

University students' readiness for E-Learning adoption in Tanzania

Hilda A. Mwangakala

Department of Information Systems and Technology, The University of Dodoma, Dodoma, Tanzania

*Corresponding authors email: ladyhmwa@gmail.com; ORCID: <https://orcid.org/0000-0002-9294-3297>

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Abstract

The importance of e-learning as an education delivery solution in higher education is underscored. However, there is a substantial variation in digital infrastructures and teachers' and learners' perceptions. Hence, before implementing e-learning, it is critical to assess the readiness for e-learning to ensure successful delivery of education in digital environments. Thus, this study assessed students' readiness for e-learning adoption in Tanzanian higher education institutions, uncovering varied readiness levels and influencing factors. Utilizing a cross-sectional design, data was gathered from undergraduate and graduate students at the University of Dodoma between November 2021 and February 2023 through surveys, content analysis, and observation. Findings indicate a moderately high level of e-learning readiness, with varying digital literacy levels. Students exhibited high technological capability and positive e-learning attitudes. Institutional support emerged as crucial, emphasizing the need for e-learning policies, software provision, training programs, and technical assistance to facilitate smooth transitions to digital learning environments. The study informs educational institutions and policymakers on the drivers of students' e-learning readiness, offering actionable insights and strategies for effective e-learning adoption.

Keywords: Students, E-learning, Readiness, Education, Technology, Higher Education

Introduction

The 2020 COVID-19 pandemic brought about many challenges and strains that have significantly impacted various aspects of life, including education. In response to the pandemic, many Higher Learning Institutions (HEIs) worldwide were compelled to transition from traditional face-to-face teaching to online learning modalities (Dehghan et al., 2022; Yang, 2021). The sudden shift stressed the importance of e-learning as an education delivery solution in

higher education. Universities and colleges worldwide have rapidly adopted e-learning platforms and tools to ensure the continuity of teaching and learning activities (Dehghan et al., 2022).

E-learning offers numerous advantages, including reliable access to educational materials and breaking the time and geographical barriers to learning (Bao, 2020; Hodges et al., 2020; Kwofie and Henten, 2011). Session flexibility enhances independent and diverse learning styles and preferences (Ali, 2021; Bao, 2020; Hodges et al., 2020). Further, adaptive learning technologies help tailor educational content to individual learners' needs, strengths, and weaknesses. The personalized learning paths, multimedia elements, simulations, and interactive content make e-learning more engaging and dynamic (Mahjob, 2021; Priatna et al., 2020; Najimi et al., 2017; Baumann-Birkbeck, 2015). Finally, compared to the traditional mode, e-learning is relatively less costly because of the absence of travel, printed material, and managing large classes (Wagirani et al., 2022).

However, the higher education landscape in developing countries is significantly different from that of developed countries; there is a substantial variation in digital infrastructures both on campus and in students' homes, which widens this gap (Naresh and Reddy, 2015). While developed countries consider e-learning a cheaper solution for access to education (Aung and Khaing, 2016), in developing countries like Tanzania, it may be a costlier alternative due to low connectivity, high internet costs, and low access to reliable electricity, especially in rural areas (Naresh and Reddy, 2015). In practice, not all students have equal access to technology and the internet. The digital divide aggravates educational inequalities, with students from poorer backgrounds facing difficulties accessing online learning resources (Zarei and Mohammadi, 2022).

Furthermore, universities in developing countries face the problem of congested classrooms (Zarei and Mohammadi, 2022; Naresh and Reddy, 2015). E-learning addresses this challenge and enables instructors to transfer knowledge to a relatively large number of students without space limitations, time, or facilities (Hodges et al., 2020). However, some preconditions must be met for e-learning to succeed, including increasing users' access to digital tools and network infrastructure and changing teachers' and learners' perceptions towards e-learning (Zarei and Mohammadi, 2022; Aung and Khaing, 2016). Studies show that the lack of preparedness, including user digital illiteracy, limited resources and infrastructure, is the primary cause of e-learning failure (Aldhahi et al., 2022; Adams et al., 2021; Mabrur et al., 2021; Widyanti et al.,

2020; Coskun et al., 2018). Hence, before implementing e-learning, it is critical to assess the readiness to ensure successful implementation (Widyanti et al., 2020; Gay, 2016).

E-learning readiness assessment evaluates the preparedness to adopt and implement e-learning (Bowles, 2004). The assessment provides the key information required to develop strategies catering to all learning groups' specific needs (Gay, 2016; Nyoni, 2014; Borotis and Poulymenakou, 2004). It considers crucial factors such as users' technological capability and technological competence for online learning (Mabrur et al., 2021; Elkaseh et al., 2020; Widyant et al., 2020). Technological capability encompasses access to digital devices and reliable internet connectivity (Al et al., 2020), while technological competency includes adeptness in information and digital communication for navigating online platforms and engaging in e-learning (Astuti et al., 2022; Wagirani et al., 2022; Arifin et al., 2020; Chitkushev et al., 2014). E-learning implementation requires students to have access to technology and equipment, which is a challenge for most students in developing countries (Choudhury and Pattnaik, 2020; Al-araibi et al., 2019). Therefore, technological readiness is critical for students and lecturers to experience the full benefits of an e-learning system (Nurtanto et al., 2021; Coskun et al., 2018; Elkaseh et al., 2015).

Beyond technological capabilities, psychological factors are other crucial aspects that need consideration in assessing e-learning readiness (Wagiran et al., 2022). Psychological factors include satisfaction, attitude towards e-learning, and individual motivation (Pereira et al., 2015; Kisanjara, 2014; Oketch et al., 2014). Student satisfaction reflects students' sentiments on the alignment of their expectations and the reality experienced from e-learning, which significantly enhances their readiness for learning (Yilmaz, 2017). Topal (2016) identifies specific measures that educational institutions can undertake to ensure satisfactory learning experiences, including providing excellent facilities, infrastructure, and accessibility. User attitudes towards online learning and perceived usefulness also significantly influence readiness (Yureva et al., 2020). Attitude towards e-learning also forms the bedrock of successful e-learning adoption in higher learning institutions (Khan et al., 2020; Kisanjara, 2014). Individual motivation is another key psychological factor in strengthening students' willingness to engage in online learning and is fundamental to stimulating e-learning activities (Maldonado et al., 2011).

Nevertheless, several challenges and barriers impede user readiness for e-learning. Scholars argue that assessing students' readiness is indispensable for pinpointing barriers and devising interventions to support effective learning online (Widyant et al., 2020; Al-araibi et al., 2019). The digital divide, marked by uneven access to technology and internet connectivity, exacerbates educational disparities among users (Khan et al., 2020). Challenges such as unfamiliarity with e-learning platforms, limited digital literacy skills, and resistance to change hinder user readiness (Khan et al., 2020). Having an effective integration of e-learning necessitates pedagogical shifts, training programs, and support services (Adams et al., 2021). Therefore, assessing user readiness for e-learning in Higher Education Institutions (HEIs) assumes critical significance to ensure the seamless delivery of education in digital environments.

The study aims to analyze these factors to determine the e-learning readiness of university students. Students' satisfaction was not assessed as the university's e-learning system has yet to be implemented. This research intends to enlighten educational institutions and policymakers on students' preparedness to adopt e-learning, providing actionable insights to enhance e-learning readiness strategies and ensure a smooth transition to digital learning environments.

Methods

The study adopted a cross-sectional research design to understand the University of Dodoma's students' e-readiness. A structured questionnaire sought data on technological proficiency, students' readiness, pedagogical factors, and the students' attitudes towards e-learning. Questions were composed based on a definition of digital proficiency and literacy, where a person who is literate in a particular field demonstrates basic interest in and knowledge of a subject and is not necessarily an expert in the field (Snavely and Cooper, 1997). Therefore, questions referred not only to knowledge and skills relevant to e-learning but also to a general acquaintance and familiarity with different aspects of ICTs, particularly e-learning. The survey was administered online using a Google form. Five-point Likert-scale questions were used to measure the various aspects of e-learning readiness.

Furthermore, document review was used to examine existing documents and materials related to support services, policies, and e-learning resources at the University of Dodoma. The researcher also used the observation data collection method to capture e-learning real-world practices, interactions, and dynamics within the educational setting. The methods helped the researcher

uncover the actual practices of e-learning support, complementing other data collection methods in the study.

Sampling

The study targeted university students in Tanzania who are potential users of e-learning platforms. The University of Dodoma, the country's largest university, was purposefully selected to represent Tanzanian universities due to its planned e-learning initiatives and diverse academic disciplines ranging from education, health and allied sciences, natural sciences, earth sciences, information and communication technologies, and business to the humanities and social sciences. The sample size was determined using a standard formula, resulting in a minimum of 651 respondents out of a population of 33,000 students. A survey questionnaire using Google Forms was distributed to all students enrolled in an Introduction to Information Technology course. A total of 756 students responded to the survey, representing students from various undergraduate and graduate programs. The random selection helped minimise bias and ensured a diverse representation of students.

On the other hand, the document review started by compiling a comprehensive list of documents related to e-learning, policies, guidelines, and initiatives that included institutional ICT policies, strategic plans, e-learning frameworks, training materials, or manuals for instructors and students. A purposive sampling strategy was employed to select documents that best represented the e-learning landscape at the university. The selection criteria were established to guide the selection of documents, including relevance to e-learning adoption, availability of information on students and institutional readiness, and the source's credibility. Relevant information from selected documents was extracted systematically, focusing on key themes related to e-learning readiness, including information on existing policies, ICT infrastructure, faculty development, student support services, technological resources, and institutional strategies for promoting e-learning.

Data analysis

The data were analyzed using correlation analysis and descriptive statistics, including the frequency mean and standard deviation (SD). The arithmetic mean is a measure of central tendency most commonly used by the general public (Rea and Parker, 2014). The more dispersed

the data are, the greater the standard deviation. Therefore, the standard deviation is a mean distance variant representing each variable value to the arithmetic mean (Rea and Parker, 2014). The mean values were used to present information regarding the collective assessment of respondents.

Results and discussion

The study involved a sample of 756 students from both undergraduate and graduate levels (Table 1). Among the participants were 504 male students, accounting for 66.7% of the total sample, while 252 female students represented 33.3%. Further, approximately 81.6% of most participants fell within the age range of 18 to 25 years. The higher representation of male students and the dominance of the 18-25 age groups among the participants underscored the need to consider these demographic characteristics when designing e-learning systems in HEIs.

Table 1. Participants' demographic characteristics

Gender	Bachelor	Certificate	Diploma	Masters	Grand Total
Female	249	-	3	-	252
18 – 25 Years	220	-	2	-	222
26 – 32 Years	17	-	-	-	17
33 – 39 Years	10	-	1	-	11
40 – 46 Years	2	-	-	-	2
Male	491	6	5	2	504
18 – 25 Years	387	3	4	1	395
26 – 32 Years	69	1	-	-	70
33 – 39 Years	31	1	1	1	34
40 – 46 Years	4	-	-	-	4
54 or more	-	1	-	-	1
Grand Total	740	6	8	2	756

Technological capability

The study explored technological capability, focusing on students' access to technology and digital resources necessary for effective e-learning. It was observed that most students (85.7%) had daily access to technological devices such as laptops, smartphones, or tablets capable of supporting e-learning platforms, which is in line with the findings by Ali-Asghari and Limooni (2021) and Mabur (2021). Also, a significant proportion of students (74.4%) reported having internet connectivity on their devices at home, facilitating uninterrupted participation in online learning activities (Dehghan et al., 2022) in case of closure due to the pandemic.

Table 2. Students' access to digital devices for E-learning

Readiness factor	Mean	Mode	Standard Deviation	Skewness	Minimum	Maximum	Confidence Level (95.0%)
I have access to a computer/Laptop/Tablet/Smart phone on a daily basis	1.889628	1	1.28695136	1.2401275	1	5	0.092130152
I have access to a computer/Laptop/Tablet/Note book/Smart phone with an internet connection at home	2.390438	1	1.47190495	0.6057944	1	5	0.105300376
I have access to a computer with all the necessary software installed	2.584	1	1.47720915	0.3567316	1	5	0.105891672
I have access to a computer/Laptop/Tablet/Smart phone in a campus with stable internet connection	2.51928	1	1.40099128	0.3995302	1	5	0.100227197

The results (Table 2) show that, generally, students have daily access to digital devices, particularly smartphones. However, the standard deviation of approximately 1.29 indicates moderate variability or dispersion in responses on daily access to a device, suggesting that the level of access varies among respondents, with some having more consistent access than others. Nonetheless, other students reported having limited access to digital devices daily, possibly facing challenges or restrictions in utilizing technology for learning. Also, access to the Internet at home and on campus seems relatively high, with a mean score of around 2.39 and 2.52, respectively, on a scale of 1 to 5. However, it is worth noting that the institution still needs to play a leading role, as some students may still lack stable internet access.

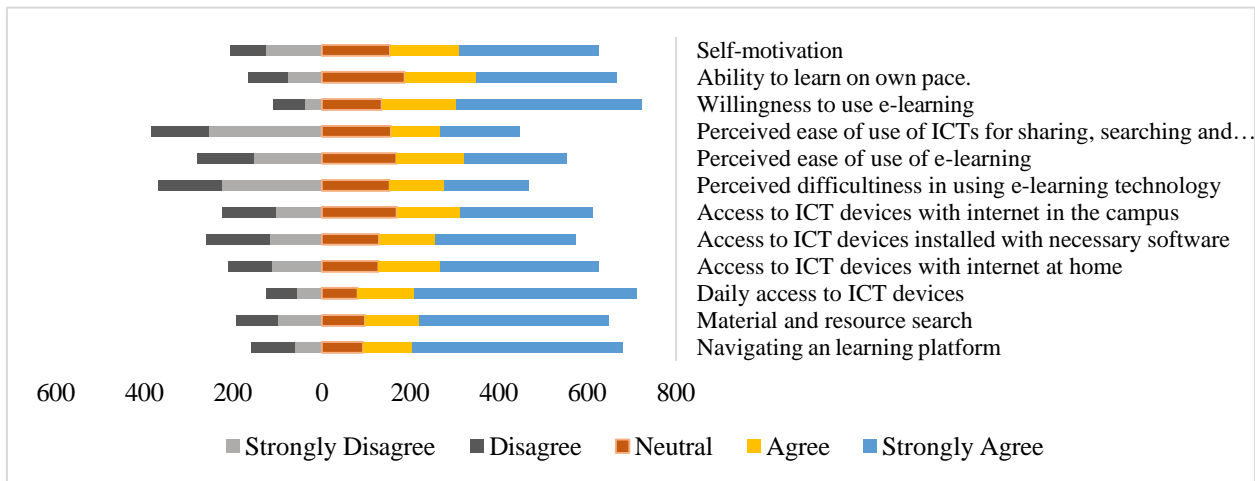


Figure 1: Students' technological capability

Access to computers with all the necessary software installed is slightly lower than overall ICT access, with a mean score of around 2.56, which might affect students' ability to utilize specific software required for academic purposes. Moreover, a significant number (25.6%) reported having limited or no access to digital devices with the Internet at home. Similar findings were observed on access to digital devices installed with the necessary software (Dehghan et al., 2022; Mhlanga et al., 2022).

Digital literacy

The study assessed students' digital literacy skills, such as navigating e-learning platforms, utilizing online resources, and engaging in online communication. A significant percentage (77.02%) of students demonstrated adequate digital literacy skills. Around 80.86% of students reported having the necessary technical skills to navigate online learning platforms effectively, in line with the findings of Mabur (2021) and Widyanti et al. (2020). They were comfortable with various digital tools, could navigate learning management systems, and effectively communicated through online discussion forums and chat platforms.

Table 3. Students' digital literacy levels

Readiness Factor	Mean	Mode	Standard Deviation	Skewness	Minimum	Maximum	Confidence level (95%)
I can save/open documents to/from a hard disk or other removable storage device.	2.116556	1	1.4593261	0.9188013	1	5	0.104262
I can navigate the web pages (go to the next or previous page)	2.033113	1	1.3685421	1.0452364	1	5	0.097776
I can browse/search the internet to collect resources to be used during lessons	1.998675	1	1.3276286	1.0559957	1	5	0.094853
I can use applications to prepare Presentations for lessons	2.439735	1	1.5182392	0.5414755	1	5	0.108471
I can send and receive email attachments	2.22649	1	1.4981289	0.7555323	1	5	0.107034
I can download/upload/browse material from a learning platform	2.064901	1	1.3741744	0.9191241	1	5	0.098178
I can resolve common errors while surfing the internet such as page not found or connection time out.	2.664894	1	1.560819	0.3186732	1	5	0.111736
I can use the Internet skills, such as using a search engine, identifying and downloading appropriate files, and installing or updating software.	2.240053	1	1.4818738	0.7634461	1	5	0.105943

The findings in Table 3 suggest that higher-education students possess at least a basic level of digital proficiency. The students demonstrated a high ability to use the Internet to search for learning materials and resources, as indicated by the mean score of 1.99. Also, most students reported having the necessary skills and knowledge to find relevant materials to support their

learning effectively. However, the minimum and maximum values of 1 and 5 indicate a mix of students with varying skills, concurring with the findings of Gupta and Dhawan (2020).

Further, the standard deviation values, ranging from 1.32 to 1.56, indicate the degree of variability in participants' responses. The higher standard deviations suggest that the data points are more spread out, indicating varied perceptions of readiness for each skill. The skewness values vary between 0.32 and 1.05. Positive skewness indicates that the responses are slightly skewed towards higher readiness levels, suggesting that some students may overestimate their digital literacy readiness. Thus, research with a diverse sample and additional context would be necessary to better understand the actual digital literacy levels and design effective interventions to improve digital skills among participants.

In general, the respondents have a moderate level of digital proficiency in using ICTs for e-learning. The mean scores range from 2.00 to 2.67, indicating that the average participant falls between "moderately ready" and "ready" on the scale, suggesting that most respondents possess at least a basic level of digital proficiency. The findings also suggest that, on average, students demonstrated a high ability to navigate an e-learning platform, as indicated by the mean score of 2.06. Most students (77.6%) reported possessing the necessary skills to navigate learning platforms effectively.

Students' attitude towards E-learning

The study assessed students' attitudes towards e-learning. The findings reveal that most students (86.80%) demonstrated a moderate to-highly positive attitude towards e-learning. Further, it was revealed that 89.72% of students perceived e-learning to be useful for learning practices. The findings suggest a positive inclination and acceptance of online learning platforms among university students, concurring with the findings by Mabur (2021) and Dehghan et al. (2022). Nonetheless, only 44.08% of students reported feeling entirely comfortable using these tools, indicating that there is still a potential need for additional training and support.

Table 4: Students' attitude toward E-learning

Readiness Factor	Mean	Mode	STD	Skewness	Min	Max.	Confidence Level (95%)
E-learning technology will improve the learning process.	1.850866	1	1.155449	1.317721	1	5	0.08277141
E-learning technology will reduce the time spent on searching and sharing learning materials.	1.968085	1	1.222968	1.138349	1	5	0.08754973
E-learning technology will make information and skills sharing easier.	1.843085	1	1.144363	1.266739	1	5	0.08192253
E-learning technology will be useful in my learning process.	1.906915	1	1.170819	1.179648	1	5	0.0838165
I think it will be difficult to use E-learning technology for learning practices.	3.132	5	1.504746	-0.12664	1	5	0.10786564
Using E-learning technology will require a lot of mental efforts.	2.802667	1	1.45001	0.175659	1	5	0.10394195
I often become confused when I try to use ICT for sharing, searching and communicating learning materials.	3.23262	5	1.516321	-0.22716	1	5	0.10884103
E-learning is easy to use.	2.364	1	1.324327	0.568488	1	5	0.09493254
I will use e-learning technology when implemented at the university	2.004011	1	1.210722	0.967965	1	5	0.08690523

The findings in Table 4 reflect generally positive attitudes towards e-learning technology, with participants expecting it to improve the learning process and ease information sharing. Generally, students demonstrated moderate perceived ease of use of e-learning and ICTs for sharing, searching, and communicating learning materials (mean = 3.23).

However, there are some concerns about its difficulty and the potential mental effort required. Some students perceived moderate difficulty (mean = 2.36) using e-learning technology, similar to findings by Aboagye (2021) and Widyanti et al. (2020). Further, the findings suggest moderate variability (STD = 1.32) in the perceived difficulty levels, as some students perceived e-learning technology as very easy to use. In contrast, others perceived it to be very difficult. It was also found that most students perceived difficulties in searching for learning materials. Nonetheless, students reported a high willingness to use e-learning (mean = 2.003), indicating

that if e-learning is to be implemented, most students will adopt it readily, concurring with the findings of Mabur (2021).

User attitudes towards e-learning determine how instructors and students perceive, embrace, and engage with the digital learning environment, encompassing a range of sentiments, beliefs, and behaviours that influence the overall readiness to participate effectively in e-learning (Sabah, 2013). It reflects the psychological preparedness of individuals to embrace e-learning. Positive attitudes include enthusiasm, openness to technology, and a willingness to adapt to new modes of education. Meanwhile, negative attitudes may lead to resistance, skepticism, or apprehension about the effectiveness of online learning. Therefore, the university must address user attitudes to create a more supportive and effective e-learning environment and foster positive user learning experiences.

Moreover, the study explored students' motivation and self-directed learning capabilities within e-learning. The findings indicate that most students (75.09%) exhibited high motivation and self-directed learning skills, concurring with the findings of Adams et al. (2018). They displayed readiness for proactive engagement in online activities, self-discipline, and ownership of the learning process.

Table 5: Students' motivation and self-directed learning

Readiness Factor	Mean	Mode	STD	Skewness	Min	Max	Confidence Level (95%)
I would be able to complete my study even when there are online distractions.	2.363636	1	1.321783	0.561659	1	5	0.094877
I consider flexibility in time as an important motivating factor in taking an online class.	2.074667	1	1.191771	0.875791	1	5	0.08543
I can remain motivated even though the instructor is not online at all times	2.477912	1	1.45642	0.526764	1	5	0.104612
I can communicate effectively with other students using online technologies.	1.791946	1	1.097867	1.323419	1	5	0.078964
I am comfortable doing academic work independently and without regular face-to-face interaction with an instructor.	2.42246	1	1.416343	0.59452	1	5	0.101665
I can schedule time to provide timely responses to other students and/or the instructor.	2.153949	1	1.209489	0.809998	1	5	0.086875
I can sacrifice personal time to complete assignments and reading.	1.701072	1	1.080852	1.542799	1	5	0.077687
I have the self-discipline to log in and participate in an online course several times a week	2.186755	1	1.293048	0.76749	1	5	0.092382

Generally, students exhibit moderate attitudes towards various factors related to online learning, such as motivation, time management, communication, and independent learning (Table 5). Nonetheless, some readiness factors, like "sacrificing personal time to complete assignments and reading," exhibit a higher standard deviation and positive skewness, indicating a more varied response. The findings suggest that participants' willingness to sacrifice personal time may differ significantly, concurring with Dehghan et al. (2022) and Mabur (2021) findings.

Moreover, students reported a moderate ability to learn at their own pace (mean = 2.36) and moderate self-motivation (mean = 2.47), indicating the need for capacity-building training to ensure equitable access to education for all students. Further research with more diverse and representative samples would provide deeper insights into the readiness, attitudes, and willingness to fully adopt e-learning technology.

Technological capability, digital literacy, attitudes and motivation toward E-learning

The strong positive correlation (0.6452) between E-Learning readiness and digital proficiency highlights the significant relationship between these two factors. Since digital proficiency encompasses skills related to using digital tools, software, and technologies effectively, the strong correlation suggests that students with higher digital proficiency are better equipped to navigate online learning platforms, engage with digital content, and leverage technology for effective communication and collaboration. Individuals with higher proficiency can quickly acclimatize to new technologies, making the transition to different online learning environments smoother. Further, digital proficiency fosters independence in online learning. Proficient learners can troubleshoot technical issues, access and utilize online resources efficiently, and take advantage of interactive features in e-learning materials.

Nonetheless, it is important to consider potential disparities in digital proficiency among student populations. The digital divide, reflecting differences in access to and familiarity with technology, may influence how students experience e-learning readiness. The strong correlation between E-learning readiness and digital proficiency emphasizes the pivotal role that technological competence plays in students' preparedness for online learning. Institutions should prioritize strategies that enhance digital proficiency, address potential disparities, and foster an inclusive e-learning environment that supports the diverse needs of students.

Table 6: Correlation between technological capability, digital literacy, attitudes and motivation toward E-learning readiness

	E-learning readiness	Digital literacy	Technological capability	Attitude towards E-learning	Motivation towards E- Learning
E-Learning Readiness	1				
Digital Literacy	0.64518505	1			
Technological Capacity	0.651942711	0.788865436	1		
Attitude Toward E-Learning	0.649678856	0.599057279	0.630917605	1	
Motivation toward e-learning	0.644647863	0.665439669	0.664092088	0.746007555	1

Like digital proficiency, technological proficiency positively correlates (0.6519) with e-learning readiness, emphasizing the importance of technological skills in preparing individuals for e-learning environments. However, the specific nature of this relationship may vary based on the context of the e-learning environment, institutional policies, and the nature of the technological tools utilized. Further, a correlation coefficient of 0.6497 suggests a substantial positive relationship between e-learning readiness and attitude toward e-learning, implying that individuals with a positive attitude towards e-learning are more likely to exhibit readiness for digital learning environments. However, despite being a key factor in initial readiness, it may evolve over time based on individuals' e-learning experiences. Hence, continuous efforts to enhance positive attitudes should be integrated into ongoing educational strategies.

Moreover, attitudes towards e-learning showed moderate positive correlations with digital proficiency, technological proficiency, and distance learning readiness, suggesting that individuals with positive attitudes tend to have higher proficiency in digital and technological skills and are more prepared for distance learning. The positive correlations between different readiness factors underscore the holistic nature of e-learning preparedness. It is not only about having technical skills but also about having a positive mindset and readiness for various forms of remote learning. The findings show a need to design interventions simultaneously addressing multiple aspects of readiness, considering both technical skills and attitudes towards e-learning.

Institutional support

The content analysis revealed no specific university policy or guidelines on e-learning. Only two documents (33.3%) from the studied university (UDOM) mentioned e-learning. The Strategic Plan and a Handbook for Standards and Guidelines for University Education in Tanzania by the Tanzanian Commission for Universities (TCU) indicate a lack of formalized guidance within the institutional framework. The two documents briefly discussed e-learning concepts that lacked specificity and clarity. Key elements such as assessment procedures, attendance expectations, and communication protocols were seldom addressed in detail. The ambiguity contributes to a vague understanding of expectations for both instructors and students and the required infrastructure. A lack of instructional guides led to challenges in designing engaging online content and optimally utilizing freely available e-learning platforms such as Google Classroom, CIVE e-classroom, and Moodle.

Table 7: Institutional documents' E-learning support

Document	E-learning	
	mention	E-learning guidelines
Handbook for Standards and Guidelines for University Education in Tanzania	√	√
Postgraduate Curriculum Guide Book 2023/2024	×	×
Regulations and Guidelines for Postgraduate Studies 2019	×	×
Undergraduate Curriculum Guidebook for the 2022/2023 Academic Year	×	×
UDOM Strategic Plan 2021/22-2025/26	√	√
Regulations and Guidelines for Postgraduate Programmes 2019	×	×

Key:

× = No mention of E-learning; √ = Brief Mention of E-learning
 √√ = Detailed Guidelines for E-learning

Existing documents made generic references to the use of technology in education without offering practical guidance for e-learning adoption. However, the university strategic plan

mentions a plan to develop an e-learning policy by June 2022. Specific training on navigating e-learning platforms, engaging with multimedia resources, and effectively utilizing collaborative tools was absent except for an ICT-focused college, which made local training arrangements. The documents reviewed seldom mentioned initiatives to provide such training. Lack of formalized training could potentially impact the digital readiness of both instructors and students. The content analysis and observation findings highlight critical gaps in policy articulation and the provision of training materials for e-learning within institutional documentation.

Potential challenges and barriers

The study identified several challenges and barriers students may encounter while transitioning to e-learning. The most common challenge reported was the lack of necessary software installed on their devices (31.26%). Not all students can access the necessary technology or high-speed internet, similar to the findings by Mabur (2021). Students from disadvantaged backgrounds or rural areas reported barriers to acquiring computers or smartphones and reliable internet connections, which may limit their ability to participate fully in online classes.

Furthermore, occasional problems when using digital services and navigating the Internet were reported (46.34%); some students lack proficiency in using digital tools and navigating online learning platforms. Digital literacy is essential for students to engage effectively with e-learning materials, participate in discussions, and complete assignments. A lack of technical skills could lead to frustration and hinder their learning progress.

Technical issues and connectivity problems were also highlighted, and some students perceived that e-learning technology might require much mental effort (66.1%). E-learning heavily relies on technology, making it susceptible to technical glitches, software malfunctions, or internet connectivity issues. These disruptions can cause frustration and disengagement and potentially lead to underutilization and system inefficiencies.

Similar to the findings by Rozhkova and Rozhkova (2020), students reported difficulties in maintaining motivation and focus in a remote learning setting (24.91%). E-learning requires students to be self-directed and disciplined in managing their time effectively. Without the structure of traditional classroom schedules, students may struggle to prioritize their studies amidst other personal or work commitments, leading to procrastination and falling behind in coursework. Also, e-learning platforms and materials may not always cater to the diverse needs of all students, including those with disabilities or special learning requirements. Thus, without

proper accommodations and accessibility features, some students may face barriers to fully engaging in the learning process. Since the effectiveness of e-learning depends on the quality of course design and content, poorly designed courses or monotonous delivery can decrease student engagement and interest in the subject matter.

Conclusion

The study on student readiness assessment for e-learning adoption in Higher Education Institutions (HEI) has shed light on the competence and perceptions of key e-learning users and the challenges they may face. While students demonstrated good access to technology, digital resources, and proficient digital literacy skills, some challenges were identified, including a lack of required software, perceived difficulty, low self-motivation, and limited technical support and training. Thus, HEIs must design and develop their e-learning infrastructure with users' needs and capabilities in mind for effective e-learning adoption. Also, policymakers and communities must work collaboratively to bridge the digital divide and ensure that e-learning is accessible and equitable for the majority of students. Nonetheless, the lack of relevant policies and guidelines and the formal utilization of e-learning at the university hindered the researcher from assessing the pedagogical readiness as no actual programmes were offered online. Further investigation is needed to explore the long-term impacts of user readiness on e-learning outcomes and student success. Additionally, further studies can conduct comparative studies across different HEIs in the country and provide insights into the contextual factors influencing user readiness. Furthermore, research can delve into the perspectives and experiences of faculty and support staff to comprehensively understand e-learning readiness in HEIs.

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Data availability statement

Data is available upon request from researchers who meet the eligibility criteria. Kindly contact the author privately through e-mail.

Competing Interests

The author declares no conflict of interest.

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