

Post COVID-19 Preparedness of Higher Learning Institutions on the Use of E-learning Technology in Mbeya City, Tanzania

Authors: Maurus Clement Mponela and Demetria Gerold Mkulu

Department of Educational Foundation
St. Augustine University of Tanzania
P. O. BOX 307 Mwanza.
Author e-mail: maurusmponela@gmail.com

ABSTRACT

Over some time, the provision of education in HLIs almost worldwide remained traditional, that is face to face learning. Upon breakout of COVID-19 pandemic in 2020, HLIs are adopting contemporary approaches to learning, namely the application of e-learning. However, the extent to which these institutions are prepared remains shaky. Thus, this study sought to examine the post-covid-19 preparedness of HLIs on the use of e-learning technology in Mbeya city, Tanzania. The study adopted an explanatory sequential mixed research design. The study targeted lecturers, second-and third-year students and administrators in HLIs. Probability and non-probability sampling procedures were used to get a sample size of 180 participants where 104 were students, 72 were lectures and 4 were administrators in HLIs. The instruments employed in gathering data were questionnaires, interviews, and observation methods. Quantifiable data were scrutinized statistically with the aid of Statistical Package for Social Science (SPSS) version 20 and qualitative data were organized and evaluated with help of the word clouds program to obtain the main themes. The results exhibited that majority of HLIs are not prepared for the use of e-learning in the post-covid-19 pandemic. The study recommended that HLIs in Tanzania should revise their institutional policy, strategies, and curriculum to accept the use of e-learning in the post coronavirus, training and retraining of students and lecturers. The government should formulate e-learning policy and strategies to facilitate the use of e-learning in HLIs

Keyword: Covid-19 preparedness, coronavirus, higher learning institutions, e-learning institutions, e-learning technology.

1. INTRODUCTION

Learning in higher institution is the education that reorients the learners at all levels to have people who think critically, creatively and behave in a way that provides a more productive world. Higher learning institutions play a specific role in generating and transferring knowledge to society for their entry into the employment market, outreach and service, sustainable research and curricula (Mkulu and Paschal, 2020). From this standing point, higher learning is crucial as it prepares the learners to be problem solvers and creative in the community. Worldwide HLIs trace their origin as early as the 3rd century before Christ (Mkulu and Paschal, 2020). The commencement of HLIs in East African countries goes back to Makerere University which was inaugurated in 1921, and it was offering divergent subjects leading to a general degree from the

University of London. Nevertheless, the university was split into three independent HLIs that the University of Dare Salaam in Tanzania, the University of Nairobi in Kenya and Makerere University (Istoroyekti and Hum, 2016). As the demand for higher education expanded, more HLIs were established in Tanzania such as Mzumbe as a training institute in 1972, the Sokoine University of Agriculture in 1984 and others (Maduekwe, 2015). Private HLIs was inaugurated after the deregulation of the education sector in 1995 (Istoroyekti and Hum, 2016).

Over a period of time, the provision of education in HLIs almost worldwide remained traditional that is face-to-face learning (Mapesos, 2017). Nevertheless, in 2019 a deadly sickness erupted which is known as corona whereby on 30 January 2020 the World Health Organization (WHO) acknowledged it as a worldwide terror (Zanke, et al., 2020). The emergence of coronavirus interrupted the traditional face-to-face method of learning in HLIs and other learning institutions were closed down due to covid-19 (Paschal and Mkulu, 2020). The existence of coronavirus threatened the growth of the education sector and the way towards the realization of Sustainable Development Goal 4 (SDG 4) as about 91% of students all over the world were affected by the closure of the face to face way of learning (UNESCO, 2020).

The globe has been experiencing radical changes in every organization including HLIs. The traditional way of teaching was needed to be replaced by the online method of learning like Zoom, Google classroom, Video conferencing, YouTube, Moodle, WhatsApp, Skype, Google meet and Microsoft teams (Paschal and Mkulu, 2020). For instance, in USA, HLIs like Harvard University have been successful to apply online learning to a greater extent for the reason that, e-learning was considered one of the means of teaching and learning before covid-19 (Adeoye, Adanikin and Adanikin, 2020). In Spain the use of online education during school lockdown witnessed high achievement mostly because of high investment in digital instruction and incorporation of technical skills to teaching professionals however, some students lacked access to e-learning largely due to poor economic conditions which increased the gap of learning inequalities (OECD, 2020). Similar, online learning in China was active before coronavirus because of effective robust network connectivity and the introduction of national internet centres classroom and free online classes. However, during the corona pandemic, China faced the problem of internet connectivity, poor supervision of students, lack of skills among students and parents leading to ineffective implementation of the platforms (UN, 2020).

Africa is not an exception from the other continents that has experiencing the radical changes brought by the covid 19 pandemic. In Nigeria for example, most HLIs were unsuccessful to adopt e-learning due to the absence of e-learning devices and inadequate skills among students and educators (Yekini, Adigun, Ojo, and Akinwole, 2020). Likewise, in Uganda, the execution of online learning experienced difficulties like students' negative responses which hindered online learning (Olum et al. 2020).

In the case of Tanzania, Paschal and Mkulu (2020) recommended that digital instructions in most HLIs in Tanzania has been unsuccessful as several students failed to access e-education for the period of corona lockdown. This indicated that the majority of HLIs in Tanzania were not greatly prepared for online learning mostly for the period of emergency cases like the covid-19 disaster.

The use of e-learning ensures the continuation of learning even during the emergence like covid-19 (Mkwizu and Ngaruko, 2020). Though, the government through the Tanzania Commission of Universities (TCU) (2019) revealed e-learning to be an essential method of enlarging access to higher education and a useful method for HLIs to compete in the provision of education in the world. In 2010 the government made effort to ensure HLIs in Tanzania utilize ICT facilities in the teaching and learning process though, the results are still low (United Republic of Tanzania (URT, 2018). Alike, the government encourages HLIs to opt for e-learning to enhance the provision of education and increase the enrolment of students in higher education (URT, 1999; URT, 2003: 2016). The study consequently intended to look after covid-19 lockdown what happened in HLIs in Tanzania particularly in Mbeya city. Were they ready for e-learning transformation or they were laid-back again?

2. METHODOLOGY

The study used an explanatory sequential mixed-method research design since it considered the nature of the study that required factual information. The design adopted by the study adopted a combined paradigm approach that is a quantitative and qualitative in nature. This approach provided a researcher with a variety of ways of looking at a research problem and being able to provide an in-depth analysis of facts. For qualitative data, phenomenology design was used because it assisted the researcher to understand the phenomenon and the lived experiences of participants in the study area (Creswell, 2014). For quantitative data on the other hand, cross-sectional survey design was employed.

The sample size comprised of 180 participants where 104 were students, 72 were lectures and 4 were administrators in HLIs. Lecturers and students were randomly selected since the technique granted room for the researcher to select a reasonable number of participants who were representative of the targeted population (Mugenda, 2008). While administrators were purposively included in the study because the focus was to get only informants with relevant in-depth information preparedness for digital classes.

The study utilized questionnaires, interviews and observation methods to gather information from participants. A set of structured and unstructured inquiries were administered to students and lecturers to collect abundant information from a large group of informants within a short period (Mugenda and Mugenda, 2003). The face-to-face semi-structured conversation was used to extract in-depth information from administrators (Taylor, et al., 2016). Moreover, non-participant observation involved observing and recording the existing situation of preparedness for the use of e-learning technology in the post-covid-19 pandemic.

Content and face validity were checked to prove appropriate of the instrument to the study aim and content area by subjecting the instruments to the research experts (Mugenda, 2008; Taherdoost, 2016). Cronbach's alpha of 0.83 indicated the reliability of research instruments. The trustworthiness of qualitative tools observed credibility, transferability, conformability and dependability.

Data were collected into two phases. The first phase involved the collection of quantitative data from students and lecturers. The completed questions were scrutinized statistically with the aid of Statistical Package for Social Science (SPSS) version 20 and the findings were exhibited in percentile, numbers, tabulation and figures. The second phase involved gathering of qualitative data from administrators in HLIs. Recoded data from interview was organized and evaluated with the support of the word clouds program to obtain the main themes.

3. RESULTS

3.1 Demographic Information of Participants

The study anchored demographic information of students and lectures. The gender of students was equivalent at 50%. The distribution of students by age indicated that most of the students 56.7% were aged 25 years and below, followed by 26-30 years with 27.9% and the last 31 years and above carried 15.4%.

The distribution of students by year of study showed that second-year students were higher by 52.9% than the third-year students with 47.1%. About the course of the specialization, students perusing the course of education they were many at 41.3% compared to Business at 5.8%, Law at 2.7%, ICT at 12.5% and other courses at 37.5%. Alike, the gender of lecturers was comparable at 50%.

The age of lectures showed that lecturers at 47.2% were aged between 36-45 years while 37.5% were aged between 26-35 and 15.3% had 46 years and above. Regarding the level of education, lecturers with a master degree were the most dominant by 59.7%, bachelor degree at 22.2% and the least were PhD holders presented by 18.1%. Moreover, the distribution of lectures by work experience demonstrated that majority of lecturers 52.8% had experience between 11-20 years, whilst 22.2% of lecturers had experience of 21-30 years, 19.6% had experience of 10 years and below and 5.6% of lecturers showed had the experience of 31years and above. Finally, the distribution of lecturers by course of specialization indicated that lecturers from other courses were higher at 40.3% followed by education by 37.5%, ICT by 9.7%, Business by 6.9% and law by 5.6%.

3.2 Post Covid-19 Preparedness of Higher Learning Institutions on the Use of E-learning Technology

This section covers post covid-19 preparedness of higher learning institutions. The section is organized based on the following sub-sections: indicators of preparedness for the use of e-learning, preparedness of HLIs on the use of e-learning, the perception of teachers and students on the use of e-learning in the post-covid-19 disaster

3.2.1 Indicators of E-learning

The study intended to look at the indicators of preparedness for the use of e-learning. Participants from students and lecturers were asked whether HLIs are preparing for the use of e-learning in the post-covid-19 pandemic. Table 1 shows the distribution of the respondents by indicators for the use of e-learning.

Table 1
Indicators for the Use of E-learning

Indicators	Students		Indicators	Lecturers	
	Frequency	Percentage		Frequency	Percentage
E-learning devices	7	6.7	Teaching devices	3	4.2
E-learning platform	4	3.8	E-learning platform	4	5.6
Strong wireless local network	9	8.7	Wireless internet	5	6.9
Experts	6	5.8	Strategic planning	2	2.8
			Training lecturers	4	5.6
Total	26	25	Total	18	25

Source: Field Data, (2021)

Table 1 presents the indicators that show the preparedness of HLIs for the use of e-learning. The findings indicate that only 25% out of 100% of both students and lecturers were able to explain the indicators of preparedness for the use of e-learning. This implies that the majority of participants 75% were not aware of online learning. Thus, the creation of awareness is highly needed for HLIs to understand the potential of e-learning particularly in emergency issues like the covid-19 pandemic.

Table 2
Preparedness of HLIs on the Use of E-learning

	Students		Lecturer	
	Frequency	Percentage	Frequency	Percentage
Yes	26	25	18	25
No	78	75	54	75
Total	104	100	72	100

Source: Field Data (2021)

The findings in table 2 indicate that majority of student's and lectures 75% showed that HLIs do not prepare for the use of e-learning while 25% agreed that HLIs are preparing. Concerning the sightings that the majority of HLIs are not preparing for the use of e-learning in the post-covid-

19 pandemic, 75% of the teachers agreed with the statement. The same percentage of the students also agreed with the statement.

3.2 Perception of Students HLIs on the Use of E-learning

The study sought to determine the perception of HLIs on the use of e-learning in the post-covid-19 disaster. The results in table 4 and 5 indicate the responses from students and lectures.

Table 4
Students Perception on the Use of E-learning

	Students Disagree	Moderate	Agree
It encourages students to learn	28(26.9)	30(28.8)	46(44.3)
Students want to learn by using online	15(14.5)	26(25)	63(60.5)
It assures permanent learning	13(12.5)	27(26)	64(61.5)
It is difficult to control learners	10(9.6)	46(44.2)	48(46.2)
It facilitates laziness	58(55.7)	32(30.8)	14(13.5)
It improves students' ICT skills	15(14.4)	40(38.5)	49(47.1)
It reduces the cost of learning	54(51.9)	29(27.9)	21(20.1)
Use of both face to face and e-learning methods	-	34(32.7)	70(67.3)
It expands the access of acquiring education	19(18.3)	37(35.5)	48(46.2)
E-learning is not achievable in our environment	57(54.8)	32(30.8)	15(14.4)

Source: Field Data, (2021)

Table 5
Lecturers Perception on the Use of E-learning

	Lecturer Disagree	Moderate	Agree
Lecturers are attracted to use online classes	-	34(47.2)	38(52.8)
E-learning ensures permanent teaching	5(7)	28(38.9)	39(54.1)
E-learning is less expensive	43(59.7)	21(29.2)	8(11.1)
E-learning is difficult to control learners	34(47.2)	26(36.1)	12(16.7)
E-learning facilitate laziness	56(77.7)	11(15.4)	5(6.9)
It improves lectures ICT skills	-	9(12.5)	63(87.5)
E-learning encourage lecturers to teach	3(4.2)	24(33.3)	45(62.5)
Use of both face to face and e-learning methods	-	1(1.4)	71(98.6)
	7(9.7)	27(37.5)	38(52.8)
It improves the access of acquiring education			
E-learning is not achievable in our environment	44(61.1)	20(27.8)	8(11.1)

Source: Field Data, (2021)

Table 4 and 5 indicates the perception of HLIs on the use of e-learning in the post-covid-19 disaster. The results show that HLIs positively appreciate the use of e-learning in the provision of higher education. For instance, students by 67.3% and lecturers 98.6% agreed with HLIs to employ both face-to-face and e-learning methods. Also, participants from students at 54.8% and lecturers at 61.1% disagreed with the statement that e-learning cannot be implemented in our context.

Table 6
Challenges in the preparedness on the use of e-learning

Items	Students		Items	Lecturers	
	Frequency	Percentage		Frequency	Percentage
Insufficient of digital learning devices	24	23.1	Financial limitation	12	16.7
Lack of awareness	16	15.4	Shortage of competent staff	18	25
High cost of internet package	19	18.3	Internet service instability	11	15.3
Geographical obstacles	11	10.6	Attitude	9	12.5
Financial problem	21	20.1	Inadequate of e-learning facilities	15	20.8
Unstable power supply	13	12.5	Unstable power supply	7	9.7
Total	104	100.0	Total	72	100.0

Source: Field Data (2021)

Table 6 presents the challenges encountered the preparedness for the use of e-learning in HLIs. Participants from both students and lecturers pointed out lack of digital learning facilities by 23.1% for students and 20.8% for lecturers, financial limitation 20.1% for students and 16.7% for lecturers, internet service 18.3 for students and 15.3% for lecturers and power supply presented by 12.5% for students and 9.7% for lecturers appeared to be the most challenging issues in the preparedness for e-learning.

3.3 Measures for Successful Online Learning in HLIs

The study attempted to find out possible measures to be taken by HLIs and the government for the successful execution of online learning in HLIs in the post corona pandemic. Table 7 and 8 present the results from participants.

Table 7
Measures to be taken by HLIs

Items	Students Frequency	Percentage	Items	Lectures Frequency	Percentage
Improve e-learning infrastructure	27	26	Improve e-learning infrastructure	18	25
Provision of education	21	20.2	Strategic plan	11	15.2
Training enough experts	25	24	Establishing e-learning centres	13	18.1
Build capacity to students	16	15.4	Build capacity to lecturers	21	29.2
Allocation of enough budget	15	14.4	Cooperation with other stakeholders	9	12.5
Total	104	100.0	Total	72	100.0

Source: Field Data (2021)

The findings in table 7 demonstrate that participants suggested improving e-learning infrastructure by 26% from students and 25% from lecturers, building e-learning capacity to students and lecturers by 15.4% from students and 29.2% from lectures as the key measures for the use of e-learning in HLIs. However, other factors were important to students like provision of education 20.2%, training enough experts 24% and allocation of enough budget 14.4%. Similar, to lecturers the issue of strategic planning was presented by 15.2%, establishing e-learning centres 18.1% and cooperation with other education stakeholders 12.5%.

Table 8
Measures to be taken by the Government

Items	Student Frequency	Percentage	Items	Lecturers Frequency	Percentage
Subsidize internet packages	23	22	Subsidize internet service to HLIs	14	19.4
Investment in ICT	14	14	Build capacity to students	16	22.2
Framing e-learning policy	19	18	Formulate e-learning policy	22	30.6
Subsidize e-learning facilities	20	19	Facilitate e-learning facilities to the HLIs	11	15.3
Financial support	17	16	Encourage HLIs to opt for e-learning	9	12.5
Facilitate accessibility of strong internet in remote areas	11	11			
Total	104	100.0	Total	72	100.0

Source: Field Data (2021)

Table 8 show that participants proposed the government subsidize internet connectivity by 22% from students and 19.4% from lecturers, formulation of e-learning policy 18% from students and 30.6%, facilitating e-learning facilities to HLIs 19% from students and 15.3% from lectures. Likewise, students by 14% proposed the government invest in ICT, provide financial support 16%, and facilitate the accessibility of strong internet in remote areas by 11%. Likely, lecturers,

22.2% proposed the government build e-learning capacity for students and encourage HLIs to opt for e-learning by 12.5%.

4. DISCUSSION

The study goal was to examine the post-covid-19 preparedness of HLIs on the use of e-learning technology. The findings from the field demonstrated the majority of HLIs do not prepare for employing e-learning in the future. One of the interviewees narrated that; "after opening the face-to-face learning due to temporary closure due to coronavirus, we have not started preparing for online learning, as the issue of online learning, in general, is too complicated and it is difficult to start preparing for it quickly". This is supported by Parkes, Reading and Stein (2019) who found that most of HLIs in Australia do not employ e-learning as one of the methods of teaching and learning as the majority of students were not aware of the operation of e-learning. Online learning is a new culture in our environment, it needs ample time for HLIs to learn and get involved in it. The findings showed that e-learning infrastructures and equipping students and lecturers with e-learning skills are signs for the enactment of online learning. Furthermore, a study by Ansong, Boateng and Boateng (2017) indicated that e-learning infrastructures such as internet connectivity and power supply play an important for the execution of e-learning.

The findings confirmed that HLIs positively appreciate the use of e-learning in the post-covid-19 pandemic. According to Kunene and Barnes (2017), HLIs in South Africa accepted the use of e-learning in the provision of higher education. HLIs has noted the conceivable of e-learning mostly in the emergency cases like covid-19 diseases. For instance, the report from USAID (2020) indicated that e-learning is the only usable method in the world that can prolong learning predominantly in the emergency time like political fights, covid-19 pandemic, Ebola and other natural disasters that can hamper face-to-face learning. Also, e-learning showed to improve the access to higher education. Ali, Hossain, and Ahamed (2016); Chola, Kisimba, George and Rajan (2020) and USAID (2020), found that e-learning offers flexibility in learning, increase the accessibility of education and easier the accessibility of learning resources. So, HLIs have to inaugurate the use of e-learning to certify learning continuity. During the interview, one of the interviewees described that; we cannot run away from using technology in educating at the present, online learning is a good method especially in the emergency cases like covid-19. For instance, Open University has been using the method for some time and even during the closure of face-to-face learning they managed to continue with learning because was already prepared, so e-learning is realizable in our context. Therefore, HLIs need to make preparations to facilitate the provision of higher education online. Despite the determination, HLIs encounters challenges that drawback the preparedness for the use of e-learning lack of awareness, high cost of internet package, financial limitations, unstable power supply, shortage of competent staff, internet instability, negative attitude and geographical obstacles weaken the efforts towards the implementation of e-learning in the post-covid-19 pandemic (Olum, et al. 2020).

The findings showed that the improvement of e-learning infrastructure in HLIs is a measure for the implementation of e-learning. This is supported by Aboderin (2015) and UNICEF (2020) that HLIs should be refining e-learning facilities by investing in modern e-learning technologies, up-to-date digital gadgets, powerful internet bandwidth as well as software's may offer successful e-

learning in HLIs in the post-covid-19 pandemic. Furthermore, looking at building e-learning capacity for students and lecturers Tarus et al. (2018) and UNICEF (2020) initiate that HLIs should prepare e-learning users with knowledge and skills to realize digital education in the post-covid-19 disaster. This means that for successful online learning in HLIs both students and lecturers must have knowledge and skills on the operation of the method. Likewise, during the interview one of the interviewees raised that; HLIs should revise their policies, strategies and curriculum of providing higher education to suit the use of e-learning. This means that most of HLIs policies, curriculum and strategies are based on face-to-face learning. The finding linked with the study by Paschal and Mkulu (2020) who found that policies in most African HLIs were incompetent to assist online instruction. Thus, for productive e-learning in the post-covid-19 emergency, HLIs should review the institution policy, strategy and curriculum to include both e-learning.

The findings have a relationship with other former researches on measures for productive digital learning in future. For example, the result concerning facilitating e-learning facilities was supported by Adeoye et al. (2020); Mhlanga and Moloji (2020) and O'Doherty et al. (2021) commended provision of support and enabling an attractive environment for accessibility for digital learning facilities can lower the cost of e-learning. Hence, the majority of HLIs can be capable to utilize digital classes. Concentrating on subsidizing internet connectivity, Mukosa and Mweemba (2019), revealed that the government should create a conducive environment to attract investors to invest in ICT and the use of e-learning in general. Government can promote internet providers to offer internet service in HLIs at low cost by reducing tax, this can help the majority of HLIs to afford the cost of the internet which is crucial for the successful operation of e-learning. E-learning policy is crucial for the implementation of digital learning. Siron et al. (2020) commended that e-learning policy is crucial to direct the execution of digital instruction in HLIs.

Furthermore, reviewing the policy and curriculum for the provision of higher education can assist to achieve the goal of digital education. Moreover, facilitating strong internet connectivity in remote areas is important for the successful implementation of e-learning. Since most of the rural areas are not connected with strong internet to allow the implementation of online learning. One of the interviewees narrated that; government should strive to facilitate the accessibility of strong internet service in rural areas where most of our students come from". This corresponds with the study by Mhlanga and Moloji (2020) commended that the efforts towards the use of e-learning drove out many students mostly from rural areas where online resources like the internet are not well connected. Thus, facilitating the accessibility of internet service in remote areas could draw attention to many students and HLIs to implement online learning. Moreover, financial support is a measure for the successful adoption of e-learning in HLIs. The result supports with one of the interviewees that; "students and HLIs should be financially empowered for effectively and efficiently online education". Likewise, Adeoye et al. (2020) advocated that government should attempt to allocate enough funds in the education sector to finance the usage of digital instruction in HLIs.

5. CONCLUSIONS

Grounded on the results of the study, the preparedness for the use of e-learning is crucial for future enriching the provision of higher education in Tanzania, particularly in emergency cases. Thus, it is recommended that HLIs in Tanzania should invest efforts and money towards the preparedness for the use of e-learning by training students and lecturers, investing in e-learning infrastructure, revising institutional policy, strategies and curriculum to fit the use of e-learning in the post-covid-19 pandemic. The government should formulate e-learning policy, strategies and mechanisms to guide and support the acquisition of digital learning gadgets in HLIs.

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