teaching and learning using electronic communication. For the e-learning concept to be as

effective as traditional classroom teaching and learning, the teaching methods must be embedded in the interaction between students and teachers in a proper and well-organized manner.

The quality of eLearning design is useful to deliver the quality of teaching and learning effectively and efficiently.

2.4.1 Types of E-learning

E-learning encompasses various approaches and formats tailored to different learning needs and preferences. One common classification distinguishes between synchronous and asynchronous e-learning. Synchronous e-learning refers to real-time interactions between instructors and learners, often facilitated through video conferencing, live webinars, or virtual classrooms. In contrast, asynchronous e-learning allows learners to access educational materials at their own pace, with communication and Interactions occurring periodically through discussion forums, emails, or recorded lectures highlight the significance of flexibility and convenience in catering to various learning schedules and preferences (Anderson & Dron, 2011; Garrison & Vaughan, 2013). This classification reflects the evolving nature of e-learning environments that adapt to diverse learner needs.

Another classification categorizes e-learning based on the level of interactivity and engagement. Passive e-learning involves the delivery of content through static materials such as text-based documents or pre-recorded videos, with limited opportunities for interaction or engagement. Active e-learning, on the other hand, encourages learners to actively participate in the learning process through interactive exercises, simulations, and multimedia elements (Clark and Mayer, 2016). This distinction underscores the importance of engaging learners through interactive experiences that promote deeper understanding and retention of information.

Furthermore, e-learning can be classified based on the delivery platform or technology used. For instance, mobile learning (m-learning) leverages mobile devices such as smartphones and tablets to deliver educational content anytime, anywhere, catering to learners' on-the-go lifestyles (Sharples et al., 2014). Blended learning combines traditional face-to-face instruction with online components, providing a hybrid learning experience that combines the benefits of both modalities (Garrison & Kanuka, 2004). These classifications reflect the evolving landscape of e-learning

technologies and platforms, offering educators and learners a wide range of options to suit their unique needs and preferences.

2.4.2. Advantages of E-learning

It is important to briefly discuss the main advantages of e-learning in order to provide a context to explain why e-learning is so important in the development of the learning process and why it provides a more efficient learning environment compared to traditional learning experiences (Mosa et al., 2016). E-learning offers many benefits to educational stakeholders, especially students and teachers, in the learning environment. These include easier access to information, improved content delivery, personalized instruction, and standardization of content, accountability, on-demand availability, empowerment, interactivity, reliability, and increased convenience. E-learning reduces costs, allows for consistent content delivery, and improves tracking. The benefits of e-learning are:

E-learning not only offers cost savings, student-centered learning, and access to global educational resources but also provides effective delivery mechanisms and fosters interactive communication, thereby enhancing the learning experience. Effective delivery is facilitated through the integration of various instructional methods and multimedia elements, ensuring that content is presented in a clear, engaging manner. According to research by Clark and Mayer (2016), effective e-learning delivery involves the judicious use of multimedia, such as graphics, animations, and audio, to cater to diverse learning styles and enhance knowledge retention. By incorporating interactive quizzes, simulations, and activities, e-learning platforms encourage active participation and engagement, leading to deeper understanding and mastery of the subject matter (Bates & Sangrà, 2011). Additionally, e-learning allows for asynchronous communication, enabling learners to interact with instructors and peers at their own convenience, fostering collaboration and knowledge sharing (Garrison & Anderson, 2003).

Moreover, the advantage of interactivity in e-learning promotes learner engagement and facilitates active learning. Through interactive features such as drag-and-drop exercises, clickable hotspots, and branching scenarios, learners are actively involved in the learning process, which can lead to higher levels of motivation and satisfaction (Mayer, 2009). Interactive e-learning activities provide

immediate feedback, allowing learners to assess their understanding and identify areas for improvement (Ally, 2004). Furthermore, e-learning platforms often incorporate social learning tools, such as discussion forums and collaborative projects, which facilitate peer interaction and knowledge exchange, promoting a sense of community among learners (Palloff & Pratt, 2013).

Additionally, e-learning offers a communication advantage by transcending geographical boundaries and enabling collaboration among learners from diverse backgrounds. Through synchronous and asynchronous communication tools, such as video conferencing, chat rooms, and email, learners can engage in meaningful discussions and collaborative activities regardless of their physical location (Garrison & Anderson, 2003). This global reach enhances cultural awareness and encourages the exchange of ideas and perspectives, enriching the learning experience for all participants (Means et al., 2009). By leveraging the communication capabilities of e-learning platforms, educators can facilitate effective knowledge sharing and collaboration, preparing learners for success in an increasingly interconnected world.

2.5. Components of E-learning System

E-learning implementation will be successful if all the variables necessary to achieve the learning objectives are considered. Good technical design does not guarantee successful e-learning implementation (McKinney et al., 2009). Students and teachers need to understand the benefits of e-learning. They also need to acquire the necessary knowledge and skills to work in an e-learning environment. In the next section, we will discuss the different components required for the development of an e-learning system.

2.5.1. Learners' Characteristics

Bhuasiri et al. (2012) identified several characteristics of e-learning learners based on their comprehensive study. Firstly, they noted that e-learning learners tend to be self-motivated and autonomous, as the nature of eLearning requires individuals to take responsibility for their learning progress and schedule. This aligns with the findings of other researchers such as Garrison and Kanuka (2004), who highlighted the importance of self-directedness in eLearning environments. Additionally, Bhuasiri et al. (2012) observed that e-learning learners often possess a high level of digital literacy and comfort with technology, allowing them to navigate online platforms and tools

effectively. This finding is consistent with the research of Clark and Mayer (2016), who emphasized the role of technological proficiency in facilitating successful e-learning experiences.

Moreover, Bhuasiri et al. (2012) identified the importance of learner interaction and collaboration in e-learning environments. They found that e-learning learners value opportunities for peer interaction and knowledge sharing, which can foster a sense of community and enhance the learning experience. This aligns with the social constructivist perspective of learning, which emphasizes the importance of social interaction in knowledge construction (Palloff & Pratt, 2013). Furthermore, Bhuasiri et al. (2012) noted that e-learning learners often exhibit a preference for flexibility and convenience, appreciating the ability to access educational materials and resources at their own pace and schedule. This finding is supported by the research of Sharples et al. (2014), who highlighted the importance of mobile learning in catering to learners' on-the-go lifestyles and preferences for anytime, anywhere access to learning materials.

2.5.2. Instructors' Characteristics

Recent studies have explored the characteristics of effective e-learning instructors, highlighting the essential qualities and skills needed for successful online teaching. For instance, Huang and Liaw (2018) emphasize the significance of instructional design expertise among e-learning educators. Their research indicates that instructors should have a solid grasp of instructional design principles to create engaging and effective online courses. This encompasses the ability to organize content logically, design interactive activities, and integrate multimedia elements to enrich the learning experience. This assertion aligns with the research of Clark and Mayer (2016), who emphasized the role of instructional design in optimizing e-learning outcomes. Moreover, recent research has underscored the importance of communication skills in e-learning instruction. For instance, Anderson and Garrison (2019) emphasize that effective e-learning instructors must possess strong communication abilities to clearly convey complex concepts and foster meaningful interactions with students. Their findings indicate that this proficiency encompasses not only written communication through discussion forums and emails but also verbal communication during synchronous online sessions, facilitating a more engaging and interactive learning environment. Palloff and Pratt (2013) supported this assertion, emphasizing the critical role of

online instructors in creating a supportive learning environment and fostering effective communication and collaboration among learners.

Moreover, Webster and Hackley (1997) underscored the significance of technological proficiency among e-learning instructors. They found that e-learning instructors must be comfortable with various technology tools and platforms used in online education, including learning management systems, multimedia authoring software, and communication tools. This aligns with the research of Bates and Sangrà (2011), who highlighted the importance of technological readiness among educators in effectively integrating technology into teaching and learning practices. Additionally, Webster and Hackley (1997) emphasized the need for flexibility and adaptability among e-learning instructors. They found that e-learning instructors must be able to adapt quickly to changes in technology and instructional methods, as well as accommodate diverse learner needs and preferences. This aligns with the research of Garrison and Anderson (2003), who emphasized the importance of flexibility and responsiveness in online teaching to create dynamic and engaging learning experiences.

2.5.3. Organizational Characteristics

Diallo and Thu (2013) delved into the organizational characteristics that influence the implementation and success of e-learning initiatives. Firstly, they underscored the importance of leadership support and organizational culture in fostering a conducive environment for e-learning adoption. Their research indicated that organizations with strong leadership support for e-learning initiatives tend to allocate sufficient resources, provide necessary training and support, and prioritize e-learning as a strategic priority. This finding aligns with the research of Bates and Sangrà (2011), who highlighted the crucial role of leadership in driving organizational change and promoting the integration of technology into teaching and learning practices. Moreover, Diallo and Thu (2013) emphasized the significance of organizational culture in shaping attitudes and behaviors towards e-learning. They found that organizations with a culture that values innovation, collaboration, and continuous learning are more likely to embrace e-learning and foster a supportive environment for its implementation. This aligns with the research of Garrison and Kanuka (2004), who emphasized the importance of organizational culture in facilitating the adoption and success of eLearning initiatives.

Furthermore, Diallo and Thu (2013) highlighted the importance of infrastructure and technological readiness in supporting e-learning initiatives within organizations. Their research indicated that organizations with robust technological infrastructure, including reliable internet connectivity, adequate hardware and software resources, and secure data management systems, are better equipped to implement and sustain e-learning programs. This finding is consistent with the research of Ally (2004), who emphasized the importance of technological readiness in ensuring the effectiveness and scalability of e-learning initiatives. Additionally, Diallo and Thu (2013) underscored the significance of organizational capacity building and change management in navigating the complexities of e-learning implementation. They found that organizations that invest in training and professional development for staff, establish clear policies and procedures for e-learning adoption, and provide ongoing support and guidance tend to experience greater success in integrating e-learning into their operations. This aligns with the research of Palloff and Pratt (2013), who emphasized the importance of organizational support and capacity building in facilitating the transition to eLearning environments.

2.6. The adoption of E-learning

E-learning adoption refers to the process by which educational institutions, organizations, or individuals integrate electronic technologies into their learning processes, embracing digital platforms and tools to facilitate teaching and learning. According to Bates and Sangrà (2011), e-learning adoption involves not only the incorporation of technology but also the strategic alignment of pedagogical practices and instructional design to maximize learning outcomes. It signifies a comprehensive shift towards digital learning environments, where technology serves as an integral component of the educational ecosystem. This adoption often involves changes in instructional delivery methods, curriculum design, and assessment strategies to leverage the affordances of technology in enhancing educational experiences. Ultimately, e-learning adoption aims to harness the potential of digital technologies to improve accessibility, flexibility, and effectiveness in delivering educational content to diverse learners.

The first step in starting an e-learning program is usually to understand and convince others of its advantages. Since e-learning can be taken anywhere and anytime its cost-effectiveness and time usability increases access as primary advantages. In the adaption of e-learning, some technical

skills such as platform skills; communication skills via computer technologies, authoring, HTML, and web-research skills are required for both the learners and the teachers W. Farhan, J. Razmak, et al., (2019) The researchers found that the e-learning tools have affected the students 'results. The belief of the e-learning tool may harm students who will depend on given materials was disproved. By the data collected from 15 documents from relevant research studies conducted on the effect of ICT-based e-learning on academic achievement examined the relationship between e-learning and students' academic achievement in higher education. There searcher found that ICT had a statistically significant positive influence on e-learning based students 'academic achievements. The results also indicated that ICT had a significant positive influence on students 'educational overall academic achievements.

The multidimensional nature of e-learning adoption, considering factors such as individual perceptions, organizational support, technological infrastructure, and cultural context. Understanding these factors is essential for designing effective strategies to promote the adoption and utilization of e-learning technologies.

E-learning adoption can be considered to have occurred when educational institutions, organizations, or individuals effectively integrate electronic technologies into their learning processes to enhance teaching and learning experiences. This integration entails the widespread use of digital platforms, resources, and tools to deliver educational content remotely, often complementing or supplementing traditional classroom instruction. According to research by Inan and Lowther (2010), e-learning adoption signifies a comprehensive shift towards digital learning environments, where technology is not just an accessory but an integral component of the educational ecosystem. Moreover, the study conducted by Means et al. (2009) emphasizes that successful e-learning adoption involves the alignment of technology with pedagogical practices and instructional design principles, ensuring that digital tools are utilized to support and enhance learning outcomes effectively.

E-learning adoption is also marked by the recognition and utilization of its potential benefits, such as increased accessibility, flexibility, and efficiency in delivering educational content. Institutions and educators acknowledge the transformative impact of e-learning on traditional educational paradigms, leading to the widespread acceptance and integration of digital technologies into teaching and learning processes. As noted by the research of Bates and Sangrà (2011), e-learning

adoption signifies a paradigm shift towards learner-centered approaches, where the focus is on personalized learning experiences tailored to individual needs and preferences. This shift reflects a broader acknowledgment of the evolving educational landscape and the importance of leveraging technology to meet the diverse needs of learners in the digital age.

2.7. E-Learning Readiness

E-learning readiness refers to the preparedness of Technological, individuals, institutions, or organizations to effectively adopt and implement e-learning initiatives. It encompasses a range of factors, including technological infrastructure, digital literacy, pedagogical expertise, organizational support, organizational culture and learner motivation. As defined by Bates and Sangrà (2011), e-learning readiness involves the alignment of technological, individual pedagogical, and organizational dimensions to create an enabling environment for eLearning. This readiness is crucial for ensuring that e-learning initiatives are successfully integrated into educational practices and that learners can fully engage with digital learning environments to achieve their learning goals.

E-learning readiness is a multifaceted concept that includes several dimensions crucial for the successful implementation and adoption of digital learning initiatives. According to research, these dimensions typically encompass technological readiness, individual readiness, and organizational readiness. Technological readiness involves the availability and adequacy of technological infrastructure, including hardware, software, and internet connectivity, necessary for e-learning (Bates & Sangrà, 2011). It also covers the reliability of these technologies and their integration into the learning environment. Individual readiness refers to learners' and educators' digital literacy, technological skills, and attitudes toward e-learning. This dimension is vital as it influences how effectively users can engage with and utilize e-learning tools and platforms (Ally, 2008). Organizational readiness includes factors such as institutional support, organizational culture, and administrative processes that support the integration of e-learning into existing practices (Hanna, 2013). This dimension ensures that there are adequate resources, policies, and a supportive environment for the successful adoption of e-learning.

In addition to these core dimensions, research highlights the importance of measuring other specific aspects within each dimension. For instance, the effectiveness of e-learning initiatives can

be significantly impacted by the quality of instructional design and pedagogical support (Garrison & Vaughan, 2008). Organizational culture and leadership play a critical role in shaping attitudes toward e-learning and ensuring adequate resources and support (Zhao, 2003). Furthermore, learner motivation and engagement are crucial for the successful adoption of e-learning, as they directly impact participation and completion rates (Tammelin, 2008). Thus, a comprehensive evaluation of e-learning readiness should include assessments of technological infrastructure, individual capabilities, organizational support, and pedagogical approaches to create a well-rounded understanding of readiness and potential barriers to effective e-learning implementation.

Measuring e-learning readiness encompasses assessing learner, instructor, and organizational readiness to ensure successful adoption and implementation of e-learning initiatives. Evaluating learner readiness involves examining factors such as digital literacy, technological proficiency, and self-directed learning skills. Researchers like Rovai and Jordan (2004) propose various scales and surveys to assess learner readiness for eLearning, which include items measuring computer skills, internet access, and motivation for self-directed learning. Additionally, understanding learner preferences and learning styles can inform the design and delivery of e-learning courses to better cater to individual needs and preferences.

Instructor characteristics significantly impact e-learning readiness through a complex interplay of various variables. Research indicates that instructors' technological proficiency, pedagogical approaches, and attitudes toward technology critically influence their readiness to implement and support e-learning initiatives. For example, instructors with higher digital literacy and positive attitudes towards technology are more likely to effectively integrate e-learning tools and strategies into their teaching practices, thereby enhancing overall e-learning readiness (Ertmer, 1999; Tondeur et al., 2012). Additionally, instructors' pedagogical expertise and willingness to adapt their teaching methods to online environments contribute to their readiness by ensuring that e-learning content is engaging and pedagogically sound (Anderson, 2008). Organizational support and professional development opportunities further affect instructors' readiness by providing them with the necessary skills and resources to utilize e-learning technologies effectively (Zhao et al., 2002). Consequently, a supportive environment that addresses these characteristics can significantly enhance instructors' readiness and, by extension, the overall effectiveness of e-learning programs. Organizational readiness assessment focuses on evaluating institutional

infrastructure, support mechanisms, and leadership commitment to e-learning initiatives. Garrison and Kanuka (2004) emphasize the importance of conducting organizational audits to assess technological infrastructure, administrative policies, and resource allocation for e-learning. This may involve evaluating the availability of technical support services, investment in learning management systems, and alignment of strategic goals with e-learning objectives. Additionally, measuring organizational culture and readiness for change can provide insights into the institutional capacity to support e-learning integration and sustainment over time.

Overall, measuring e-learning readiness across learner, instructor, and organizational dimensions requires a comprehensive approach that considers technological, pedagogical, and institutional factors. By conducting systematic assessments of readiness levels, educational institutions and organizations can identify strengths, weaknesses, and areas for improvement, informing strategic planning efforts and resource allocation decisions to ensure successful e-learning adoption and implementation.

2.8. E-Learning readiness models

As e-learning becomes more and more prevalent in developing countries where e-learning readiness levels are considered low, it also becomes increasingly important to assess user readiness. The assessment should focus on key variables, and existing research suggests that several factors are common: technical readiness, content readiness, employee readiness, and financial readiness. In addition, there are demographic factors such as age, gender, and education level (Aydin & Tasci, 2005). Furthermore, it is important to understand that readiness is not a one-time event, but should be a continuous evaluation process. Borotis and Poulymenakou (cited in Mosa et al., (2016) defined e-learning readiness as: “the mental or physical preparedness of an organization for some e-learning experience or action”.

The use of ICT is recognized as a means to improve education in Kenya and better achieve the goals of a trained and skilled workforce. Educational institutions therefore need to be at the forefront of educational technology to produce well-rounded students who are ready for the digital age. Over the years, various researchers have attempted to document the power of technology.

They have found that educational institutions that have integrated technology into their teaching enjoy many benefits, including cost savings, increased flexibility and productivity, and staying

competitive. Lecturers have been recognized as a key factor influencing the success of e-learning. Instructors should have good ICT skills and be trained on how to make course materials available online and how to use new teaching methods. This is important because "an incompetent instructor may waste the time of 30 or 40 students, but poor online teaching can affect thousands and cause immediate damage" (Tubaishat & Lansari, 2011).

Teacher training and development are needed to keep up with today's rapidly changing technology. Improving skills can focus on the efficient and effective use of technology and the application of problem-based collaborative asynchronous learning.

According to Hirut (2011), various activities are taking place in the field of e-learning technologies in Ethiopian universities. For instance, eLearning Ethiopia is an online social network that anyone interested in or engaged in ICT-based education in Ethiopia can join. It was established and is currently managed by the Ethiopian Engineering Capacity Building Program (ECBP). As one of his tasks includes the introduction of e-learning technologies and methods to Ethiopian universities and vocational training institutions. The introduction of e-learning brings many concrete benefits to the future development of the Ethiopian higher education system. The planned strategic cooperation between Ethiopia and Germany in the field of higher education goes beyond the general advantages of e-learning in terms of temporal and spatial flexibility (e-Learning Ethiopia).

In the Ethiopian higher education context, the development of an e-learning readiness model is essential to address the unique challenges and opportunities of implementing e-learning initiatives. Such a model should encompass factors such as infrastructure readiness, technological capacity, faculty readiness, student preparedness, institutional support, and cultural considerations specific to Ethiopia Mekuria (2014) by identifying and addressing these factors, higher education institutions can better assess their readiness to adopt e-learning and implement strategies to overcome barriers to its successful implementation. Additionally, a tailored e-learning readiness model can guide policymakers and stakeholders in the design and implementation of policies and initiatives aimed at promoting the effective integration of e-learning into Ethiopian higher education.

2.9. The Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) provides a valuable framework for understanding eLearning readiness by linking individual attitudes, subjective norms, and their perceived behavioral control to educational outcomes. According to TPB, an individual's intention to engage in a behavior is influenced by their attitude towards the behavior, the subjective norms surrounding it, and their perceived control over the behavior (Ajzen, 1991). In the context of eLearning, this theory helps to elucidate how learners' attitudes towards online education, their perceptions of social pressure to participate in eLearning, and their confidence in using technology contribute to their readiness for eLearning environments. For instance, learners with positive attitudes towards eLearning, who perceive strong support from peers and instructors, and who feel competent in using digital tools are more likely to be prepared and motivated to engage in eLearning (Venkatesh, Morris, Davis, & Davis, 2003).

Research applying TPB to eLearning readiness often finds that these factors significantly impact learners' readiness levels. For example, a study by Kuo and Chung (2014) demonstrated that perceived behavioral control and positive attitudes towards eLearning were strong predictors of learners' readiness to adopt online courses. By assessing these TPB components, educators and institutions can better understand and address the factors that influence eLearning readiness, allowing them to design interventions that enhance students' preparedness and engagement in eLearning environments (Kuo & Chung, 2014). This approach underscores the importance of fostering positive attitudes, supportive social networks, and technological confidence to improve eLearning outcomes.

2.10. The TOE E-Learning Readiness Model

The TOE E-Learning Readiness Model provides organizations with a structured framework to assess their readiness for integrating e-learning initiatives effectively. Rooted in the Technology-Organization-Environment (TOE) framework, this model has been instrumental in evaluating the multifaceted aspects crucial for successful e-learning adoption (Chuttipattana, Srisa-ard, & Chuttipattana, 2016).

Technological Context, the first dimension, scrutinizes the organization's technological infrastructure and capabilities necessary for seamless e-learning implementation. This includes evaluating factors such as the compatibility of e-learning platforms with existing systems, the availability of technical support, and the scalability of these platforms to meet organizational needs. Additionally, considerations are made regarding the reliability of internet connectivity and the accessibility of e-learning resources, which are pivotal for a smooth transition to digital learning environments.

Organizational Context, the second dimension, focuses on internal dynamics within the organization that influence e-learning adoption. Leadership support, organizational culture, and resource allocation for training and development play significant roles here. Moreover, the alignment of e-learning goals with broader organizational objectives, as well as the level of stakeholder involvement in decision-making processes, are critical factors to consider. A positive organizational environment conducive to change is essential for the successful implementation and integration of e-learning initiatives (Chuttipattana, Srisa-ard, & Chuttipattana, 2016).

Environmental Context, the third dimension, encompasses external factors shaping the organization's e-learning readiness. This includes regulatory requirements, industry standards, and competitive pressures, among others. Government policies supporting e-learning initiatives, industry trends driving digital transformation, and the availability of external funding or partnerships all impact the organization's preparedness to embrace e-learning solutions. By comprehensively evaluating these dimensions, organizations can identify potential barriers and opportunities, enabling them to develop strategic plans tailored to their specific context and needs.

2.10.1. Chapnick, (2000) E-Learning Readiness Model

Chapnick's E-Learning Readiness Model, proposed in 2000, outlines five essential dimensions crucial for assessing an organization's preparedness for e-learning adoption. These dimensions, as elucidated by Chapnick, include the Organizational Environment, Technological Infrastructure, Learning Design and Development, Administrative Support, and Faculty Readiness. Chapnick posits that organizations must thoroughly evaluate each dimension to ensure alignment with their goals and capacities before implementing e-learning initiatives (Chapnick, 2000). The model suggests that for e-learning initiatives to succeed, organizations must assess and address each of

these dimensions to ensure alignment with their goals and capabilities. Organizational Environment considers factors such as culture, leadership, and strategic planning. Technological Infrastructure involves evaluating hardware, software, and network resources. Learning Design and Development focus on instructional design principles and content development processes. Administrative Support encompasses policies, funding, and staffing. Lastly, Faculty Readiness evaluates educators' skills, attitudes, and support needs for online teaching. This holistic approach provides a framework for organizations to systematically evaluate their readiness and implement e-learning initiatives effectively.

Table 2.1 E-Learning Readiness Factors Model (Chapnick, 2000)

Readiness Factors	Explanation of Factors
Organizational Environment	Evaluates organizational culture, leadership support, and strategic planning for e-learning.
Technological Infrastructure	Assesses hardware, software, and network resources needed to support e-learning initiatives.
Learning Design and Development	Focuses on instructional design principles and content development processes for e-learning.
Administrative Support	Considers administrative policies, funding mechanisms, and staffing structures supporting e-learning.
Faculty Readiness	Evaluates educators' skills, attitudes, and training needs for teaching effectively online.
Organizational Environment	Evaluates organizational culture, leadership support, and strategic planning for e-learning.

Chapnick (2000) model has a Limitations that should be taken into account, even though it offers insightful information about the factors influencing e-learning readiness. For example, it primarily focuses on organizational factors like staff training, leadership support, and technology infrastructure that influence e-learning readiness. However, it could ignore elements that are more important for a successful adoption of e-learning at the individual level, like learner preparedness and digital literacy.

2.10.2. Psycharis, (2005) E-Learning Readiness Model

Psycharis (2005) explores his E-Learning Readiness Model by drawing insights from the eLearning Readiness model proposed by Oketch & Achieng (2013). Oketch & Achieng (2013)

proposed an e-learning readiness model that encompasses three main categories and their respective sub-dimensions.

1. Resources Category:

Technological Readiness: This dimension evaluates the technological infrastructure necessary for e-learning, including hardware, software, internet connectivity, and technical support services.

Economic Readiness: It assesses the financial resources allocated for e-learning initiatives, budget allocation for infrastructure development and maintenance, and the cost-effectiveness of e-learning solutions.

Human Resources Readiness: This dimension focuses on the skills and expertise of staff in using e-learning technologies, training and professional development programs for educators, and staffing levels to support e-learning implementation.

2. Education Category:

Content Readiness: This dimension examines the availability and quality of e-learning content, alignment of content with learning objectives, and accessibility and usability of learning materials.

Educational Readiness: It includes pedagogical strategies for e-learning delivery, instructional design principles, and assessment methods and feedback mechanisms.

3. Environment Category:

Entrepreneurial Readiness: This dimension considers the vision and leadership support for e-learning initiatives, strategic planning, and goal-setting.

Leadership Readiness: It assesses the commitment and involvement of organizational leaders, communication and advocacy for e-learning, and their ability to drive change.

Cultural Readiness: This dimension evaluates the organizational culture and norms related to technology adoption, acceptance and openness to change, and collaboration and teamwork across departments.

Oketch and Achieng (2013) model provides a comprehensive framework for evaluating e-learning readiness within organizations, considering various factors that impact successful e-learning implementation (Oketch & Achieng, 2013).

Psycharis (2005) presents an E-Learning Readiness Model that encompasses four key dimensions crucial for evaluating an organization's preparedness to adopt and implement e-learning initiatives. These dimensions include Technological Readiness, Educational Readiness, Organizational Readiness, and Sociocultural Readiness. Technological Readiness assesses the organization's technological infrastructure and resources necessary to support e-learning, such as hardware, software, network capabilities, and technical support systems. Educational Readiness focuses on the alignment of curriculum materials, instructional strategies, and assessment methods with the goals and objectives of e-learning initiatives. Organizational Readiness considers the administrative policies, funding mechanisms, and staff training programs designed to promote e-learning adoption and integration. Sociocultural Readiness examines the cultural context, social dynamics, and stakeholder perceptions surrounding e-learning adoption, addressing factors such as attitudes, beliefs, and acceptance of e-learning among learners, educators, and other organizational stakeholders. This model offers a structured framework for assessing e-learning readiness within organizations, enabling stakeholders to identify strengths, weaknesses, and areas for improvement.

Psycharis (2005) presented an E-learning Readiness Model focusing on organizational and technological factors. However, a limitation of the model is its narrow scope, which primarily emphasizes technical infrastructure readiness and organizational support, potentially overlooking critical individual-level factors such as learner motivation, digital literacy, and readiness for change. By neglecting these individual-level variables, the model may fail to capture the diverse needs and preferences of learners, hindering the effective adoption and utilization of e-learning initiatives. Therefore, while offering insights into organizational readiness, Psycharis's model may benefit from incorporating a more comprehensive perspective that encompasses both organizational and individual dimensions of e-learning readiness.

2.10.3. Aydain and Tasci (Aydin, 2005) E-Learning Readiness Model

Aydain and Tasci (2005) developed a model with seven categories: HR, Learning Management Systems, Learners, Content, IT, Finance, and Vendors.

They argue that since most companies purchase e-learning solutions from external providers, whether there are enough e-learning providers and consultants could be another indicator of whether e-learning will be adopted soon. Thus, the model asks managers about the average education level of employees, whether the company has qualified personnel and experts, champions (leaders) in the HR and training departments, and whether there are enough e-learning providers and external e-learning experts.

Table 2.2 E-Learning Readiness Assessment Model, Aydin and Tasci (2005)

Factors	Resources	Skills	Attitudes
Technology	Access to computers and Internet	Ability to use computers and Internet	Positive attitude toward use of technology
Innovation	Barriers	Ability to adopt innovations	Openness to innovations
People	Average education level of employees Experienced HR specialists An e-learning champion Enough vendors and external parties	Ability to learn via/with technology	
Self-development	Budget	Ability to manage time	Belief in self-development

Aydin and Tasci (2005) proposed an E-learning Readiness Model focused on identifying the factors influencing the adoption and success of e-learning initiatives in educational settings. However, a limitation of their model lies in its relatively narrow application to educational contexts, potentially overlooking the broader organizational and cultural factors that also influence

e-learning readiness in corporate and institutional settings. While the model provides valuable insights into the readiness of educational institutions to embrace e-learning, it may not fully capture the multifaceted nature of e-learning readiness across diverse organizational contexts. Therefore, further research and refinement of the model may be necessary to enhance its applicability and effectiveness in addressing the complexities of e-learning adoption beyond educational settings.

2.10.4. Engholm's (2001) E-Learning Readiness Model

Engholm's (2001) E-Learning Readiness Model focuses on four main dimensions essential for assessing an organization's readiness for e-learning adoption. These dimensions include Technological Readiness, Pedagogical Readiness, Organizational Readiness, and Resource Readiness. Technological Readiness evaluates the technological infrastructure and resources necessary to support e-learning initiatives, such as hardware, software, and network capabilities. Pedagogical Readiness focuses on instructional design principles, curriculum development, and teaching strategies conducive to effective e-learning delivery. Organizational Readiness considers the administrative policies, leadership support, and resource allocation necessary to facilitate e-learning implementation within the organization. Resource Readiness assesses the availability of financial resources, staffing levels, and training programs designed to support e-learning initiatives. Engholm's model provides a structured approach for evaluating e-learning readiness within organizations, enabling stakeholders to identify strengths, weaknesses, and areas for improvement (Engholm, 2001).

Engholm's (2001) E-Learning Readiness Model focuses on assessing an organization's readiness for implementing e-learning initiatives, emphasizing key factors such as infrastructure, technological capabilities, and organizational support. However, a limitation of the model lies in its tendency to prioritize technical readiness over other critical factors such as organizational culture, leadership commitment, and learner engagement. By primarily focusing on technological aspects, the model may overlook the importance of addressing broader organizational and individual-level factors that are essential for successful e-learning implementation. Therefore, while providing insights into technical readiness, Engholm's model may benefit from incorporating a more comprehensive perspective that considers the multifaceted nature of e-learning readiness.

2.11. Related Works

An empirical study on e-learning readiness in Turkey identified a group of e-learning readiness that may affect e-learning implementation, among which technical skill readiness, attitudinal readiness, cultural readiness, and infrastructural readiness are the most important according to Parlakkılıç (2015).

Findings from the study revealed regarding the e-learning readiness model likely emphasizes the significance of individual and institutional factors in determining the success of e-learning initiatives. The study probably highlights the importance of considering learners' technological proficiency, self-discipline, motivation, and other personal characteristics, as well as the readiness of educational institutions in terms of technological infrastructure, support systems, and pedagogical frameworks.

The role of top management readiness has also been described as a critical success factor for e-learning adoption. Top management readiness represents the extent to which top management is committed to supporting and encouraging employees to use new technologies Al-mamary, H. et al. (2014).

The empirical investigation titled "An empirical investigation of the factors affecting e-learning readiness of academics in Egypt" conducted by Tolba et al. (2017) delves into the readiness of academics in Egyptian universities to embrace e-learning. This quantitative study employed a structured questionnaire to gather data from 275 academics across various universities in Egypt. By examining a range of factors including technological, organizational, individual, and contextual aspects, the research aimed to uncover the determinants influencing e-learning readiness among academics in Egypt. Through regression analysis and structural equation modeling (SEM), the study scrutinized the relationships between these factors to provide a comprehensive understanding of e-learning readiness.

Findings from the study revealed significant insights into the factors influencing e-learning readiness among academics in Egypt. Technological factors such as access to reliable internet, hardware, and software emerged as crucial determinants affecting the readiness of academics to adopt e-learning practices. Additionally, organizational support and infrastructure played a pivotal role, emphasizing the importance of leadership commitment, resource allocation, and policy

frameworks in fostering an environment conducive to e-learning adoption (Tolba et al., 2017). The study also highlighted the significance of individual factors such as digital literacy, motivation, and attitudes toward e-learning in shaping academics' readiness to embrace online teaching and learning methods.

Moreover, contextual factors specific to the Egyptian educational landscape were identified as influential determinants of e-learning readiness among academics. These included cultural norms, institutional policies, and socio-economic factors that impact the adoption and implementation of e-learning initiatives in Egyptian universities (Tolba et al., 2017). By uncovering the multifaceted nature of e-learning readiness and its determinants, this empirical investigation contributes valuable insights to educational policymakers, administrators, and stakeholders seeking to enhance e-learning practices and initiatives within the Egyptian higher education context.

The study conducted by Olatokun and Opesade (2008) focused on the factors influencing the adoption of e-learning in higher education institutions. This empirical investigation aimed to identify the key determinants that affect the readiness of institutions to embrace e-learning methodologies and technologies. Olatokun and Opesade utilized a quantitative research approach, employing surveys and data analysis techniques to gather insights from stakeholders within higher education institutions.

The findings of Olatokun and Opesade's study shed light on various factors influencing the adoption of e-learning, including technological infrastructure, organizational support, pedagogical approaches, and learner readiness. Their empirical investigation highlighted the significance of adequate technological infrastructure, such as access to computers, internet connectivity, and learning management systems, in facilitating the effective implementation of e-learning initiatives. Furthermore, organizational support emerged as a critical determinant, emphasizing the importance of leadership commitment, resource allocation, and policy frameworks in fostering a supportive environment for e-learning adoption.

Moreover, Olatokun and Opesade's study underscored the importance of pedagogical readiness and learner engagement in successful e-learning implementation. Effective instructional design, course development strategies, and learner support mechanisms were identified as essential elements in enhancing the quality of e-learning experiences and promoting learner satisfaction and engagement. By uncovering these factors, Olatokun and Opesade's empirical investigation

provided valuable insights for educational policymakers, administrators, and practitioners seeking to enhance e-learning initiatives within higher education institutions.

The study conducted by Tubaishat and Lansari (2011) investigated the factors influencing the adoption of e-learning technologies in higher education institutions. Through a quantitative research approach, the authors aimed to identify the key determinants impacting the readiness of institutions to embrace e-learning methodologies and tools. Their study focused on understanding the perspectives of stakeholders within higher education settings to gain insights into the challenges and opportunities associated with e-learning adoption.

Tubaishat and Lansari's findings revealed several significant factors influencing the adoption of e-learning technologies. Technological infrastructure emerged as a critical determinant, with access to reliable internet connectivity, computers, and learning management systems playing a pivotal role in facilitating effective e-learning implementation. Furthermore, organizational support and leadership commitment were identified as key drivers, underscoring the importance of supportive policies, resource allocation, and strategic planning in fostering a conducive environment for e-learning adoption within institutions.

Moreover, the study highlighted the importance of pedagogical readiness and learner engagement in successful e-learning implementation. Effective instructional design, course development strategies, and learner support mechanisms were identified as essential components in enhancing the quality of e-learning experiences and promoting learner satisfaction and retention. By uncovering these factors, Tubaishat and Lansari's empirical investigation provided valuable insights for educational policymakers, administrators, and practitioners seeking to enhance e-learning initiatives within higher education institutions

The study conducted by Al-Huneidi and Schreurs (2012) aimed to investigate the factors influencing the successful implementation of e-learning initiatives in higher education contexts. Through a qualitative research approach, the authors sought to identify the key determinants impacting the readiness of institutions to embrace e-learning methodologies and technologies. Their study focused on understanding the perspectives of stakeholders within higher education settings to gain insights into the challenges and opportunities associated with e-learning adoption.

Al-Huneidi and Schreurs' findings shed light on various factors influencing the successful implementation of e-learning. Organizational readiness emerged as a crucial determinant, encompassing aspects such as leadership support, institutional policies, and resource allocation. Leadership commitment and vision were identified as essential drivers in fostering a culture of innovation and facilitating the integration of e-learning technologies into teaching and learning practices within higher education institutions.

Furthermore, the study highlighted the importance of pedagogical alignment and instructional design in successful e-learning implementation. Effective course development strategies, learner-centered approaches, and technological integration were identified as key components in enhancing the quality and effectiveness of e-learning experiences. Additionally, the study emphasized the significance of ongoing support and professional development for faculty members to equip them with the necessary skills and competencies to leverage e-learning technologies effectively.

As suggested by Rohayani.AH, Kurniabudi, and Sharipuddin (2015), e-learning adoption will only be successful if a measurement of e-learning readiness level is done before adoption. Measuring e-learning readiness allows educational institutions to develop systems that match the measurements to ensure successful implementation. Learners' willingness to use e-learning technologies is influenced by many factors, including their ability and willingness to use ICT. Research shows that the factors most commonly used to measure e-learning readiness are technical resources, content, human resources, and financial resources.

According to Red, Borlongan, Briagas, and Mendoza (2013), to assess the e-learning readiness level of faculty and students in Malaysian universities, three different sets of questionnaires were distributed to students, faculty, and administrators. The instrument for students contained a total of 53 questions divided into three parts: access to technology, technology knowledge, and attitude towards e-learning. The attitudinal questions are further categorized into study habits, skills, motivation, and time management. The instrument for teachers contained a total of 71 questions divided into access to technology, technology knowledge, and attitude towards e-learning. The attitudinal questions are further categorized into teaching style and strategies, skills, motivation, and time management.

Administrators have 15 questions consisting of engagement, policy, and instructional administrative support questions and an additional 15 school resource support questions consisting of financial, staffing, and technology questions. The instrument used in the study is in Liker scale format and uses the mean value to measure facility readiness.

Song (2010) explained that in the context of e-learning, online users need to use technology to complete online tasks in the eLearning environment. Several technological factors, such as appropriate software, hardware, and bandwidth, can play a key role in e-learning outcomes. Slow internet connections and system usage issues can lead to students becoming frustrated and dropping out of courses. Therefore, to reap the benefits of e-learning and mitigate the challenges of e-learning adoption, it is necessary to assess the technological readiness for e-learning before implementing an e-learning system. Therefore, measuring e-learning readiness is essential to support the successful implementation of e-learning in higher education (Alshaher, 2013). Although many factors influence the implementation and effectiveness of e-learning in educational environments, readiness is a key success factor for the successful implementation of e-learning methods for knowledge acquisition (Azimi, 2013).

Tubaishat & Lansari (2011) in their study "Students' Perceptions of E-Learning Implementation in Egyptian Universities" focused on Egyptian students as customers of the e-learning process.The study attempted to determine students' educational preferences, perceptions regarding the effectiveness of e-learning methods, and readiness to implement e-learning methods by asking the question "What do Egyptian students prefer regarding higher education in Egypt? " What are students' perceptions regarding the effectiveness of e-learning as a learning method in Egyptian higher education? “A structured questionnaire was developed targeting students from higher education institutions in two large cities in Egypt. The questionnaire was created to explore students' usage patterns, e-readiness, perceptions and preferences regarding the usefulness, effectiveness, and implementation issues of e-learning.

The test involved comparing the observed and expected frequencies of each category to test whether all categories contained the same percentage of values or whether each category contained a percentage of user-defined values. The survey results show that Egyptian students have heard of e-learning but are not aware of its benefits, highlighting once again the role of Egyptian authorities in addressing the dilemma of resistance to change and taking into account customer needs.

The researchers of this study believe that although e-learning has many potentials and benefits, it can only be truly successful in Egypt if the willingness and perception towards e-learning is taken into account.

Ngamporncha and Adams (2016) investigated teacher education preceptors' attitudes and perceptions towards the need for professional development and the relationship with teachers' use of technology for teaching and learning in two tertiary teacher education institutions in Ghana. The study was based on Rogers' (1995) Diffusion of Innovation (DoI) theory and the Concern-Based Adoption Model (CBAM) criteria for innovations in educational technology as a theoretical framework. The study used a survey method supplemented by interviews. Quantitative data was analyzed using multiple regression. Participants in the study were 132 preceptors from the College of Education, Winneba and the Faculty of Education, University of Cape Coast, two teacher training institutions in Ghana.

The Faculty Technology Survey consisted of 65 items divided into five components. The results revealed 4,444 faculty's (i) perceptions of the impact of technology use on pedagogy and student learning, (ii) faculty perceptions of barriers and challenges in implementing and using technology in teaching and learning, and (iii) faculty motivations for adopting instructional practices. Technology made a unique and significant contribution to explaining faculty's use of technology for teaching and learning. Based on responses to open-ended questions in the interviews and survey, the study also found that the contextual conditions enabling innovation in educational technology were not met at the two participating universities.

Al-adwan and Smedley (2012) investigated how frequently teachers in Jordanian public universities use the Internet in their academic work in terms of the following demographic variables (academic rank and age) and the type and manner of Internet tools used by teachers on a daily basis: Teachers are satisfied with the use of the Internet in their academic work in terms of the following demographic variables (academic rank and age): The study found that the frequency of Internet use of all respondents varies between (2-3 times a week) and (daily) as the average values are close to each other: The results showed that there was no significant difference in academic ranks: The results showed that there was a significant difference between the age groups: The average values are close to each other as the average values are close to each other: The frequency of Internet use of all respondents varies between (2-3 times a week) and (daily) as the

average values are close to each other: The results showed that there was a significant difference between the age groups: The average values are close to each other as the average values are close to each other .

In the realm of e-learning readiness, both technological and organizational aspects are indeed crucial, but individual readiness cannot be overlooked, as it significantly impacts the success of e-learning initiatives within educational institutions. Technological readiness pertains to the infrastructure, resources, and tools necessary for effective e-learning implementation, while organizational readiness encompasses policies, support systems, and leadership commitment to facilitate e-learning integration (Nguyen, 2020). However, individual readiness, which includes factors such as learners' technological proficiency, self-regulation skills, and motivation, plays a pivotal role in determining the actual adoption and utilization of e-learning within an educational setting (Ally, 2008). Without addressing individual readiness, even the most advanced technological infrastructure or well-developed organizational policies may fall short in achieving desired e-learning outcomes.

Educational institutions must recognize the importance of individual readiness as a critical component of overall e-learning readiness. This involves providing support and resources to enhance learners' technological skills, self-discipline, and motivation, thus empowering them to engage effectively in eLearning environments (Parlakkılıç, 2015). Moreover, institutions should implement strategies to foster a culture of e-learning readiness among learners, encouraging them to take ownership of their learning and adapt to the demands of digital education. By addressing both technological, organizational, and individual readiness factors, educational institutions can create a conducive environment for successful e-learning adoption and implementation, ultimately enhancing the quality and accessibility of education in the digital age.

2.12. Conceptual Model for E-Learning Readiness Assessment

A conceptual model for E-learning Readiness Assessment provides a structured framework to evaluate an organization's preparedness for integrating e-learning technologies effectively. Drawing from existing literature, such a model typically incorporates multiple dimensions that collectively influence the success of e-learning initiatives. Psycharis (2005) presents an E-Learning Readiness Model that encompasses four key dimensions crucial for evaluating an

organization's preparedness to adopt and implement e-learning initiatives. These dimensions include Technological Readiness, Educational Readiness, Organizational Readiness, and Sociocultural Readiness. The four main parameters that are used to adopt the hybrid model are; Technological Readiness (Chapnick, 2000; Aydin & Tasci, 2005), Organizational Readiness (Chapnick, 2000; Borotis & Poulymenakou, 2004) and Individual Readiness (Fetaji & Matilinda, 2015). In addition, each of these factors has sets of sub- factors each of which will be taken into consideration during the assessment period. Each dimension represents critical aspects that contribute to the overall readiness of an organization to embrace e-learning, allowing stakeholders to identify strengths, weakn. These three dimensions of eLearning readiness are interconnected and mutually reinforcing. A strong technology infrastructure enhances organizational readiness by providing the necessary tools and platforms for eLearning implementation. Similarly, organizational support and policies facilitate the development of individuals' readiness by offering training programs, support services, and incentives for eLearning participation. Conversely, individuals' readiness influences organizational and technological readiness by driving demand for eLearning initiatives and shaping institutional priorities and investments in technology and infrastructure. eases, and areas for improvement (Hussain & Al-Shehri, 2019).

2.12.1 Technological Readiness

E-learning technological readiness refers to the infrastructure, tools, and resources necessary to support effective eLearning experiences. Technological readiness encompasses various elements, including hardware, software, internet connectivity, and digital platforms, all of which play crucial roles in facilitating e-learning initiatives. Adequate technological readiness ensures that learners have access to the necessary resources and can engage with online materials seamlessly. Moreover, it allows educators to design and deliver engaging and interactive e-learning content effectively.

Hardware is a fundamental component of e-learning technological readiness, encompassing devices such as computers, tablets, smartphones, and other mobile devices (Carliner, 2015). Access to reliable and up-to-date hardware ensures that learners can access e-learning materials from any location, enabling flexibility and convenience in their learning experiences. Additionally, hardware compatibility with e-learning platforms and software applications is essential to ensure a smooth user experience and optimize engagement with online content.

Software and digital platforms also play a critical role in e-learning technological readiness. Learning management systems (LMS), content authoring tools, video conferencing software, and interactive multimedia resources are examples of software applications commonly used in e-learning environments (Ally, 2004). These tools facilitate content delivery, communication, collaboration, and assessment in eLearning settings. Furthermore, the availability of user-friendly and intuitive software interfaces enhances learners' ability to navigate e-learning platforms and engage with course materials effectively.

Ensuring technological readiness for e-learning requires ongoing investment in infrastructure, software development, and technical support services. Organizations must assess their existing technological capabilities, identify areas for improvement, and allocate resources accordingly to enhance e-learning technological readiness (Bates, 2015). Moreover, staying abreast of technological advancements and emerging trends in e-learning technologies is essential to adapt and evolve e-learning infrastructures to meet the evolving needs and preferences of learners and educators.

2.12.2 Organizational Readiness

Organizational leadership plays a crucial role in shaping e-learning cultural readiness by championing e-learning initiatives, promoting a culture of innovation, and providing strategic direction (Bliuc, Ellis, & Goodyear, 2007). Leaders must communicate the importance of e-learning, align it with organizational goals, and allocate resources to support its implementation. Additionally, creating a culture of continuous learning and professional development encourages employees to embrace e-learning as a valuable tool for personal and professional growth. By fostering a positive and supportive cultural environment, organizational leaders can mitigate resistance to change and enhance receptivity to e-learning initiatives.

Cultural readiness for e-learning also involves addressing attitudes toward technology, change, and learning within the organization (Gibson, 2016). Organizations must assess employees' perceptions of e-learning, identify potential barriers or concerns, and implement strategies to address them. Providing training and support to enhance digital literacy skills, promoting a growth mindset toward technology adoption, and recognizing and rewarding e-learning achievements can help cultivate a culture of openness, curiosity, and readiness for innovation. Moreover, fostering a

collaborative and inclusive culture that values knowledge sharing and peer learning encourages employees to actively participate in e-learning activities and contribute to a culture of continuous improvement and innovation.

Financial readiness for eLearning implementation within an organization necessitates a comprehensive assessment of budgetary allocations, encompassing initial setup costs, ongoing maintenance expenses, and potential return on investment (ROI). This entails budgeting for software licenses, content development tools, learning management system (LMS) subscription fees, infrastructure upgrades, and staff training. According to a study by Deloitte, organizations typically allocate around 4-6% of their total budget to learning and development initiatives (Deloitte, 2020). Moreover, a strategic approach to financial planning should incorporate provisions for scalability and flexibility, allowing for adjustments as the eLearning program evolves. Additionally, fostering a culture of cost-consciousness and accountability among stakeholders can enhance financial stewardship and optimize resource utilization in the long term.

2.12.3 Individual Readiness

Individual e-learning readiness refers to a person's capacity and willingness to engage effectively in eLearning environments. It encompasses various factors such as technological proficiency, self-discipline, time management skills, and motivation. The readiness of individuals plays a critical role in determining the success or failure of e-learning initiatives. For instance, individuals who are comfortable using technology and possess strong self-regulation skills are more likely to navigate eLearning platforms effectively and achieve their learning goals (Hart, 2012). On the other hand, those who lack technological proficiency or struggle with time management may find it challenging to adapt to the demands of e-learning, leading to lower engagement and poorer learning outcomes.

Moreover, individual e-learning readiness can significantly influence the overall effectiveness and efficiency of e-learning programs. Research suggests that learners who are well-prepared for online learning tend to exhibit higher levels of satisfaction, engagement, and performance (Ally, 2008). By understanding and addressing the factors that contribute to individual e-learning readiness, educators and instructional designers can design more tailored and effective online learning experiences. This may include providing additional support and resources for learners

who may struggle with certain aspects of e-learning, such as technical skills or time management, to enhance their readiness and ultimately improve the overall success of e-learning initiatives. Integrating these concepts resulted in the model shown in Figure 2.1.

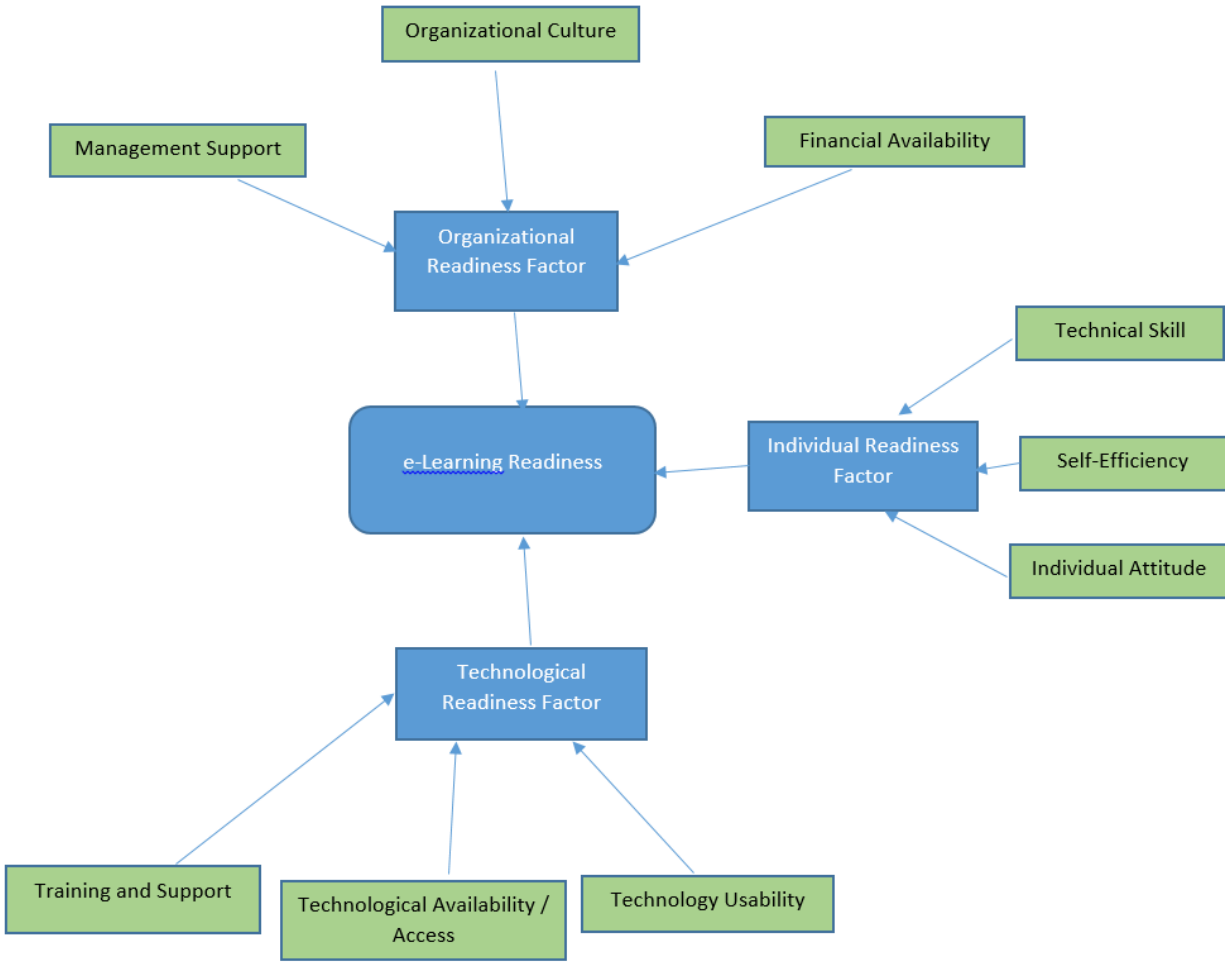

Figure 1. Proposed model for assessing e-learning readiness

Chapter Three

Research Methodology

3.1. Introduction

This chapter discuses brief discussion by the description of the study area, the research approaches, research design, data collection instrument, sources of data, target population, sample size determination, sample selection, data collection techniques, data analysis and interpretation, reliability and validity, reliability, validity and ethical considerations.

3.2. Description of the Study Area

Ethiopian Resource Center (Cluster Lead) Universities have been selected by the Ministry of Education as part of the E-learning for Strengthening Higher Education (E-SHE) initiative, a collaboration with Arizona State University (ASU), Shayashone Trading PLC, and the MasterCard Foundation. The selected institutions Addis Ababa University (central area), Bahirdar University (north region), Dire Dawa University (east region), Hawassa University (south region), and Jimma University (west region), were chosen due to their strong rankings and strategic geographic locations across Ethiopia. This partnership aims to enhance the higher education system by utilizing digital technologies to deliver high-quality education that equips youth with essential skills for entrepreneurship and employability. The initiative plans to enable 50 public universities to provide blended, high-quality education through standardized e-learning programs, supported by advanced learning management and student information systems.

As part of the E-SHE initiative, the Ethiopian Resource Center (Cluster Lead) Universities will promote experience sharing among their cluster universities, fostering collaboration and the exchange of best practices within the educational network. This cooperative approach is designed to strengthen Ethiopia's overall educational landscape, ensuring that institutions are better prepared to meet the evolving demands of higher education.

3.3. Research Approach

The research approach serves as a systematic plan and procedure that progresses from broad assumptions to specific methods for data collection, analysis, and interpretation (Creswell, 2013). It provides a framework for obtaining information from a sample. According to Creswell (2009), clearly illustrating the research approach is crucial for enhancing the validity of the study.

This research employs a quantitative data collection method to assess the e-learning readiness of five Ethiopian Public Resource Center (Cluster Lead) Universities, considering the perspectives of both teachers and students. This approach is deemed effective for identifying key gaps in the research area.

The readiness for e-learning in higher education institutions is primarily influenced by technological, individual, and organizational factors. Therefore, the researcher recognizes the importance of gathering quantitative data from instructors and students through a questionnaire to achieve the research objectives. As noted by Almalki (2016), this approach facilitates a deeper understanding of the existing gaps and allows for the collection of essential metrics related to the e-learning readiness of the selected (Cluster Lead) universities.

3.4. Research Design

The descriptive survey design is particularly advantageous in situations where resources are limited, as it facilitates efficient data collection and analysis without the need for extensive experimental manipulation or longitudinal tracking. This study, which focuses on the e-learning readiness of several Ethiopian Cluster Lead Universities, is well-suited to address real-world challenges in a resource-constrained environment. The descriptive method's capacity to systematically describe and organize data makes it especially effective for assessing the current state of readiness and pinpointing areas that require improvement. This approach not only offers a clear overview of the existing conditions but also aids in developing actionable recommendations for enhancing e-learning readiness, thereby supporting strategic planning and resource allocation (Creswell, 2014).

Furthermore, the descriptive survey design emphasizes capturing and analyzing data as it naturally occurs, which is beneficial for understanding the complexities of e-learning readiness. It enables the collection of quantitative data on various readiness aspects, including technological, individual, and institutional support, while providing a structured framework for organizing and interpreting this data. By systematically documenting these aspects, the study can identify specific areas where the universities may be underprepared and highlight key factors that contribute to successful e-learning implementation. Such insights are crucial for formulating targeted strategies and interventions to enhance readiness, facilitating a smoother transition to e-learning and ultimately improving the educational experience for all stakeholders involved (Bryman, 2016).

Therefore, in this research, the researcher opted for a descriptive research design, as it effectively allows for the assessment of e-learning readiness across the five Ethiopian Public Resource Center (Cluster Lead) Universities.

3.5. Data Collection Instrument

In the study, data collection was facilitated through the distribution of questionnaires and the use of Google Forms, which streamlined the process of gathering responses. The questionnaire, carefully designed to capture comprehensive information about the readiness for e-learning, was distributed to various stakeholders including students, faculty including Professionals. This method allowed for the collection of quantitative data on factors such as technological, individual and organizational readiness. The structured format of the questionnaire ensured that the data collected was both consistent and comparable across different respondents, which is crucial for a thorough analysis of the institution's readiness (Creswell, 2014).

Questionnaires of teachers and students are adopted and customized and modified to the university from (Mercado, 2008 and Doculan, 2016) international journals and the demographic profile of all sample population.

Table 3.1 variable names, operational definitions, and example questionnaire items

Variable Name	Operational Definition	Questionnaire Items
Technological readiness	The extent of technology availability, access, usability, and ICT support for e-learning readiness	"I have computer access (in school, cafes, etc.)" (1 = Strongly Disagree, 5 = Strongly Agree)

Individual readiness	The level of individuals' basic technical skills, attitudes and awareness, and self-efficacy and confidence for e-learning readiness	"I have Basic knowledge and skills to use computers." (1 = Strongly Disagree, 5 = Strongly Agree)
Organizational readiness	The extent of organizational culture, top management support, and financial resources availability for e-learning readiness	"My institution has strong believe on eLearning benefits" (1 = Not ready, needs a lot of work, 5 = perfectly implementing currently)

Utilizing Google Forms for the survey further enhanced the efficiency of the data collection process. Also which facilitated the Gathering of responses from a diverse range of geographical areas.

3.6. Sources of Data

In the study, both primary and secondary sources of data were employed to ensure a comprehensive analysis of e-learning readiness. Primary data was collected directly from respondents using questionnaires, which were distributed to a representative sample of students, faculty including Professionals. These questionnaires were designed to gather firsthand information on various aspects of e-learning readiness, such as technological, individual, and Organizational mechanisms. By directly engaging with the stakeholders involved, the study was able to obtain current and relevant data that reflects their experiences and perceptions regarding e-learning implementation. This approach provided valuable insights into the actual state of readiness and the specific needs of the institution (Creswell, 2014).

In addition to primary data, secondary sources were utilized to supplement and contextualize the findings. Secondary data was gathered from institutional Reports, including academic resources. These sources offered a broader perspective on existing research, theoretical frameworks, and best practices related to e-learning. By reviewing relevant literature and previous studies, the research was able to situate its findings within the wider academic discourse and identify trends, gaps, and benchmarks in e-learning readiness. This combination of primary and secondary data sources enriched the study's analysis and provided a well-rounded understanding of the factors influencing e-learning adoption (Bryman, 2016).

3.7. Target Population

The target populations for this study encompassed a broad range of individuals involved in the university's educational ecosystem, including both students and academic staff/professionals. Specifically, the study focused on 167 students and 161 academic staff members including Professionals. By including participants from Social and Natural Science departments across the Cluster Lead universities, the research aimed to capture a comprehensive snapshot of e-learning readiness from multiple perspectives within the institutions. This approach ensured that the data reflected the diverse experiences and opinions involved in the educational process.

Collecting data from a diverse sample of students and academic staff/ professionals allowed for a nuanced understanding of the various factors influencing e-learning readiness. The study aimed to achieve a well-rounded assessment of the institution's preparedness for e-learning, thereby enhancing the reliability and validity of its findings (Bryman, 2016; Creswell, 2014).

3.7.1. Sample Selection

Determining the sample size for the study involved careful consideration of the target population and the use of purposive sampling due to geographical constraints and the nature of the research respondents. Given the widespread distribution of participants across various geographical locations, it was essential to select a sample size that would be both practical and representative of the entire target group. Purposive sampling was chosen to focus specifically on those respondents who could provide the most relevant and insightful data regarding e-learning readiness. This approach allowed the researchers to strategically select individuals from different departments and roles within the university, ensuring that the sample was diverse yet manageable given the geographical distances involved (Creswell, 2014).

For this study, the sample size was calculated based on the total number of 167 students and 161 academic staff members/ professionals, with purposive sampling used to select a subset that represented various departments and levels of experience. The aim was to capture a wide range of perspectives while considering logistical constraints such as distance and the uniformity of responses. By focusing on a purposively chosen sample, the study ensured that the responses gathered were pertinent and provided a meaningful assessment of e-learning readiness across the

Cluster Lead Universities. This method allowed for a detailed and nuanced analysis while maintaining a practical approach to data collection given the geographical spread of the participants (Bryman, 2016; Israel, 2009).

3.8. Data collection techniques

The primary data collection techniques for this study involved both printed questionnaires and online surveys using Google Forms. Printed questionnaires were distributed and collected directly from the target population within the university, ensuring a personal and immediate data-gathering process. Simultaneously, Google Forms were utilized to reach respondents from the cluster lead universities, allowing for efficient data collection from a broader geographical area. This dual approach facilitated comprehensive data acquisition by accommodating different preferences and accessibility needs, thereby enhancing the representativeness and reliability of the collected data across various locations (Creswell, 2014; Bryman, 2016).

3.9. Data analysis and interpretation

Data analysis for this study was conducted using the Statistical Package for Social Sciences (SPSS) version 25, which facilitated the thorough examination of the collected data. SPSS provided robust tools for organizing and analysing the data efficiently. Initially, tables were created to present the survey data in a structured format, allowing for clear and straightforward visualization of responses. This tabular representation enabled researchers to quickly assess and interpret the data, identifying key trends and patterns in e-learning readiness across the sample population.

To evaluate respondents' opinions, descriptive statistics were employed, including frequency counts, percentages, means, standard deviations, T-values, P-values, one way Anova and e-LRS readiness assessment model. Frequency counts and percentages offered insights into the distribution of responses, while means and standard deviations provided measures of central tendency and variability. T-values and P-values were used to determine the significance of differences or relationships observed in the data. This comprehensive statistical approach ensured a detailed and accurate interpretation of the survey results, facilitating a deeper understanding of the factors affecting e-learning readiness and supporting evidence-based conclusions and recommendations (Bryman, 2016; Creswell, 2014). The e-LRS tool was initially created for the e-

learning sector (Aydin & Tasci, 2005; Chapnick, 2000) and has since been adapted to evaluate readiness in various other fields (Purnomo & Lee, 2010). This tool utilizes a five-point Likert scale to measure responses. Its primary focus is on assessing organizational capabilities, access to resources, and available opportunities (Alaaraj & Ibrahim, 2014). Notably, the e-LRS model establishes a threshold (minimum) score of **3.41** on the five-point scale to signify a minimum level of readiness. See figure 2.

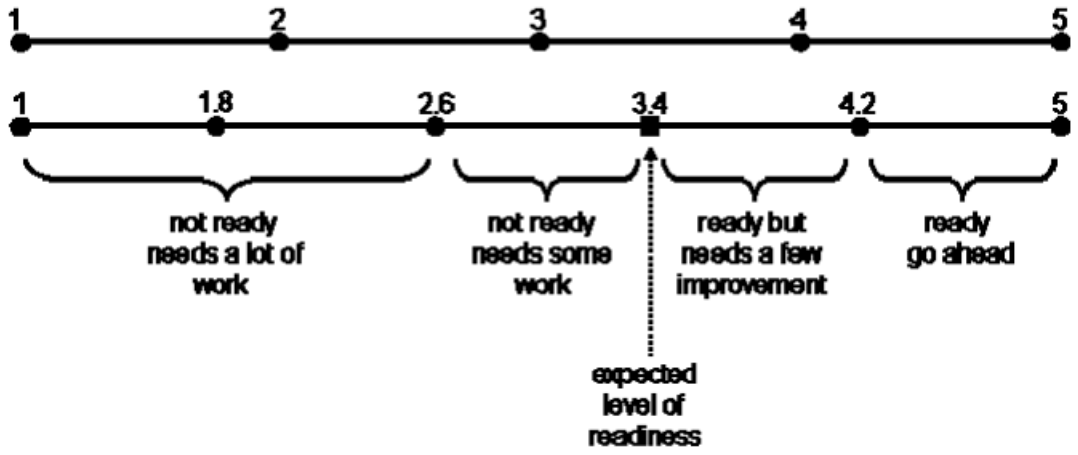

FIGURE 2 e-LRS assessment Model

3.10. Reliability and validity

Before the main data collection, the researcher conducted a pilot test involving 10 respondents, including both students and faculty members, to evaluate the reliability and effectiveness of the survey instrument. This pilot test was crucial for identifying any issues with the questionnaire's clarity, structure, or content, allowing for necessary adjustments before the full-scale survey. Feedback from these initial participants was used to refine the questions and improve the overall survey design, ensuring that the final instrument accurately captured relevant data and was reliable for assessing e-learning readiness. This iterative process helped enhance the validity and reliability of the survey, leading to more accurate and meaningful results in the main study (Creswell, 2014).

3.11. Ethical Considerations

In conducting the study, the researcher adhered strictly to ethical considerations, ensuring that the research was carried out in accordance with professional standards and fundamental principles.

Ethical practices were integral to the study, focusing on obtaining informed consent from all participants. The researcher made it clear that participation was voluntary, and respondents were fully informed about the nature, purpose, and scope of the research before completing the questionnaire. This transparency ensured that participants understood their rights, including their right to withdraw from the study at any time without penalty. By emphasizing informed consent, the researcher aimed to respect and uphold the participants' autonomy and contribute to the integrity of the research process (Sarantakos, 2005).

Confidentiality and privacy were paramount throughout the study. Participants were assured that their personal details and responses would remain confidential and that their identities would not be disclosed in any reports or publications. The researcher took measures to protect the anonymity of participants, ensuring that their names would not be associated with any of the information provided. Moreover, the researcher was committed to avoiding any form of deception or bias and made efforts to respect cultural sensitivities and handle sensitive information appropriately. This commitment to ethical standards aimed to maintain the credibility of the research and foster trust between the researcher and participants (Creswell, 2011).

Chapter Four

Data Presentation, Analysis and Interpretation

4.1. Introduction

This chapter intends to reveal the findings and statistical analysis used to evaluate the research question that has been established in earlier chapters. Subsequent to the data screening process and also the chapter reports the results of the screening for errors in the sample and the procedural check on the instruments utilized. With the help of the preliminary and analysis of the results, the study try to assessing readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Students and Teachers Perspective. Therefore, this chapter has two parts: the first part deals with the characteristics of the respondents and the second part presents the analysis and interpretation of the main data.

To this end, dominantly quantitative data obtained through questionnaire was used to answer the basic research questions. Due to their large size, respondents were selected based on sample size for the study involved careful consideration of the target population and the use of purposive sampling due to geographical constraints and the nature of the research respondents.

On purposive sampling method particularly by including participants from Social and Natural Science departments across the Cluster Lead universities, the research aimed to capture a comprehensive snapshot of e-learning readiness from multiple perspectives within the institutions. This approach ensured that the data reflected the diverse experiences and opinions involved in the educational process. Accordingly, a total of 328 sample respondents (167 student & 161 instructor) were participated in the study. The number of participants involved in the study and sampling proportion was statistically representative and adequate to the analysis as well as to make the inference. The respondents were provided with 350 close ended/online questionnaire. Out of the total, 328 respondents (93.71%) from five Ethiopian Resource Center (Cluster Lead) universities completed and returned the questionnaire on time. However, 22 respondents (6.28%) did not return the questionnaire due to various reasons.

The collected data were analyzed by descriptive statistics such as frequency count, percentage, mean, standard deviation, T value, P-value, one way Anova and e-LRS readiness assessment

model respectively. Data were analyzed using the "Statistical Package for the Social Sciences" (SPSS) version 25 software. Since the objective of this study was to assess readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers and Students Perspective. Initially, the responses to questionnaire with the sample respondents were quantitatively analyzed.

4.2 Analysis and Interpretation from Students Perspectives

To ensure a comprehensive assessment of e-learning readiness, we selected students from five Cluster Lead universities, taking into account their fields of study both natural and social sciences enrolled programs, academic year, and gender. This approach was designed to yield the most accurate and representative results regarding their preparedness for e-learning.

4.2.1 Demographic Characteristics

Table 4.1 Students Respondents by Universities

Variable	Frequency	Percent
Addis Ababa University	35	21.0
Hawassa University	33	19.8
Jimma University	32	19.2
Dire Dawa University	34	20.4
Bahir Dar University	33	19.8
Total	167	100.0

Source: Survey Data 2024

Item one of table 4.1 shows that of the respondents, Addis Ababa University was represents with (21.0%) while Hawassa University represented by 19.8%. Besides, Jimma University represented by (19.2%) and Dire Dawa University represented by 20.4%. Finally, Bahir Dar University represented by (19.8%). Based on the data indicated above the researcher can deduce that, the sample of universities is fairly representative of the population of universities in the country, with no single university dominating the sample. This could indicate that the cluster universities in the county are relatively balanced in terms of their representation in the sample.

4.3 Departments of Sample Universities

Table 4.2 Students Classification of Departments

Variable	Frequency	Percent
Social Science	87	52.1
Natural Science	80	47.9
Total	167	100.0

Source: Survey Data 2024

As can be observed from the above table of item one, 52.1% of departments are social science stream whereas 47.9% of the departments are natural science stream. The above figure clearly shows that, social science is the dominant department in terms of frequency, with a significant majority of observations falling under this category and natural science is the second most common department, but still has a substantial presence. Besides, since there are only two streams of studies represented in the dataset, so, we can assume that these two streams are the only ones being considered or studied.

4.4 Characteristics of Respondents

Table 4.3 Students Sex Compositions of Respondents

Variable	Frequency	Percent
Male	94	56.3
Female	73	43.7
Total	167	100.0

Source: Survey Data 2024

As Table 4.3 above shows that 56.3% of the sample employees were males which means that nearly six out of every 10 respondents are men and 43.7% were females which means that almost four out of every 10 respondents are women. Based on the data indicated above the researcher can deduce that a significant proportion of male respondents participated in filling out the questionnaire compared to female respondents. Besides, the above data indicates that, sex composition of the respondents is skewed towards males, but with a significant proportion of female respondents as well.

Table 4.4 Students Age Compositions of Respondents

Variable	Frequency	Percent
Below 20 years	41	24.6
21-30 years	119	71.3
31-40 years	6	3.6
41 and above	1	.6
Total	167	100.0

Source: Survey Data 2024

As can be observed from the above table, 24.6%) of respondents fall into this age category of youngest age group below 20 years while 71.3% found within the age range of 21-30 years which is middle age group. Besides, 3.6% of respondents fall into this age category of older age group

whereas a mere 0.6% of respondents are in this age category oldest age group. The data indicated that, the high proportion of young adults may suggest that services catering to this age group may be more successful, such as those related to education and research. On the other hand, the high proportion of young adults could present opportunities for targeted services and related academic activities efforts focused on this age group.

Table 4.5 Students Year of Study

Variable	Frequency	Percent
First Year (Freshman)	51	30.5
Second Year	39	23.4
Third Year	29	17.4
forth Year	29	17.4
Fifth Year	18	10.8
Above Six Year	1	.6
Total	167	100.0

Source: Survey Data 2024

As to item 1 of table 4.5, about 30.5%) are in their first year (freshmen), which is the largest group. The remaining students are distributed across the higher years of study, with a decreasing trend. These are Second year students 23.4%, third year students 17.4%, fourth year students 17.4%, fifth year students 10.8% and finally above six years student 0.6%. This indicates that, the majority of students are in their first year (freshmen) and a decreasing trend as students' progress to higher years of study. Besides, the percentage of students in each subsequent year group decreases, with fewer students remaining in university beyond their third year.

4.5. Technological Readiness

The respondents were surveyed about their technological readiness for eLearning, focusing on their access to resources such as computers, laptops, and network infrastructure. This is important because effective learning relies on having these technological resources and a stable internet

connection. Additionally, the survey included questions about internet speed and the measures in place to protect against online security threats related to eLearning.

Table 4.6 Students Technological Availability and Access Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	2.68	1.376	25.199	166	.000	2.683	2.47	2.89
2	167	2.67	1.355	25.466	166	.000	2.671	2.46	2.88
3	167	2.53	1.246	26.278	166	.000	2.533	2.34	2.72
4	167	2.50	1.212	26.693	166	.000	2.503	2.32	2.69
5	167	2.52	.999	32.610	166	.000	2.521	2.37	2.67

Source: Survey Data 2024

In order to assess the related to technological availability and access were presented to rate certain issues in this regard. The average rating specific to the technological availability and access and their significance was evaluated using t-tests; which are presented in the following way and presented with five questions to be rated in a scale of agreement level.

The sample means for each of the five items range from 2.52 to 2.68, which are all below the test value of 3. This suggests that, on average, the technological availability and access items may not be as high as expected and also, the p-values for all five items are extremely low (less than 0.001) and this means that it is highly unlikely that the sample means are equal to 3.41 by chance alone. Besides, for all five items, the intervals do not overlap with the test value of 3.41, indicating that it is unlikely that the true population mean is equal to 3.41.

From the findings, respondents agree that they have access to either a desktop computer or a laptop in school, home or Cafe [M=2.68]. In addition, the respondents indicated that they have Computer access with all necessary software installed to support the eLearning [2.67], this mean score is below the expected readiness level for eLearning [Mi =2.67 < M=3.41] .On the other hand, the majority of the respondents strongly agree they have access a computer with internet connection [M=2.53] also agree that the speed of the internet access is satisfactory and agrees that they are secured from Different online Attacks respectively [M=2.50], [M=2.52]. Although the overall mean score for technological availability and Access readiness is much lower than the threshold e-LRS readiness Model value [M=2.58 < M=3.41].

The result have showed that, there may be a significant difference between the actual technological availability and access items and what is considered average or expected. Specifically, the mean values are lower than expected, indicating that there may be a gap in technological availability and access and also, the p-values indicate that this difference is statistically significant, suggesting that it is not due to chance. Besides, the finding can inform decisions related to improving technological infrastructure, training programs, or other initiatives aimed at increasing accessibility and bridging the gap in the cluster/sample universities.

4.6. Technology Usability

The respondents were surveyed about their technological readiness for eLearning, focusing on Technology usability such as the institution has online educational resources. This is important because effective learning relies on having these online resources. Additionally, the survey included questions about availability of social media platforms, online application software and student management system related to eLearning.

Table 4.7 Students Technology Usability Finding

Items		**Test Value = 3.41 (e-LRS Assessment Model threshold value**				
	One-Sample Statistics	**T**	**Df**	**p-value**	**Mean Difference**	**95% Confidence Interval of the Difference**

	N	Mean	Std. Deviation					Lower	Upper
1	167	2.63	.965	35.268	166	.000	2.635	2.49	2.78
2	167	3.17	1.162	35.309	166	.000	3.174	3.00	3.35
3	167	2.73	1.026	34.379	166	.000	2.731	2.57	2.89
4	167	2.93	1.228	30.880	166	.000	2.934	2.75	3.12

Source: Survey Data 2024

From the findings, the majority of the respondents agree that their institution have online educational database resources [M=2.63]. In addition, the majority respondents indicated that there is Accessible online application software collection in their institution, this mean score is below the expected readiness level for eLearning [Mi =2.73 < M=3.41] .On the other hand, the majority of the respondents agree that their institution have different social media platforms [M=3.17] also majorities agree that usability of Institution student management system is satisfactory [M=2.93]. Although the overall mean score for technological usability readiness is much lower than e-LRS readiness Model threshold value [M=2.86 < M=3.41], availability of social media platforms not reliable enough to support eLearning

Accordingly, the finding indicated that, technology usability items have different means and standard deviations, indicating varying levels of usability and the means are statistically significantly different from the test value of 3.41, suggesting that the technology usability is not equal to the expected level. Besides, technology usability needs to be improved across all items and the T variations in means and standard deviations indicate that there may be room for improvement in technology usability, and further investigation is needed to understand the causes of these variations

4.7. ICT Support

The respondents were surveyed about their technological readiness for eLearning, focusing on ICT Support such as the institution ICT has Guidelines and Tutorials to use ELearning

Management System. This is important because effective eLearning relies on having these guidelines and tutorials. Additionally, the survey included questions about having Technical Support, having trainings on eLearning platform and having basic computer training related to eLearning.

Table 4.8 Students ICT Support Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	2.25	.955	30.463	166	.000	2.251	2.11	2.40
2	167	2.32	1.002	29.976	166	.000	2.323	2.17	2.48
3	167	2.45	.973	32.511	166	.000	2.449	2.30	2.60
4	167	2.35	1.036	29.355	166	.000	2.353	2.20	2.51

Source: Survey Data 2024

From the findings, respondents agree that there is available user friendly guidelines and tutorials to us LMS [M=2.25]. In addition, the majority respondents indicated that there is technical support from ICT unit to use eLearning, this mean score is below the expected readiness level for eLearning [M =2.32 < M=3.41] .On the other hand, the the respondents agree that their institution ICT unit provide elearning training on LMS Platform [M=2.45] also majorities agree that they are satisfied with the availability of Basic computer training and Support [M=2.35]. Although the overall mean score for Training and Support readiness is much lower than the expected level e-LRS readiness Model threshold value [M=2.34 < M=3.41].

4.8. Individual Readiness

The respondents were surveyed about their technological readiness for eLearning, focusing on Individual Readiness such as individual technology skill and individual trainings. This is important

because effective eLearning relies mostly on individual Technology skills. Additionally, the survey included questions about basic computer skill, using internet resources, basic ELearning Training and having skill using LMS.

Table 4.9 Students Individual Basic Technical Skill Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	3.58	1.189	38.921	166	.000	3.581	3.40	3.76
2	167	3.57	1.179	39.178	166	.000	3.575	3.39	3.76
3	167	3.30	1.111	38.365	166	.000	3.299	3.13	3.47
4	167	3.10	1.304	30.669	166	.000	3.096	2.90	3.30
5	167	2.51	1.197	27.159	166	.000	2.515	2.33	2.70
6	167	3.34	1.325	32.582	166	.000	3.341	3.14	3.54
7	167	3.36	1.327	32.707	166	.000	3.359	3.16	3.56
8	167	2.96	1.270	30.158	166	.000	2.964	2.77	3.16
9	167	3.56	1.268	36.298	166	.000	3.563	3.37	3.76
10	167	3.28	1.316	32.173	166	.000	3.275	3.07	3.48
11	167	3.05	1.293	30.457	166	.000	3.048	2.85	3.25

Source: Survey Data 2024

The findings reveal that most respondents believe they possess basic knowledge and skills to use computers, with a mean score of [M=3.58]. Additionally, respondents generally feel competent in

using the internet effectively, with a mean score of [M =3.57], which is higher than the threshold value of [M =3.41], for eLearning.

Conversely, while respondents agree that they have the basic skills to utilize eLearning systems and confidently use operating systems and application software for eLearning tasks, the mean score for this skill is [M =3.2]. They also show agreement in their ability to handle email with attachments, web browsing, social media platforms, application software, and Learning Management Systems (LMS), with a mean score of [M =3.31]. However, a significant majority agree having formal training in eLearning, reflected in a lower mean score of [M =2.51].

Overall, the mean score for individual Technical Skill readiness is [M =3.23], which is close to e-LRS readiness Model threshold value [M =3.41], indicating a general readiness. Nevertheless, there is still a notable need for improvement in individual training for eLearning and accessing online resource databases to enhance overall readiness.

The 95% confidence intervals for each item provide a range within which the true population mean is likely to lie. For example, for Item 1, the confidence interval is (3.40, 3.76), indicating that the true population mean readiness score for this item is likely to be between these values. In sum, the majority of individuals have readiness scores above the target value of 3, but some individuals have scores below this target and the findings suggest that targeted interventions, training programs, or support may be needed to address areas of low readiness and improve overall readiness across the sample universities.

4.9. Attitude/Awareness

The respondents were surveyed about their individual attitude/awareness for eLearning, focusing on understanding on significance of eLearning such as understanding of eLearning is effective mode of education. This is important because effective eLearning relies mostly on individual attitude/awareness skills. Additionally, the survey included questions about how motivated to engage in self-directed learning, and how they are ready for eLearning.

Table 4.1 Students Attitude/Awareness Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	3.38	1.186	36.866	166	.000	3.383	3.20	3.56
2	167	3.31	1.161	36.854	166	.000	3.311	3.13	3.49
3	167	3.31	1.130	37.883	166	.000	3.311	3.14	3.48
4	167	3.48	1.145	39.261	166	.000	3.479	3.30	3.65

Source: Survey Data 2024

The findings reveal that most respondents believe they understand the significance of online education with a mean score of [M=3.38]. Additionally, respondents generally believe that eLearning is more effective mode of education with mean score of [M =3.57], which is higher than the threshold value of [M =3.41], for eLearning.

The majority of the respondents agree that they are motivated engage in self-directed learning [M=3.31] also majorities agree that they are ready for eLearning [M=3.48]. Overall, the mean score for Attitude/awareness readiness is [M =3.38], which is close to e-LRS readiness Model threshold value [M =3.41], indicating a general readiness. Nevertheless, there is still a notable need for improvement in individual attitude/awareness to enhance overall readiness.

In sum, technology usability needs to be improved across all items and the T variations in means and standard deviations indicate that there may be room for improvement in technology usability, Finally, the confidence intervals provide a range of values within which the true population mean is likely to lie.

4.10. Self-Efficacy/ Confidence with E-Learning

The respondents were surveyed about their self-efficacy and confidence in eLearning, with a particular focus on their familiarity with online classes and their perceptions of eLearning as an effective mode of education. This is crucial because successful eLearning heavily depends on an individual's self-efficacy and confidence. The survey also covered their experiences with attending online classes, previous training in digital skills, and familiarity with using student management systems.

Table 4.11 Students Self-Efficacy/ Confidence with E-Learning Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	2.80	1.351	26.745	166	.000	2.796	2.59	3.00
2	167	2.65	1.192	28.759	166	.000	2.653	2.47	2.83
3	167	2.81	1.261	28.786	166	.000	2.808	2.62	3.00
4	167	2.93	1.223	31.005	166	.000	2.934	2.75	3.12

Source: Survey Data 2024

The findings indicate that most respondents feel they have attended online classes, with a mean score of [M=2.80]. Additionally, respondents generally believe they have prior training in digital skills, reflected in a mean score of [M=2.65], which is below the threshold value of 3.41 for eLearning readiness.

The majority also agree that they use a Student Management System, with a mean score of [M=2.81], and that they have participated in online courses, with a mean score of [M=2.93]. Overall, the mean score for self-efficiency/confidence readiness is [M=2.79], which falls below e-LRS readiness Model threshold value [M=3.41].

Based on these findings, one can conclude that, participants generally have moderate to high levels of self-efficacy/confidence with e-learning and there is significant variation in self-efficacy/confidence levels among participants. In addition, the true population mean self-efficacy/confidence level is likely to be higher than the expected value of 3.41. In sum, the results suggest that eLearning platforms and educational institutions can benefit from emphasizing strategies to build students' confidence and self-efficacy in eLearning environments.

4.11. Organizational Readiness

The respondents were surveyed about organizational culture readiness for eLearning, focusing on their institution's culture and perceptions of eLearning as an effective educational approach. This is essential because the success of eLearning largely depends on the organizational culture. The survey also addressed whether the organization strongly supports eLearning, has a plan for eLearning implementation, has developed a curriculum designed for eLearning, and possesses a fully functional Learning Management System (LMS).

Table 4.12 Students Organizational Culture Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	2.63	1.158	29.395	166	.000	2.635	2.46	2.81
2	167	2.54	1.165	28.222	166	.000	2.545	2.37	2.72
3	167	2.74	1.126	31.411	166	.000	2.737	2.56	2.91
4	167	2.45	1.101	28.739	166	.000	2.449	2.28	2.62
5	167	2.40	1.047	29.568	166	.000	2.395	2.24	2.56
6	167	2.57	1.056	31.450	166	.000	2.569	2.41	2.73

Source: Survey Data 2024

The findings indicate that respondents feel their institution recognizes the benefits of eLearning, with a mean score of [M=2.63]. However, they generally perceive that the institution lacks a well-defined eLearning usage plan, as reflected in a mean score of [M=2.54], which is below the threshold of [M=3.41] for eLearning readiness.

Large number of respondents agree that their institution has a good culture of using new technologies [M=2.74] also they agree that their institution Curricula is designed properly to align with e-learning, supportive social networking group for your participation in e-learning and their institution has e-learning system with all the necessary functionalities [M=2.47].

Overall, the mean score for Organizational Culture readiness is [M=2.55], which is below e-LRS readiness Model threshold value [M=3.41] threshold. This suggests that while some aspects of organizational culture are in place, significant improvements are needed to enhance overall readiness for eLearning.

Accordingly, one can possibly concluded that, the sample universities has a decent level of readiness, but there may be areas that require improvement and may not be fully prepared for changes or challenges, and therefore may face some difficulties in implementing new initiatives or responding to unexpected situations. Besides, the sample cluster universities should focus on developing targeted interventions to address specific areas where readiness is lower, in order to improve overall preparedness and resilience. In sum, the institutional/organization's readiness scores are generally moderate to high, with some variation across different areas or teams.

4.12. Top management Support

The respondents were surveyed about the support provided by top management for eLearning, specifically focusing on how well the organization’s top leadership supports eLearning as an effective educational method. This support is crucial, as the success of eLearning largely depends on backing from top management. The survey also examined whether top management is actively involved in eLearning, encourages students to use eLearning, organizes events to raise awareness about eLearning, and facilitates discussions with students regarding online class modalities.

Table 4.13 Students Management support findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	167	2.49	1.080	29.798	166	.000	2.491	2.33	2.66
2	167	2.46	.998	31.783	166	.000	2.455	2.30	2.61
3	167	2.56	1.039	31.801	166	.000	2.557	2.40	2.72
4	167	2.41	1.082	28.752	166	.000	2.407	2.24	2.57
5	167	2.51	1.086	29.932	166	.000	2.515	2.35	2.68
6	167	2.53	1.080	30.236	166	.000	2.527	2.36	2.69

Source: Survey Data 2024

The findings indicate that respondents feel top management involvement with eLearning education is strong, with a mean score of [M=2.49]. However, they generally perceive that the top management encourages students to use the LMS, as reflected in a mean score of [M=2.46], and top management lacks to arrange different gatherings for eLearning awareness to students [M=2.56], which is below the threshold of [M=3.41] for eLearning readiness.

Number of respondents agree that their institution top management made discussion about online class modality and puts pressure on departments to use eLearning [M=2.41] [M=2.51] also they agree that their institution top managements has a strong commitment to implement eLearning [M=2.53].

Overall, the mean score for Organizational top management support readiness is [M=2.49], which is below e-LRS readiness Model threshold value [M=3.41]. This indicates that although certain aspects of top management support are present, substantial improvements are required to boost overall eLearning readiness within the institution.

Based on these findings, one can possibly concluded that, top management support is generally high across all samples, with most means exceeding the test value of 3.41 and there may be some variation in top management support across different samples, but this variation is not statistically significant. Furthermore, top management support is significantly higher than the benchmark value of 3, indicating that top management may be providing more support than expected.

In addition to that, the result have showed that, top management is providing sufficient support to the organization, which can lead to increased employee morale, job satisfaction, and overall performance. Besides, the consistency in mean values across samples implies that top management's support is consistent across different departments, teams, or locations, which can foster a sense of trust and stability within the organization while top management support is generally high, there may be opportunities to further improve it. In sum, top management support is generally high, indicating a positive environment for employees and consistency in support across departments and locations is key to fostering trust and stability.

4.13. Financial Availability

The respondents were surveyed about the financial readiness of their organization for eLearning, focusing on the availability of financial resources to support eLearning as an effective educational method. This is essential because the success of eLearning depends significantly on adequate financial support. The survey also assessed whether the organization allocates a budget for eLearning initiatives, provides funding to avail computers for students, invests in expanding IT infrastructure, and supports basic computer training for students.

Table 4.14 Students Financial Availability Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper

1	167	2.40	.964	32.204	166	.000	2.401	2.25	2.55
2	167	2.17	.850	33.043	166	.000	2.174	2.04	2.30
3	167	2.41	1.104	28.236	166	.000	2.413	2.24	2.58
4	167	2.32	.945	31.697	166	.000	2.317	2.17	2.46

Source: Survey Data 2024

The findings indicate that respondents feel Organizational financial availability to allocate budget for eLearning projects and initiatives is good, with a mean score of [M=2.40]. However, they generally perceive that financial availability to expand IT infrastructure, as reflected in a mean score of [M=2.41], and Organizational financial availability lacks to avail computers to students [M=2.17], which is below the threshold of [M=3.41] for eLearning readiness.

Number of respondents agree that their institution allocated budget for basic computer training to students [M=2.32]

Overall, the mean score for Organizational top management support readiness is [M=2.32], which is below the e-LRS readiness Model threshold value [M=3.41]. This indicates that although certain aspects of financial availability are in place, substantial improvements are required to boost overall eLearning readiness within the institution.

4.14. One Way Anova

Table 4.15 Students one Way Anova

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Technological Readiness technology Access	Between Groups	67.574	16	4.223	6.903	.000
	Within Groups	91.772	150	.612		
	Total	159.346	166			
Technological Readiness technology usability	Between Groups	49.826	16	3.114	5.837	.000
	Within Groups	80.026	150	.534		
	Total	129.852	166			
Technological Readiness technology Training and support	Between Groups	25.941	16	1.621	2.848	.000
	Within Groups	85.386	150	.569		
	Total	111.327	166			
Individual Readiness Basic Technical Skills	Between Groups	129.372	16	8.086	22.919	.000
	Within Groups	52.920	150	.353		

	Total	182.292	166			
Individual Readiness Confidence with eLearning	Between Groups	84.484	16	5.280	7.367	.000
	Within Groups	107.508	150	.717		
	Total	191.992	166			
Organizational readiness Organizational Culture	Between Groups	53.928	16	3.371	5.304	.000
	Within Groups	95.318	150	.635		
	Total	149.247	166			
Organizational Readiness Top Management Support	Between Groups	59.811	16	3.738	6.407	.000
	Within Groups	87.512	150	.583		
	Total	147.323	166			
Organizational Readiness Financial Availability	Between Groups	21.660	16	1.354	2.585	.001
	Within Groups	78.554	150	.524		
	Total	100.214	166			

Source: Survey Data 2024

The ANOVA analysis shows significant differences in several areas of readiness. For Technological Readiness, there are clear differences in Technology Access, Usability, and Training and Support, with all showing significant variation between groups. In terms of Individual Readiness, significant differences were found in Basic Technical Skills, Confidence with e-Learning, Organizational Culture, and Top Management Support. Additionally, Organizational Financial Availability also showed significant differences. Overall, these results indicate that readiness levels vary significantly across all the factors examined.

4.15 Analysis and Interpretation from Instructors as well as Professional Perspectives

To ensure a comprehensive assessment of e-learning readiness, we selected Instructors and Professionals from five Cluster Lead universities, taking into account their fields both natural and social sciences, Academic Rank, Service Year and gender. This approach was designed to yield the most accurate and representative results regarding their preparedness for e-learning.

4.16. Demographic Characteristics

Table 4.16 Instructors Demographic Characteristics Source:

Variable	Frequency	Percent
Addis Ababa University	33	20.4
Hawassa University	32	19.8
Jimma University	32	19.8
Dire Dawa University	32	19.8
Bahir Dar University	32	19.8
Total	161	100.0

Survey Data 2024

Item one of table 4.16 shows that of the respondents, Addis Ababa University was represents with (20.4%) while Hawassa University represented by 19.8%. Besides, Jimma University represented by (19.8%) and Dire Dawa University represented by 19.8%. Finally, Bahir Dar University represented by (19.8%). Based on the data indicated above the researcher can deduce that, the sample of universities is fairly representative of the population of universities in the country, with no single university dominating the sample. This could indicate that each university has a similar proportion of representation, with Addis Ababa University having a slight increase and the remaining four universities have a percentage distribution of very close to each other.

4.17. Characteristics of Respondents

Table 4.2 Instructors Sex Compositions of Respondents

Variables	Frequency	Percent
Male	94	58.0
Female	67	41.4
Total	162	100.0

Source: Survey Data 2024

Table 4.3 Instructors Age Compositions of Respondents

Variables	Frequency	Percent
21-30 years	26	16.0
31-40 years	73	45.1
41 and above	62	38.3
Total	162	100.0

Source: Survey Data 2024

Table 4.18 shows that, the majority of respondents fall into the age group of 31-40 years (45.1%), followed by those who are 41 and above (38.3%), and then those in the age group of 21-30 years (16.0%). This suggests that, the majority of the respondents are in their middle to late working years, with a smaller proportion being younger and fewer being older. And also, the findings provide a snapshot of the age composition of the respondents and may be useful in understanding specific trends or patterns within this demographic group.

Table 4.19 Instructors Qualification of Respondents

Variables	Frequency	Percent
BA/BSC	8	4.9
MA/MSC	109	67.3
PhD and above	44	27.2
Total	162	100.0

Source: Survey Data 2024

Table 4.19 shows that, the majority of respondents have a Master's degree (MA/MSC), with a frequency & percentage of 109 (67.3%) while the and second most common qualification is Bachelor's degree (BA/BSC), with a frequency and percentage of 8 (4.9%). Besides, the third most common qualification is PhD and above, with a frequency & Percentage of 44 (27.2%). The result indicated that, the sample is predominantly composed of individuals with advanced degrees, particularly Master's degrees and relatively small proportion of Bachelor's degree holders also

represented. Also, presence of PhD and above qualifications in the sample indicates that there may be researchers, academics, or senior-level professionals present in the sample.

Table 4.20 Instructors Service Year of Respondents

Variables	Frequency	Percent
Below 10 years	47	29.0
11-20 years	88	54.3
21-30 years	18	11.1
30 years & above	8	4.9
Total	162	100.0

Source: Survey Data 2024

Table 4.20 shows that, the majority of the respondents 54.3% have 11-20 years of service, which is the largest category while early career representation have represented with 29% of respondents with less than 10 years of service. Besides, maturity and experience have represented with 11.1% of respondents with 21-30 years of service whereas the smallest category represented with (4.9%) with 30 years or more of service. The result have showed that, the sample universities appears to have a relatively young workforce with a majority having moderate levels of experience and there may be opportunities to develop and retain early-career talent to fill future leadership gaps.

Table 4.21 Instructors Staff Category of Respondents

Variables	Frequency	Percent
Academic	144	88.9
Professional	17	10.5
Total	162	100.0

Source: Survey Data 2024

Table 4.21 indicated that, 144 (88.9%) a significant majority of respondents are belong to the academic category whereas, 17 (10.5%) of them respondents are belong to professional category, which is a significant minority. Based on this fact, one can possibly conclude that, a significant

dominance of individuals with an educational background and the professional staff category accounts for a smaller but still significant portion of the respondents.

4.18. Technology Availability

The respondents were surveyed about their technological readiness for eLearning, focusing on their access to resources such as computers, laptops, and network infrastructure. This is important because effective learning relies on having these technological resources and a stable internet connection. Additionally, the survey included questions about internet speed and the measures in place to protect against online security threats related to eLearning.

Table 4.22 Instructors Technology Availability Findings

Items	One-Sample Statistics			Test Value = 3					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	4.12	1.115	46.881	160	.000	4.118	3.94	4.29
2	161	3.83	1.050	46.301	160	.000	3.832	3.67	4.00
3	161	4.03	1.109	46.114	160	.000	4.031	3.86	4.20
4	161	3.58	1.099	41.392	160	.000	3.584	3.41	3.75
5	161	3.16	1.151	34.866	160	.000	3.161	2.98	3.34

Source: Survey Data 2024

From the findings, majority of respondents agree that they have access to either a desktop computer or a laptop in school, home or Cafe [M=4.12]. In addition, the respondents indicated that they have Computer access with all necessary software installed to support the eLearning [3.83], this mean score is above the expected readiness level for eLearning [Mi=3.83 > M=3.41] .On the other hand, the majority of the respondents strongly agree they have access a computer with internet

connection [M=4.03] also agree that the speed of the internet access is satisfactory and agrees that they are secured from Different online Attacks respectively [M=3.58], [M=3.16]. Although the overall mean score for technological availability and Access readiness is higher than the expected level of e-LRS readiness Model threshold value [M=3.74 > M=3.41].

Specifically a one-sample t-test, which is used to compare the mean of a sample to a known population mean. The test is being conducted on 5 different technology availability items, with 161 observations (sample size) for each item. Accordingly, one can conclude that, items 1, 2, and 3 have means that are significantly higher than 3, indicating that these technology availability items have higher levels of availability compared to the known population mean. Besides, items 4 and 5 have means that are significantly lower than 3, indicating that these technology availability items have lower levels of availability compared to the known population mean. In sum, there are differences in technology availability across these five items, with some items having higher levels of availability and others having lower levels.

4.19. Technology Usability

The respondents were surveyed about their technological readiness for eLearning, focusing on Technology usability such as the institution has online educational resources. This is important because effective learning relies on having these online resources. Additionally, the survey included questions about availability of social media platforms, online application software and student management system related to eLearning

Table 4.23 Instructors Technology Usability Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	3.39	.896	48.045	160	.000	3.391	3.25	3.53

2	161	3.55	1.024	43.930	160	.000	3.547	3.39	3.71
3	161	3.20	1.089	37.281	160	.000	3.199	3.03	3.37
4	161	3.70	.902	52.005	160	.000	3.696	3.56	3.84

Source: Survey Data 2024

From the findings, the majority of the respondents agree that their institution have online educational database resourses [M=3.39]. In addition, the majority respondents indicated that there is Accessable online application software collection in their institution, this mean score is above the expected testing value for eLearning [M =3.20 < M=3.41] .On the other hand, the majority of the respondents agree that their institution have different social media platforms [M=3.55] also majorities agree that usability of Institution student management system is satisfactory [M=3.70]. Although the overall mean score for technological usability readiness is higher than the expected level of e-LRS readiness Model threshold value [M=3.46 > M=3.41], availability of social media platforms not reliable enough to support eLearning

In terms of technology usability, the results showed that, there may be some variation in user satisfaction or performance across different user groups or conditions, but none of these variations are statistically significant at a conventional significance level. However, there may be some indication that certain user groups or conditions (samples 2 and 4) exhibit better or worse performance compared to others (sample 3), although these differences may not be statistically significant at a conventional level. In sum, the technology usability may vary slightly across different user groups or conditions, but these variations are not statistically significant.

4.20. ICT Support

The respondents were surveyed about their technological readiness for eLearning, focusing on ICT Support such as the institution ICT has Guidelines and Tutorials to use ELearning Management System. This is important because effective eLearning relies on having these guidelines and tutorials. Additionally, the survey included questions about having Technical Support, having trainings on eLearning platform and having basic computer training related to eLearning.

Table 4.24 Instructors ICT Training & Support Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	3.00	1.031	36.929	160	.000	3.000	2.84	3.16
2	161	3.39	1.113	38.648	160	.000	3.391	3.22	3.56
3	161	3.16	1.028	38.942	160	.000	3.155	3.00	3.32
4	161	3.20	1.001	40.637	160	.000	3.205	3.05	3.36

Source: Survey Data 2024

From the findings, respondents agree that there is available user friendly guidelines and tutorials to us LMS [M=3.00]. In addition, the majority respondents indicated that there is technical support from ICT unit to use eLearning, this mean score is below the expected readiness level for eLearning [M =3.39 < M=3.41] .On the other hand, the respondents agree that their institution ICT unit provide eLearning training on LMS Platform [M=3.16] also majorities agree that they are satisfied with the availability of Basic computer training and Support [M=3.20]. Although the overall mean score for Training and Support readiness is more close to the expected level of e-LRS readiness Model threshold value [M=3.18 < M=3.41].

Accordingly, one can conclude that, for all four test values, there is strong evidence to reject the null hypothesis that the true population mean is equal to the test value and the sample means (3.41, 3.39, 3.16, and 3.20) are significantly different from each other at a 95% confidence level. Besides, the 95% confidence intervals for each test value do not overlap, indicating that there are significant differences between the sample means. Furthermore, it appears that the training and support items have varying levels of effectiveness, with Test Values 2 and 4 having higher means than Test Values 1 and 3. In sum, the ICT training and support is leveled as good and the training and support provided by ICT is having a significant positive impact on the learners.

4.21. Individual Readiness

The respondents were surveyed about their technological readiness for eLearning, focusing on Individual Readiness such as individual technology skill and individual trainings. This is important because effective eLearning relies mostly on individual Technology skills. Additionally, the survey included questions about basic computer skill, using internet resources, basic ELearning Training and having skill using LMS.

Table 4.25 Instructors Individual Technical Skill Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	4.58	.856	67.843	160	.000	4.578	4.44	4.71
2	161	4.56	.900	64.253	160	.000	4.559	4.42	4.70
3	161	4.05	1.011	50.816	160	.000	4.050	3.89	4.21
4	161	4.07	1.016	50.894	160	.000	4.075	3.92	4.23
5	161	3.66	1.019	45.544	160	.000	3.658	3.50	3.82
6	161	4.60	.931	62.755	160	.000	4.602	4.46	4.75
7	161	4.58	.899	64.617	160	.000	4.578	4.44	4.72
8	161	4.08	1.037	49.947	160	.000	4.081	3.92	4.24
9	161	4.29	1.021	53.251	160	.000	4.286	4.13	4.44
10	161	4.17	.997	53.106	160	.000	4.174	4.02	4.33

11	161	3.68	1.105	42.240	160	.000	3.677	3.51	3.85

Source: Survey Data 2024

The findings reveal that most respondents believe they possess basic knowledge and skills to use computers, with a mean score of [M=4.58]. Additionally, respondents generally feel competent in using the internet effectively, with a mean score of [M =4.56], which is higher than the threshold value of [M =3.41], for eLearning.

Conversely, while respondents agree that they have the basic skills to utilize eLearning systems and confidently use operating systems and application software for eLearning tasks, the mean score for this skill is [M =4.06]. They also show agreement in their ability to handle email with attachments, web browsing, social media platforms, application software, and Learning Management Systems (LMS), with a mean score of [M =4.23]. However, a significant majority agree that they have formal training in eLearning, reflected in a mean score of [M =3.66].

Overall, the mean score for individual Technical skill is [M =4.21], which is above the e-LRS readiness Model threshold value [M =3.41], indicating a general readiness.

Based on these results it is possible to give account that, individual readiness items are not uniformly distributed around a central value of 3.41 and found varying levels of individual readiness. Furthermore, the standard deviations suggest that some items may have more variability in individual readiness than others and the p-values indicate that all differences between the test value and each item's mean are statistically significant at a level of $\alpha = 0.05$. In sum, some individuals may be more prepared or ready for the task than others and a need for additional support or training, while a mean value above 3 might suggest that individuals are adequately prepared.

4.22. Attitude/ Awareness

The respondents were surveyed about their individual attitude/awareness for eLearning, focusing on understanding on significance of eLearning such as understanding of eLearning is effective mode of education. This is important because effective eLearning relies mostly on individual

attitude/awareness skills. Additionally, the survey included questions about how motivated to engage in self-directed learning, and how they are ready for eLearning.

Table 4.26 Instructors Attitude/ Awareness Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	4.26	.932	57.996	160	.000	4.261	4.12	4.41
2	161	4.02	.968	52.762	160	.000	4.025	3.87	4.18
3	161	4.04	1.008	50.879	160	.000	4.043	3.89	4.20
4	161	4.20	.954	55.841	160	.000	4.199	4.05	4.35
5	161	4.22	.981	54.634	160	.000	4.224	4.07	4.38

Source: Survey Data 2024

The findings reveal that most respondents believe they understand the significance of online education with a mean score of [M=4.12]. Additionally, respondents generally believe that eLearning is more effective mode of education with mean score of [M =4.02], which is higher than the threshold value of [M =3.41], for eLearning.

The majority of the respondents agree that they are motivated engage in self-directed learning and willing to share lecture slides online [M=3.31] also majorities agree that they are are ready for eLearning [M=4.14]. Overall, the mean score for Attitude/awarness is [M =3.38], which is more equal to the e-LRS readiness Model threshold value [M =3.41], indicating a general readiness. Nevertheless, there is still a notable need for improvement in individual attitude/awareness to enhance overall readiness.

4.23. Self-Efficiency/Confidence with E-learning

The respondents were surveyed about their self-efficacy and confidence in eLearning, with a particular focus on their familiarity with online classes and their perceptions of eLearning as an effective mode of education. This is crucial because successful eLearning heavily depends on an individual's self-efficacy and confidence. The survey also covered their experiences with attending online classes, previous training in digital skills, and familiarity with using student management systems.

Table 4.27 Instructors Self-Efficiency/Confidence findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	3.93	1.143	43.569	160	.000	3.925	3.75	4.10
2	161	3.58	1.138	39.883	160	.000	3.578	3.40	3.75
3	161	3.40	1.120	38.556	160	.000	3.404	3.23	3.58
4	161	3.71	1.086	43.379	160	.000	3.714	3.55	3.88
5	161	3.71	1.093	43.032	160	.000	3.708	3.54	3.88
6	161	3.16	1.198	33.473	160	.000	3.161	2.97	3.35
7	161	3.25	1.204	34.225	160	.000	3.248	3.06	3.44

Source: Survey Data 2024

The following interpretations were made to the analysis results depicted in the table below.

The findings indicate that most respondents feel they have attended online classes, with a mean score of [M=3.93]. Additionally, respondents generally believe they have prior training in digital

skills, reflected in a mean score of [M=3.58], which is higher than the threshold value of 3.0 for eLearning readiness.

The majority also agree that they use a Student Management System, with a mean score of [M=3.40], and that they have participated in online courses and attended seminars/workshops related to eLearning, with a mean score of [M=3.71]. Overall, the mean score for self-efficiency/confidence readiness is [M=3.58], which is higher than e-LRS readiness Model threshold value [M=3.41].

Accordingly, one can conclude that, the p-values are all extremely low (less than 0.000), indicating that the results are statistically significant and suggests that the differences between the observed means and the test value of 3.41 are unlikely to occur by chance. Besides, the means of the self-efficiency/confidence with e-learning scores range from 3.16 to 3.93, with a median of around 3.58 and the standard deviations (Std. Deviation) are relatively small, ranging from 1.06 to 1.20, indicating that the scores are relatively consistent and not extremely spread out. In addition, the 95% confidence intervals (CI) provide an estimate of the range within which the true population mean is likely to lie. Accordingly, for most of the samples (items 1-4, 5), the means are significantly higher than the test value of 3, indicating that participants had higher self-efficiency/confidence with e-learning compared to the hypothesized value and item 6 has a significantly lower mean than the test value, suggesting that participants had lower self-efficiency/confidence with e-learning in this particular item. Besides, items 7 and 4 have similar means, both indicating higher self-efficiency/confidence with e-learning. In sum, participants generally reported higher self-efficiency/confidence with e-learning compared to the value of 3, but there may be some variability across different items or aspects of e-learning. And also, most participants had high self-efficiency/confidence with e-learning, which is generally a positive outcome.

4.24. Organizational Readiness

The respondents were surveyed about organizational culture readiness for eLearning, focusing on their institution's culture and perceptions of eLearning as an effective educational approach. This is essential because the success of eLearning largely depends on the organizational culture. The survey also addressed whether the organization strongly supports eLearning, has a plan for

eLearning implementation, has eLearning implementation policy, has developed a curriculum designed for eLearning, and possesses a fully functional Learning Management System (LMS).

Table 4.28 Instructors Organizational Culture Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	3.63	1.060	43.437	160	.000	3.627	3.46	3.79
2	161	3.38	1.012	42.362	160	.000	3.379	3.22	3.54
3	161	2.96	.911	41.193	160	.000	2.957	2.81	3.10
4	161	3.11	.975	40.512	160	.000	3.112	2.96	3.26
5	161	3.02	1.021	37.497	160	.000	3.019	2.86	3.18
6	161	3.16	.961	41.737	160	.000	3.161	3.01	3.31
7	161	3.21	.951	42.828	160	.000	3.211	3.06	3.36

Source: Survey Data 2024

The findings indicate that respondents feel their institution recognizes the benefits of eLearning, with a mean score of [M=3.63]. However, they generally perceive that the institution lacks a well-defined eLearning usage plan, as reflected in a mean score of [M=3.38], which is higher than the threshold of [M=3.41] for eLearning readiness.

Number of respondents agree that their institution has eLearning Implementation policy and have clear strategies and goals regarding implementing eLearning [M=3.16] also they agree that their institution Curricula is designed properly to align with e-learning, supportive social networking group for your participation in e-learning and their institution has e-learning system with all the necessary functionalities [M=3.04].

Overall, the mean score for Organizational Culture readiness is [M=3.21], which is close equal to the e-LRS readiness Model threshold value [M=3.41]. This suggests that while some aspects of organizational culture are in place, improvements are needed to enhance overall readiness for eLearning.

Accordingly, one can conclude that, the mean score for each group varies from 2.96 to 3.63, indicating that there is some variation in the scores across the 7 groups and the p-values for all 7 groups are 0.000, indicating that the null hypothesis (i.e., the mean score is equal to 3) can be rejected at a significance level of 0.05 for all groups and suggests that the mean score in each group is significantly different from 3. Besides, the confidence intervals for the difference between each group's mean and the test value (3.41) are all non-overlapping with zero, indicating that the mean score in each group is significantly higher than 3. And also, standard deviations (Std. Deviation) vary from 0.911 to 1.060, indicating that there is some variation in the scores within each group. In addition, these organizations are more prepared to adapt to change or have a more positive cultural environment than what is typical and may be differences in readiness and culture across different parts of the organization or between different teams. In sum, these sample universities have a relatively high level of organizational readiness and culture, but there may be areas for improvement and variation across different groups or teams.

4.25. Top management Support

The respondents were surveyed about the support provided by top management for eLearning, specifically focusing on how well the organization’s top leadership supports eLearning as an effective educational method. This support is crucial, as the success of eLearning largely depends on backing from top management. The survey also examined whether top management is actively involved in eLearning, encourages faculty to use eLearning, top management consider eLearning as a strategic resource and has a strong commitment on departments to use eLearning.

Table 4.29 Instructors Top Management Support Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	3.24	.960	42.839	160	.000	3.242	3.09	3.739
2	161	3.20	.988	41.153	160	.000	3.205	3.05	3.36
3	161	3.33	1.029	41.035	160	.000	3.329	3.17	3.49
4	161	2.98	.898	42.139	160	.000	2.981	2.84	3.12
5	161	3.20	1.042	38.961	160	.000	3.199	3.04	3.36

Source: Survey Data 2024

The findings indicate that respondents feel top management involvement with eLearning education is strong, with a mean score of [M=3.24]. However, they generally perceive that the top management encourages faculty to use the LMS, as reflected in a mean score of [M=3.20], and top management consider eLearning as a strategic resource [M=3.33], which is slightly lower than the threshold of [M=3.41] for eLearning readiness.

Number of respondents agree that their institution top management puts pressure on departments to use eLearning [M=2.98] also they agree that their institution top managements has a strong commitment to implement eLearning [M=3.20].

Overall, the mean score for Organizational top management support readiness is [M=3.19], which is close to the e-LRS readiness Model threshold value [M=3.41]. This indicates that although certain aspects of top management support are present, substantial improvements are required to boost overall eLearning readiness within the institution.

Accordingly, one can conclude that, the mean score for each group varies from 2.98 to 3.33, indicating that there is some variation in the scores across the 5 groups and the p-values for all 5

groups are 0.000, indicating that the null hypothesis (i.e., the mean score is equal to 3) can be rejected at a significance level of 0.05 for all groups and suggests that the mean score in each group is significantly different from 3. Besides, the confidence intervals for the difference between each group's mean and the test value (3.41) are all non-overlapping with zero, indicating that the mean score in each group is significantly higher than 3. And also, standard deviations (Std. Deviation) vary from 0.898 to 1.042, indicating that there is some variation in the scores within each group. In addition, these organizations are more prepared to adapt to change or have a more positive cultural environment than what is typical and may be differences in readiness and culture across different parts of the organization or between different teams. In sum, these sample universities have a relatively high level of organizational readiness and culture, but there may be areas for improvement and variation across different groups or teams.

4.26. Financial Availability

The respondents were surveyed about the financial readiness of their organization for eLearning, focusing on the availability of financial resources to support eLearning as an effective educational method. This is essential because the success of eLearning depends significantly on adequate financial support. The survey also assessed whether the organization allocates a budget for eLearning initiatives, provides Incentive for staffs who participated in the e-learning, budget to purchase licenses for different authoring tools for eLearning education, and allocate budget for eLearning course development training.

Table 4.30 Instructors Financial Availability Findings

Items	One-Sample Statistics			Test Value = 3.41 (e-LRS Assessment Model threshold value					
								95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Df	p-value	Mean Difference	Lower	Upper
1	161	2.73	.986	35.173	160	.000	2.733	2.58	2.89

2	161	2.42	1.046	29.304	160	.000	2.416	2.25	2.58
3	161	2.69	1.008	33.865	160	.000	2.689	2.53	2.85
4	161	2.63	.934	35.685	160	.000	2.627	2.48	2.77
5	161	2.60	.970	34.041	160	.000	2.602	2.45	2.75

Source: Survey Data 2024

The findings indicate that respondents feel Organizational financial availability to allocate budget for development and maintenance of elearning, with a mean score of [M=2.73]. However, they generally perceive that financial availability provides incentive for staff participated in eLearning, as reflected in a mean score of [M=2.42], and Organizational financial availability lacks allocate budget for different eLearning initiatives [M=2.69], which is below the threshold of [M=3.41] for eLearning readiness.

Number of respondents agree that their institution allocated budget to purchase licenses for eLearning education Authoring tools and allocating budget for eLearning course development trainings [2.61]

Overall, the mean score for Organizational financial availability readiness is [M=2.61], which is below the e-LRS readiness Model threshold value [M=3.41]. This indicates that although certain aspects of financial availability are in place, substantial great improvements are required to boost overall eLearning readiness within the institution.

Accordingly, one can conclude that, the sample means range from 2.42 to 2.73, with a mean of approximately 2.64 and the standard deviation ranges from 0.934 to 1.046, indicating some variation in the data. Besides, the p-values are all extremely small ($p < 0.001$), indicating that the sample means are significantly different from the test value of 3. Furthermore, all five samples have a mean that is lower than the test value of 3.41, indicating that the population mean is likely less than 3 and the confidence intervals for each sample provide a range of values within which the true population mean is likely to lie. Then, the finding shows that, there may be a significant difference between the actual financial availability and the expected or target value of 3.41 and this could have implications for financial planning, budgeting, or decision-making in various

contexts. In sum, financial availability in sample universities is not sufficient to meet the needs or expectations and there may be a need for improvement or increased funding to address this issue.

4.27. One Way Anova

Table 4.31 Instructors One Way Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Technological Readiness Technology_access	Between Groups	52.443	23	2.280	4.298	.000
	Within Groups	72.676	137	.530		
	Total	125.119	160			
Technological Readiness Technology_Usability	Between Groups	29.394	23	1.278	2.812	.000
	Within Groups	62.260	137	.454		
	Total	91.655	160			
Technological Readiness Technology_training_Support	Between Groups	49.086	23	2.134	3.896	.000
	Within Groups	75.043	137	.548		
	Total	124.129	160			
Individual_readiness_Attitude/Awarness	Between Groups	77.528	23	3.371	14.082	.000
	Within Groups	32.794	137	.239		
	Total	110.322	160			
Individual_readiness_Self-efficacy/Confidence	Between Groups	83.310	23	3.622	10.222	.000
	Within Groups	48.548	137	.354		
	Total	131.858	160			
Organizational readiness Organizational Culture	Between Groups	23.071	23	1.003	1.863	.015
	Within Groups	73.747	137	.538		
	Total	96.818	160			
Organizational readiness _Top Management Support	Between Groups	37.218	23	1.618	2.597	.000
	Within Groups	85.369	137	.623		
	Total	122.588	160			
Organizational readiness _Organizational Financial Availability	Between Groups	42.069	23	1.829	3.245	.000
	Within Groups	77.221	137	.564		
	Total	119.290	160			

The one-way ANOVA analysis shows that there are significant differences in several areas of readiness. For Technological Readiness, the differences in Technology Access, Usability, and Training Support were all significant, indicating that these factors vary notably between groups.

In Individual Readiness, both Attitude/Awareness and Self-efficacy/Confidence also showed significant differences, suggesting varying levels of readiness among individuals. Additionally, in Organizational Readiness, factors such as Organizational Culture, Top Management Support, and Financial Availability had significant differences, meaning these aspects also vary significantly between groups. Overall, these results indicate that there are clear and meaningful differences in readiness across the different areas studied.

Table 4.32 Summary of e-LRS Students Readiness analysis

Readiness Parameters	Mean	Level of Readiness
Technology Access	2.58	Not Ready Needs significant Improvement
Technology Usability	2.86	Not Ready Needs significant Improvement
ICT Support	2.34	Not Ready Needs significant Improvement
Individual Technical Skill	3.23	Not Ready Needs some work
Individual Attitude/Awareness	3.38	Not Ready Needs some work
Individual Self-efficacy/ Confidence	2.79	Not Ready Needs significant Improvement
Organizational Culture	2.55	Not Ready Needs significant Improvement
Top Management Support	2.49	Not Ready Needs significant Improvement
Financial Availability	2.32	Not Ready Needs significant Improvement

Table 4.33 Summary of e-LRS Instructors Readiness analysis

Readiness Parameters	Mean	Level of Readiness
Technology Access	3.74	Ready but Needs a few improvement
Technology Usability	3.46	Ready but Needs a few improvement
ICT Support	3.18	Not Ready Needs some work
Individual Technical Skill	4.21	Ready but Needs a few improvement
Individual Attitude/Awareness	3.38	Not Ready Needs some work
Individual Self-efficacy/ Confidence	3.58	Ready but Needs a few improvement
Organizational Culture	3.21	Not Ready Needs some work
Top Management Support	3.19	Not Ready Needs some work
Financial Availability	2.61	Not Ready Needs significant Improvement

The e-LRS results presented in Tables 4.32 and 4.33 indicate the e-learning readiness of the five Ethiopian Resource Center (Cluster Lead) Universities from the students' perspective. It reveals that technology, individual, and organizational readiness are currently lacking and require significant improvement. In contrast, from the instructors' perspective, the results suggest that they are generally ready but need enhancements in technology and individual readiness. However, they are not prepared in terms of organizational readiness, indicating that this area requires further improvement. Overall, the scores exceed the threshold of 3.41, highlighting that only a few improvements are necessary.

4.28. Discussion

This study aimed to assess and evaluate the e-learning readiness of five Ethiopian Public Resource Center (Cluster Lead) Universities from the perspectives of both teachers and students. Implementing e-learning in higher education can be disruptive if not properly planned and managed, potentially resulting in failure after implementation (Demiris et al., 2004). Therefore, assessing a higher educational organization's e-learning readiness is crucial for identifying barriers and limitations prior to launching such initiatives.

Evaluating eLearning readiness in higher education institutions helps pinpoint strengths and weaknesses within the organization, resulting in enhanced outcomes. Readiness is measured using a scale from 1 to 5.

The study results from the students' perspective indicate that the overall mean values for technological availability, technology usability, and ICT support are very low, highlighting a significant lack of readiness in student technological preparedness. The variations in means and standard deviations point to substantial opportunities for improvement, particularly in technology usability and access, with a particular emphasis on enhancing ICT support.

In terms of individual readiness, the mean values for technology skills and awareness of eLearning are low but close to the expected readiness threshold, suggesting that some improvements would be beneficial. However, self-efficacy and confidence in eLearning fall below the expected threshold, indicating a pressing need to enhance students' confidence and self-efficacy in these environments.

From an organizational perspective, the mean values for organizational culture, top management support, and financial availability for eLearning are also quite low. This underscores the need for significant improvements and focused attention from cluster universities to bolster these areas and facilitate effective eLearning implementation from the students' viewpoint.

Based on these findings, the researcher concludes that the study reveals a critical lack of readiness for eLearning among students, evidenced by low mean values in technological availability, usability, and ICT support. While technology skills and awareness are nearing the expected threshold, self-efficacy and confidence remain insufficient, necessitating significant

improvements. Additionally, organizational factors such as culture, top management support, and financial resources are also lacking, highlighting the need for cluster universities to enhance these areas for effective eLearning implementation.

On the other hand, the study results from the instructors' perspective indicate a generally positive level of technological readiness across the cluster universities. Mean values for technological availability, usability, and ICT support are favorable, suggesting a solid foundation, though some improvements are still needed. Notably, while technology usability and access readiness score well, ICT support requires substantial enhancement. Variations in mean scores and standard deviations point to areas for further development in technology availability, usability, and support.

Regarding individual readiness, mean values for technology skills and awareness of eLearning are just above the expected threshold, although some improvement is still necessary. However, there is a pressing need to enhance instructors' attitudes and awareness in these environments.

From an organizational perspective, mean values for organizational culture, top management support, and awareness of eLearning are low but near the expected threshold, while financial availability for eLearning remains very low. This highlights the need for significant improvements and focused attention from cluster universities to strengthen these areas and facilitate effective eLearning implementation.

The study findings from instructors reveal a generally positive level of technological readiness in cluster universities, with favorable mean values for technological availability, usability, and ICT support, although improvements are still necessary, particularly in ICT support. While technology skills and awareness of eLearning are just above the expected threshold, enhancing instructors' attitudes and awareness is crucial. Additionally, organizational factors like culture, top management support, and financial availability for eLearning are low, emphasizing the need for significant improvements to facilitate effective eLearning implementation.

Chapter Five

Conclusion and Recommendations

5.1 Introduction

This chapter deals with the summary of major findings of the study, the conclusion drown based up on the major findings and recommendation that forwarded based on the conclusions arrived at.

5.2 Summary and Key Findings

This study was conducted aiming at assessing the readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers and Students Perspective. More specifically, the study intended to attain the following objectives:

1. What is the status of technological infrastructure for assessing readiness for e-learning implementation?

2. What factors measure organizational readiness for e-learning?

3. What is the level of individual technological skills for implementing e-learning?

This eLearning readiness study focused on technological, individual, and organizational readiness in cluster lead universities. From the students' perspective, the findings reveal a critical lack of readiness for eLearning, characterized by low mean values in technological availability, usability, and ICT support. Although students' technology skills and awareness are approaching the expected threshold, their self-efficacy and confidence are inadequate, highlighting the need for substantial improvements. Organizational factors such as culture, top management support, and financial resources also require enhancement, with an overall student readiness average of 54.5%.

Conversely, the instructors' findings indicate a generally positive level of technological readiness, with favorable mean values in technological availability, usability, and ICT support, though improvements are still needed, particularly in ICT support. While instructors' technology skills and awareness are slightly above the expected threshold, there is a pressing need to enhance their attitudes and awareness. Organizational aspects like culture, top management support, and

financial availability for eLearning are low, necessitating significant improvements for effective implementation. The total instructors' readiness level is 67.8%, which is promising. Overall, the combined eLearning readiness level for both students and instructors is 61.9%, indicating readiness but underscoring the need for significant improvement.

5.3 Conclusion

The primary objective of this study was to assess the current state of eLearning readiness in five Ethiopian Resource Center (Cluster Lead) Universities from the perspectives of both teachers and students. By evaluating this readiness, the study aimed to identify existing conditions and highlight areas for potential improvement. A quantitative approach was utilized for data collection and analysis, providing a comprehensive understanding of technological, individual, and organizational readiness across these institutions. The findings offer valuable insights into how various factors influence the overall eLearning environment in these universities.

From the students' perspective, the study revealed significant challenges in technological readiness. Specifically, technological availability, usability, and ICT support were found to be very low, creating barriers to effective eLearning experiences. Students require accessible and reliable technology to fully engage in their learning. In contrast, individual readiness among students showed a more positive outlook, with technical skills and awareness of eLearning assessed at a good readiness level. However, concerns regarding self-efficacy emerged, indicating that despite possessing the necessary skills, students lack the confidence to navigate eLearning environments successfully. This gap underscores the urgent need for targeted interventions to enhance students' self-efficacy and overall technological confidence.

Regarding organizational readiness, the study identified significant deficiencies in factors such as organizational culture, top management support, and financial availability. These elements are crucial for fostering an environment conducive to eLearning. A supportive organizational culture and strong backing from top management are essential for the successful implementation of eLearning initiatives. Furthermore, financial constraints limit institutions' ability to invest in essential technological infrastructure and resources. Addressing these gaps is vital for establishing a more robust foundation for eLearning, as these factors directly affect the effectiveness and sustainability of educational programs.

Conversely, the findings from instructors indicate a generally positive level of technological readiness in the cluster universities. Instructors reported favorable conditions concerning technological availability, usability, and ICT support, suggesting that the teaching environment is relatively well-equipped. However, despite demonstrating good self-efficacy in eLearning, there remains a pressing need to enhance instructors' attitudes and awareness regarding the full potential of eLearning methodologies. Additionally, organizational readiness factors such as culture, top management support, and financial availability were also found to be low, indicating the need for further improvement in these areas to support effective eLearning implementation

5.4. Recommendations

The findings of this study are believed to have some recommendations for practice. The implication might show areas of intervention to assess the readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Teachers and Students Perspective. As we think of improving the readiness of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities, the following recommendations are made on the basis of the research findings and the conclusion.

I. Recommendation in terms Technology Improvement

Universities, in collaboration with all relevant stakeholders in higher education, should conduct a comprehensive evaluation of the current technology infrastructure to identify both areas requiring improvement and opportunities for new investments. This assessment should encompass various elements, including hardware availability, software functionality, and the overall usability of eLearning platforms. By engaging stakeholders such as faculty, students, IT staff, and administrative personnel universities can gather diverse insights that will inform a holistic understanding of the technological landscape. The findings from the study indicate that students' technology readiness, particularly regarding access and usability, is critically low, underscoring the urgent need for enhancements. A thorough assessment will not only highlight deficiencies but also provide a roadmap for strategic improvements that align with institutional goals. In addition to identifying areas for improvement, universities should prioritize the implementation of changes that significantly enhance the user-friendliness, accessibility, and reliability of technological resources.

II. Recommendation in terms of the Enhancement of eLearning Platforms

Universities, in partnership with all relevant stakeholders in higher education, should prioritize the development of targeted strategies to enhance students' confidence and self-efficacy in eLearning environments. One effective approach is to implement awareness programs that inform students about the benefits and potentials of eLearning, helping to demystify the technology and its applications.

Additionally, comprehensive training sessions should be organized to equip students with the necessary skills to navigate eLearning platforms effectively. These training sessions can focus on practical skills, such as using specific tools and resources, as well as soft skills, such as time management and self-directed learning.

Ongoing support is also crucial; establishing mentoring systems or peer support groups can provide students with the encouragement and assistance they need to thrive in an online learning environment. By fostering a culture of support and continuous learning, universities can significantly enhance students' confidence and self-efficacy, ultimately leading to more successful eLearning experiences.

III. Recommendation in terms of Increasing Technology Availability

Universities, in collaboration with relevant higher education stakeholders, must work diligently to ensure that technology is accessible and available across all departments and locations, with a strong emphasis on equity and fairness.

IV. Recommendation in terms Human Capital Development

Universities, in partnership with all relevant higher education stakeholders, should identify and create opportunities to address future leadership gaps. Additionally, they must continue to offer robust ICT training and support to ensure instructors and professionals are well-prepared for their roles. Furthermore, fostering a positive work environment by recognizing and rewarding employees' contributions, promoting teamwork, and cultivating a culture of trust and stability is essential.

V. Recommendation in terms Financial Planning

Universities, in collaboration with all relevant higher education stakeholders, need to enhance financial resources by exploring alternative funding sources or increasing budget allocations. This will help address the issue of insufficient financial availability and meet the needs of students, instructors, and staff. Additionally, it is crucial to prioritize financial allocation to critical areas such as technology infrastructure and human capital development.

VI. Recommendation in terms Organizational Readiness

Universities together with all concerned stakeholders of the higher education need to develop a comprehensive plan to address the identified areas for improvement, including technology usability, financial availability, and human capital development. Besides, try to foster top management support and ensure that top management provides consistent support across departments and locations to foster trust and stability. The last but not the least, all concerned stakeholders of the higher education system regularly monitor the progress towards goals and adjust strategies as needed.

5.5. Limitations of the study

The study relied solely on questionnaires to collect primary data and did not incorporate qualitative data collection methods. The inclusion of qualitative approaches could have provided more in-depth insights from the respondents. Additionally, the study did not include data on top management's readiness for eLearning.

Appendixes A

Students Questionnaire

Students Tool

This questionnaire is designed to help us gain a better understanding on assessing readiness of E-learning in five Ethiopian Cluster Universities from Students and Teachers perspective. Please indicate your opinions about each of the statements below by circling the appropriate number.

Dear Participant

My name is Fanuel Zegeye Tesfaye, a Master's Program Student in the School of Information Science at Addis Ababa University, and I am doing research under the supervision of Dr. Temtim Assefa School of Information Science at Addis Ababa University, Ethiopia. You are being asked to participate in a study entitled "Assessing Readiness of E-Learning in five Ethiopian Resource Center Universities from Students and Teachers Perspective"

The purpose of the study

I am conducting this research to study is to assess readiness (To identify key issues related to e-learning readiness with respect to students, and teachers, analyze individual and organizational factors affecting students, and teachers) of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Students and Teachers Perspective

Tell No: 0911623291 Email:fanuel.zegeye@aau.edu.et

Section I. General information

1.1 University Name: _____

1. Addis Ababa University: 2.Hawassa University: 3.Jimma University: 4.Dire Dawa University: 5.Bahir Dar University

1.2 Department (Social / Natural Science):_____

1.3 Email of the Student (Optional):_____

1.4 Sex Male ☐ Female ☐

1.5 Age

(1) Below 20 years

(2) 21-30 years

(3) 31-40 years

(4) 41 and above

1.6 Year of the Study

(1) Freshman (First Year)

(2) Second Year

(3) Third Year

(4) Fourth Year

(5) Fifth Year

(6) Sixth Year

(7) Above Six Year

1.7 Program Enrolled

(1) Regular Under Graduate- in campus

(2) Regular Under Graduate- off campus

(3) Extension off-campus

Please rate the institutions readiness to implement e-learning using the Likert scale 1-5. Your answers will be kept strictly confidential and will not be identified by name

No	Parameter	Ranking				
		1	2	3	4	5
1	**Technological readiness** **Technology Availability / Access** **(Do you have Availability /access to the following technological resource lists?)** **(1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree)**					
1.1	I have computer access (in school, cafes, etc.).					
1.2	I have Computer with all necessary software installed.					
1.3	I have computer with internet connection (in school, cafes, etc.).					
1.4	The speed of the internet access is satisfactory					
1.5	I am Secured from different online Attacks (Computer Virus, …)					
	Technology usability (Do you have the following Technology Usability?)					
1.6	My institution has online educational database resources					

1.7	My institution has different social media platforms (Telegram, Whatsapp, etc..) for education purpose					
1.8	My institution has accessible online application software Collection Database					
1.9	My institution has full functional student Management System					
	ICT Support (Do you have the following Training and support?)					
1.10	There is user-friendly guidelines and tutorials in my organization available to use eLearning management system?					
1.11	I have good technical support service from ICT Unit					
1.12	There are different eLearning training areas of the eLearning platform (e.g., course navigation, assessment tools)?					
1.13	I have satisfied with Computer basic training and support available from my organization?					
2	**Individual Readiness Please Rate Your Readiness to Implement E-learning (Basic Technical Skills, Attitude and Knowledge)** **(1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree)**					
2.1	I have Basic knowledge and skills to use computers.					
2.2	I have Basic skills to use the internet.					
2.3	I have Basic skills and knowledge to use e–learning systems.					
2.4	I can confidently use operating system and application software for my task					
2.5	I have training on elearning					
2.6	I can use email and file attachments.					
2.7	I can use web browsing and other online resources confidently.					
2.8	I can use online recourses database confidently.					
2.9	I can use social platforms (Telegram, WhatsApp, google meet, etc.) for education confidently.					
2.10	I can confidently use different application software.					
2.11	I can use Learning Management Software (LMS).					
	Attitude/Awareness (Do you have the following Attitude and awareness?)					
2.12	I understand the significance of online education.					
2.13	I believe that e-learning is more effective mode of education					
2.14	I am motivated to engage in self-directed learning					
2.15	I feel that I am ready for e-learning					
	Self-efficacy/ Confidence with eLearning					
2.16	I have attended online classes.					
2.17	I have prior training on digital skills					
2.18	I have used a Learning Management System (LMS) before.					
2.19	I have the skills to participate in online courses (Assignments, Quiz and forum)					
3	**Organizational Readiness** **Organizational Culture (Please Rate Your Organizational Culture)**					

	(1 = Not ready, needs a lot of work 2 = Not ready, needs some work 3 = Ready, but needs a few improvements 4 Ready to go ahead 5 = perfectly implementing currently)					
3.1	My institution has strong believe on eLearning benefits					
3.2	My institution has an e-learning usage plan in the course outline?					
3.3	My institution has a good culture of using new technologies.					
3.4	My institution has Curricula is designed properly to align with e-learning delivery.					
3.5	Is there any supportive social networking group for your participation in e-learning?					
3.6	My institution has e-learning system with all the necessary functionalities?					
	Top management (Please Rate Top Management Support)					
3.7	The top management involvement with e-learning education is strong.					
3.8	The top management encourages students to use the e- learning system.					
3.9	My institution prepares different gathering for eLearning awareness to students.					
3.10	The Top management discussed with students about online class modality					
3.11	The top management puts pressure on departments to use e-learning.					
3.12	The top management has a strong commitment to implement e-learning.					
	Financial Availability (Please Rate Financial Availability)					
3.13	My organization provides allocate budget for different eLearning projects or initiatives?					
3.14	My organization has budget to purchase licenses for different authoring tools for eLearning education?					
3.15	My organization has budget to purchase wireless Devices to cover many places (Student cafeteria, classrooms and dormitory ….)					
3.16	My organization has allocate budget for basic computer training for students?					

Appendixes B

Faculty Questionnaire

Faculty Member Tool

This questionnaire is designed to help us gain a better understanding on assessing readiness of E-learning in five Ethiopian Cluster Universities from Students and Teachers perspective. Please indicate your opinions about each of the statements below by circling the appropriate number.

Dear Participant

My name is Fanuel Zegeye Tesfaye, a Master's Program Student in the School of Information Science at Addis Ababa University, and I am doing research under the supervision of Dr. Temtim Assefa School of Information Science at Addis Ababa University, Ethiopia. You are being asked to participate in a study entitled "Assessing Readiness of E-Learning in five Ethiopian Resource Center Universities from Students and Teachers Perspective"

The purpose of the study

I am conducting this research to study is to assess readiness (To identify key issues related to e-learning readiness with respect to students, and teachers, analyze individual and organizational factors affecting students, and teachers) of E-Learning in five Ethiopian Resource Center (Cluster Lead) Universities from Students and Teachers Perspective

Tell No: 0911623291 Email: fanuel.zegeye@aau.edu.et

Section I. General information

1.8 University Name: _____

1. Addis Ababa University: 2.Hawassa University: 3.Jimma University: 4.Dire Dawa University: 5.Bahir Dar University

1.9 Email of the respondent:_____

1.10 Sex Male ☐ Female ☐

1.11 Age

(1) Below 20 years

(2) 21-30 years

(3) 31-40 years

(4) 41 and above

1.12 Qualification

(1) Diploma

(2) BA/BSC

(3) MA/MSC

(4) PhD and above

1.13 Service Year

(4) Below 20 years

(5) 21-30 years

(6) 31-40 years

(7) 40 years & above

1.14 Staff Category

(1) Academic

(2) Professional

Please rate the institutions readiness to implement e-learning using the Likert scale 1-5. Your answers will be kept strictly confidential and will not be identified by name

No	Parameter	Ranking				
		1	2	3	4	5
1	**Technological readiness** **Technology Availability / Access** **(Do you have Availability /access to the following technological resource lists?)** **(1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree)**					
1.1	I have computer access (in school, cafes, etc.).					
1.2	I have Computer with all necessary software installed.					
1.3	I have computer with internet connection (in school, cafes, etc.).					
1.4	The speed of the internet access is satisfactory					
1.5	I am Secured from different online Attacks (Computer Virus, …)					
	Technology usability (Do you have the following Technology Usability?)					
1.6	My institution has online educational database resources					
1.7	My institution has different social media platforms (Telegram, Whatsapp, etc..) for education purpose					
1.8	My institution has accessible online application software Collection Database					
1.9	My institution has full functional student Management System					

	ICT Support (Do you have the following Training and support?)					
1.10	There is user-friendly guidelines and tutorials in my organization available to use eLearning management system?					
1.11	I have good technical support service from ICT Unit					
1.12	There are different eLearning training areas of the eLearning platform (e.g., course navigation, assessment tools)?					
1.13	I have satisfied with Computer basic training and support available from my organization?					
2	**Individual Readiness** **(Basic Technical Skills, Attitude and Knowledge) Please Rate Your Readiness to Implement E-learning** **(1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree)**					
2.1	I have Basic knowledge and skills to use computers.					
2.2	I have Basic skills to use the internet.					
2.3	I have Basic skills and knowledge to use e–learning systems.					
2.4	I can confidently use operating system and application software for my task					
2.5	I have training on eLearning					
2.6	I can use email and file attachments.					
2.7	I can use web browsing and other online resources confidently.					
2.8	I can use online recourses database confidently.					
2.9	I can use social platforms (Telegram, WhatsApp, google meet, etc.) for education confidently.					
2.10	I can confidently use different application software.					
2.11	I can use Learning Management Software (LMS).					
	Attitude/Awareness (Do you have the following Attitude and awareness?)					
2.12	I understand the significance of online education.					
2.13	I believe that e-learning is more effective mode of education					
2.14	I am motivated to engage in self-directed learning					
2.15	I have willing to share my lecture materials					
2.16	I feel that I am ready for e-learning					
	Self-efficacy/ Confidence with eLearning					
2.17	I have attended online classes.					
2.18	I have prior training on digital skills					
2.19	I have used a Learning Management System (LMS) before.					
2.20	I have the skills to participate in online courses (Assignments, Quiz and forum)					
2.21	I have attended seminars/workshops related to online learning activities.					
2.22	I have Engaged in e-learning course production process (Training and production).					
2.23	I have prior training in e-learning.					
3	**Organizational Readiness** **Organizational Culture (Please Rate Your Organizational Culture)**					

	(1 = Not ready, needs a lot of work 2 = Not ready, needs some work 3 = Ready, but needs a few improvements 4 Ready to go ahead 5 = perfectly implementing currently)					
3.1	My institution has strong believe on eLearning benefits					
3.2	My institution has an e-learning usage plan in the course outline?					
3.3	My institution has Curricula is designed properly to align with e-learning delivery.					
3.4	Is your institution has an e-learning implementation policy?					
3.5	Is there any supportive social networking group for your participation in e-learning?					
3.6	My institution has e-learning system with all the necessary functionalities?					
3.7	There is clear organizational goals and strategies regarding implementation of eLearning?					
	Top management (Please Rate Top Management Support)					
3.8	The top management involvement with e-learning education is strong.					
3.9	The top management support & encourage Faculties to use the e-learning system.					
3.10	The top management consider e-learning as a strategic resource.					
3.11	The top management puts pressure on departments to use e-learning.					
3.12	The top management has a strong commitment to implement e-learning.					
	Financial Availability (Please Rate Financial Availability)					
3.13	Financial resources allocated for the development and maintenance of e-learning					
3.14	My organization provides Incentive for staffs who participated in the e-learning activities					
3.15	My organization provides allocate budget for different eLearning projects or initiatives?					
3.16	My organization has budget to purchase licenses for different authoring tools for eLearning education?					
3.17	My organization has allocate budget for eLearning course development training?					

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