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The Adoption of Online Teaching and Learning strategy in Tertiary Learning Institutions in Tanzania amidst COVID-19 pandemic

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ABSTRACT: The teaching and learning process has been a big revolution since Corona Virus Disease 19 (COVID-19) has spread out to the world. This paper assessed adoption of Online Teaching and Learning in the Midst of COVID-19 in Tertiary Learning Institutions in Tanzania. Specifically, the study examined readiness level of students and teachers on the practices of online teaching and learning strategy during COVID-19 and lock down; the attitude of students towards online teaching and learning; and online teaching and learning facilities in Tertiary Learning Institutions in Tanzania. A case study research design was adopted while a sample of 87 respondents was selected using judgemental sampling technique. Data was collected through a questionnaire tool while descriptive statistics was used for data analysis. The findings revealed that57.5% of students were ready to learn though online services. On other hand the findings revealed that college management and staff were not ready to adopt online teaching and learning strategy. The reluctant of staffs were caused by inadequate online learning resources, incapability of staff, and absence of policies and guidelines issued by government on application of online teaching and learning programs. The study concludes that although there was high degree of readiness of students and internet accessibility, the adoption of online teaching and learning strategy was impossible due to inadequate facilities. Therefore, the study recommend to the government to establish and issue the policies and guidelines about the application of online teaching and learning technologies.
Key words: Online Teaching and Learning, Tertiary Learning Institutions, COVID-19, Online learning facilities.
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I.   INTRODUCTION

The teaching and learning process has been a big revolution since Corona Virus Disease 19 (COVID-19) has spread out to the world. Education is one of the sectors that have a mostly big impact on its condition. COVID-19 has changed everything in the education system. The announcement of the global pandemic of coronavirus (COVID-19) took place on 12 March 2020 and it caused policy to have social distancing which render a problem such as the school closing affecting the learning of millions of children and adolescents. COVID-19 has pinpointed the problem of school management and the way of learning between teachers and students. The teaching and learning process which do face to face must be changed to an online system. (Lapada*et al*., 2020)

Armed conflicts, forced displacement, climate change induced disasters and protracted crises have disrupted the education of 75 million children and youth globally[1]. And that number is growing in an unprecedented way with the spread of COVID-19. Education has been hit particularly hard by the COVID-19 pandemic with 1.53 billion learners out of school and 184 country-wide school closures, impacting 87.6% of the world's total enrolled learners. Drop-out rates across the globe are likely to rise as a result of this massive disruption to education access, both in schools and universities (UNICEF, 2019). The pandemic pushed governments across the globe to also close down universities as part of a strategy, among others, to prevent the spread of the virus. In Tanzania, the government took similar measures, suspending teaching and learning in all public and private universities. As a result, students in Tanzania have stayed at home for one month without learning, leaving the lecturers to engage in other academic roles such as research and consultancy, keeping teaching roles in abeyance until the pandemic slowed down. The 'pile-on effect' of the coronavirus is that

interruptions to teaching and learning can have long term implications especially for the most vulnerable. Online learning can be characterized as guidance conveyed on an advanced gadget that is expected to uphold learning (Clark and Mayer, 2016). In this feasibility research study, therefore, we seek to explore the possibility of using online teaching and learning platforms at Tanzania Public Service College to enable students to continue learning during the COVID 19 pandemic.

The problem for this paper was that; during the outbreak of the pandemic in Tanzania and the World at large, the government closed all academic institutions public and private as a present to corona from spreading and reduce the number of cases; thus had an impact on the academic whereby academic year changed/prolonged due to the fact that most institutions failed to adopt to online teaching and learning. Therefore this paper aims to assess opportunities and challenges of adopting online teaching and learning in Tertiary Learning Institutions in Tanzania. Several studies have been conducted on the advantages of online teaching and learning. However, little is known about the challenges that hindered public institutions including Tertiary learning institutions from adopting online teaching and learning during the outbreak of the coronavirus pandemic in 2019. The aim was to generate empirical information that could help understand better the underlying causes of failure to adopt online classes as opposed to higher education institutions' e-learning desire.

II.   GENERAL AND EMPIRICAL LITERATURE

2.1 Teaching
When a person imparts information or skills to another, it is common to describe the action as teaching. Imparting may mean sharing experiences or communicating information, for instance, lectures. Teaching is regarded as both an art and a science. As an art, it lays stress on the imaginative and artistic abilities of the teacher in creating a worthwhile situation in the classroom to enable students to learn. As a science, it sheds light on the logical, mechanical, or procedural steps to be followed to attain an effective achievement of goals. Different educationalists hold different ideas regarding the concept of teaching (Rajagopalan, 2019).
Teaching is arrangement and manipulation of a situation in which there are gaps or obstructions which an individual will seek to overcome and from which he will learn in the course of doing so (Brubacher, 1939). Therefore, teaching is a scientific process, and its major components are content, communication and feedback. The teaching strategy has a positive effect on student learning.

2.2 Learning
Learning is about a change: the change brought about by developing a new skill, understanding a scientific law, and changing an attitude. The change is not merely incidental or natural in the way that our appearance changes as we get older. Learning is a relatively permanent change, usually brought about intentionally (Sequeira, 2012).
When we attend a course, search through a book, or read a discussion paper, we set out to learn! Other learning can take place without planning, for example by experience. Generally with all learning there is an element within us of wishing to remember and understand why something happens and to do it better next time. Thus, Learning in a manner online is a new way of learning teaching that makes use of the device electronics especially the deep internet delivery of learning. Online learning, entirely dependent on access Internet Network. According to Imania (2019), online learning is a form in the delivery of conventional learning which is reflected on digital format through the internet. Online learning is considered to be the medium for delivering material between teachers and students during a pandemic emergency moment.

2.3 Online Teaching and Learning
Online teaching and learning are designed to reach and engage the modern learner on a one-to one basis anywhere, any time. A popular one involves Massive Open Online Courses (MOOC), which have grown to involve many researchers and research institutions. The reasons for offering online courses include easy and convenient access for students, higher degree completion rates, and the appeal of such courses to non-traditional students (Sadiku *et al.* 2017). In a similar vein, barriers to the adoption of online courses include lack of faculty commitment and high costs of implementation and delivery of the courses (Bollger and Wasilik, 2009) The key to a successful implementation of online teaching and learning is taking student characteristics into account.

2.3.1 Online teaching
Online teaching offers exciting opportunities to expand the learning environment for diverse student populations. As the demand for online teaching increases, college professors may be asked to consider teaching their classes online. Online teaching shares much with face-to-face teaching, but it also has a unique set of skills and requirements. Both approaches are similar in content, except in pace and delivery. Rather than developing the courses from scratch, a company has emerged to take care of the courses. Professors just need to use Course

Management System (CMS) software to prepare and deliver their courses. Using the software allows instructors to get it right from the beginning. For online teaching to be successful, it is recommended that the instructor should follow the following seven principles [5]: (1)encourage student participation, (2) encourage student cooperation, (3) encourage active learning, (4) give prompt feedback, (5) emphasize time on task, (5) communicate high expectations, (7) Respect diverse talents and ways of learning. To these principles one may add seven more [6]: (1) address individual differences, (2) motivate the student, (3) avoid information overload, (4) create a real-life context, (5) encourage social interaction, (6) provide hands-activities, and (7) encourage student reflection.

2.3.2 Online teaching

The process of learning is complex and it involves the auditory, visual, and tactile senses. The traditional way of learning at a campus university is not for everyone. Online learning for those who wish to study for a degree alongside work or other commitments. Online learning has been referred to as a form of distance education and as web-based learning, e-learning, and digital learning. It is offered over the Internet and uses web-based materials and activities.

2.4 Online Learning Facilities

The term e-learning defines technology mediated and digitally empowered learning that utilizes hardware (e.g., PCs, tablets, printer, digital camera, digital videos, scanner, overhead projector; OHP, and OHP screen), software (operating systems, cloud technologies, applications (apps), writing, editing, MS Office) and (CD textbooks that fall in the category of course ware, OERS, e-content) and others (e.g., USB drives, CD-ROM), whether from a distance or face-to-face classroom setting (PC helped learning), to empower teacher to student interactions (Eze *et al.* 2018).

While traditional learning was teacher-focused, the learner focus was facilitated by technology accordance which empowers learners to share and receiving content regularly. E-learning encompasses simplified and synergistic PC-bolstered learning processes and appraisal approaches that utilize innovation and other programming such as wikis, blogs, podcasts, and learning management frameworks (e.g., internet and web offices -www) to improve teaching and research (Mahahusudhan, 2008; Nadiu, 2006) and to empower students and teachers to produce, progress, and share learning contents in a more regular structure (Chiaha*et al*. 2013).

2.5 Empirical Literature

Online education changes all components of teaching and learning in higher education. Many empirical studies have been conducted to examine issues in delivering online courses; however, few have synthesized prior studies and provided an overview of issues in online courses. A review of literature using Cooper's framework was conducted to identify such issues. Three major categories of findings were identified: issues related to online learners, instructors, and content development. Learners' issues included learners' expectations, readiness, identity, and participation in online courses. Instructors' issues included changing faculty roles, transitioning from face-to-face to online, time management, and teaching styles. Content issues included the role of instructors in content development, the integration of multimedia in content, the role of instructional strategies in content development, and considerations for content development. To address these challenges in online education, higher education institutions need to provide professional development for instructors, training for learners, and technical support for content development (Kebritchi*et al.,* 2017).

Issues related to learners may be summarized into learners' expectations, readiness, identity, and participation in online courses

Regarding the applicability of e-learning in higher learning institutions in Tanzania, the study findings reveal that, e-learning in HLIs has facilitated much more flexible access to learning resources. The study findings further indicate that e-Learning provides flexibility to learners in the learning process. These findings are supported by Ndoje, (2013) who found that learners in various universities had access to teaching materials online which in one way or another helped to simplify the learning process. To date HLIs are able to personalize web environments and establish forums in classes. This enhances and allows flexibility for learners in their studies. The study by Willy (2016) on the application of e-learning in HLIs in Tanzania revealed that e learning is gaining momentum in Tanzania, and students experience e-learning services such as online teaching, online tests/exam's, online library, student registration, online time table, examination results, and payment status, all of which provides flexibility in the learning process. Advancement in technology plays an important role in promoting the integration of ICT in teaching and learning, which ultimately enhances distance learning as an effective and efficient practice. The findings of this study confirm the results noted by Mwandosya and Montero (2017) which established that the rapid growth of e-learning courses at academic institutions has brought about a big change for students and tutors. Students may demonstrate their learning efforts via different methods such as text, email, video or audio devices. Instructors often need to restructure their courses to successfully incorporate e-Learning. The presence of e-learning services in higher learning institutions provide flexibility to users to be able to use the technology as well as to ensure a better teaching and learning process. The study findings also indicate that rapid Applicability of e-learning in higher education in Tanzania - 247

III. METHODOLOGY

3.1 Research design

The study adopted case study research design where Tanzania Public Service College (TPSC), was chosen to represent other training institutions in Tanzania. Tanzania Public Service College (TPSC) is a semi-autonomous Executive Agency established through the Executive Agency Act No.30 of 1997 in a year 2000. It is a comprehensive training facility of the Tanzania Public Service. TPSC implements her mandates by designing, packaging and delivering demand – driven programmes, consulting and action research services to the public and private sectors in Tanzania (URT, 2027). The study used case study because wanted to explore in details more information regarding the adoption of online teaching and learning strategy. A qualitative research approach was chosen primarily because it involved an in-depth study of variables under investigation. Although qualitative methods dominated the study, it was triangulated by quantitative data collection with structured questionnaires administered to respondents to strengthen validity and reliability of the findings.

3.2 Research Approach

This study invoked interpretative paradigm approach; the interpretative perspective allowed adoption of qualitative approach which facilitated maximum understanding of perception of reality of the actors (Morin, 2003).

3.3 Sample size and sampling techniques

The study used 87 sample size obtained using judgmental sampling techniques. The justification for using judgmental sampling is to ensure to gather the relevant data from the respondents. The composition of sample involved the college management, academic staffs, parents, and students pursuing certificated and diploma education level.

Table 1: Sample Selection and Distribution

s/n	Category	Sample number	Actual response	Percentage (%)
1.	TPSC management	8	4	50%
2.	TPSC Tabora management	8	5	62%
3.	Academic staff TPSC	15	12	80%
4.	Sponsors/parents	10	7	70%
5.	Students (Certificates/Diplomas)	68	59	86.7%
	TOTAL	**109**	**87**	**79.8%**

Source: Survey Data (2022)

3.4 Data collection methods

The study used the questionnaire tool in gathering data from 87 respondents. The questionnaire tool was contained both open-ended and close-ended questions. Open-ended questions were used to get the experiences and feelings of respondents about the readiness of students and teachers in adopting the online teaching and learning. Close-ended questions were used for gathering information that the researcher intended to get which could not be obtained using open-ended questions.

3.4 Data Analysis

The data obtained were coded, summarised, and presented in tables, frequencies and percentage for clarity. Simple statistics including the use of percentage, frequencies, mean, and standard deviation were applied during data analysis. Also, for qualitative data Content analysis was used to analyse data. The above information was triangulated with the information obtained from interviews, Focus Group Discussions (FDGs), and questionnaires and subjected to detailed analysis based on the needs and objectives to be answered. Quantitative data were collected and analyzed through frequencies and percentages.

IV. RESULTS AND DISCUSSIONS

This section adumbrates the key findings of the study as revealed from the research objectives and coalescing with key themes from the literature.

4.1 Demographic Characteristics of Respondents

The characteristics of respondents were categorised in terms of sex, age, and level of education. With regard to sex, findings in Table 2 shown that males were 35 (40.2%) while females were 52 (59.8%). This shows clearly that females dominate students who study at Tanzania Public Service College. Likewise, the

demographic statistics of respondents in term of age indicates that 60 (69.0%) of respondents were aged from 18 to 23 years, 24 (27.6%) were from 24 to 29 years old, and 3 (3.4%) were from 30 and above years old as detailed in Table 2. The above feature reveals that 60 (69.0%) of the respondents in the study were aged from 18 to 23 years old, implying that the students at a TPSC were dominated by young youth. Also, the findings in Table 2 revealed that 17 (19.5%) were basic technician certificate education level, 69 (79.3%) were ordinary diploma education level, and 1 (1.2%) were bachelor degree education level.

Table 2: Demographic Characteristics

Demographic Characteristics of Respondents	Frequency	Percentage
Sex of Respondents		
Male	35	40.2
Female	52	59.8
Age of Respondents		
Between 18 to 23 years	60	69.0
Between 24 t0 29 years	24	27.6
Between 30 and above	03	03.4
Education level of Respondents		
Basic Certificate education level	17	19.5
Diploma education level	69	79.3
Bachelor degree education level	01	01.2

Source: Survey Data (2022)

4.2 The level of Readiness, Access to internet and Online learning facilities

The study was interested to explore the extent of readiness of students on online learning during COVID-19. Out of 87 students, 50 (57.5%) were ready to learn though online services while 37 (42.5%) were not ready as detailed in Table 3. With regard to ability of respondents to internet access either when they at home or around the college premises, findings in Table 3 revealed that 57 (65.5%) had ability to internet access while 30 (34.5%) had no ability to access internet. These findings concurred with the study done by Maqableh and Alia (2021) who found that 95.9% of the students used online resource during online learning implying that they had ability to access internet.

Table 3: The results on readiness, access to internet and online learning facilities

	Statements	Frequency	Yes	No	Mean	Std. Deviation
1.	Readiness of college to offer any online course	87	0(0.0%)	87 (100%)	2.00	.000
2.	Readiness of students in attending online lectures midst of COVID- 19 pandemic	87	50(57.5%)	37(42.5%)	1.43	.497
3.	Having Computer/laptop of your own that you can use at home	87	42(48.3%)	45(51.7%)	1.52	.503
4.	Easy Internet access around the college	87	57(65.5%)	30(34.5%)	1.33	.473
5.	Internet access at home/where you stay	87	57(65.5%)	30(34.5%)	1.33	.473
6.	Does the college have adequate online learning facilities?	87	42(48.3%)	45(51.7%)	1.52	.503
	Average scores	87				

Source: Survey Data (2022)

About the readiness of the college to offer any online course during COVID-19, the findings in Table 3 revealed that 87(100%) respondents responded that the college was not ready to conduct online training in any module taught at the college. These findings imply that majority of tertiary learning institutions in Tanzania were not ready to conduct online training. This might be due to lack of online training policy, inadequate online learning facilities, and incapability of lecturers to conduct online training. These study findings were in line with those of Maqableh and Alia (2021) who found that 84.7% of respondents believe the university student was not ready to shift from traditional mode of learning to online mode of learning. Also 74.1% of students believe the teachers were ready for online learning.

On whether the college had adequate learning facilities for online training on not, the findings indicated that 42 (48.3%) agreed that the college had adequate learning facilities while 45 (51.7%) disagreed. The majority of respondents said that the college had inadequate online learning materials. This implies that even if there was high degree of readiness of students to conduct online learning, it could be impossible due to lack of facilities. The findings agreed with those of Becker (1997) and Katz and Becker (1999) who found that inadequate online resources as major hindrance of online training

4.3 The attitude of students towards online teaching and learning

The study assessed the attitude of students towards participating in online teaching and learning. The responses were given on a five-point Likert scale (where 1 = strongly disagree, 2 = disagree, 3 = neutral/undecided, 4 = agree, and 5 = strongly agree). The score's strongly 'agree' and 'agree' has been taken to represent a statement highly agreed, equivalent to a mean score of 3.5 to 5.0, while the scores of 'disagree' and strongly 'disagree' were taken to represent a statement not agreed upon, equivalent to a mean score of 1.0 to 2.5. The mean scores from 2.6 to 3.4 were taken to represent a statement of neither agreeing nor disagreeing.

Table 4: The summary of results on attitude of students towards online teaching and learning

Statements	Frequency	Mean	Std. Deviation
Accessing internet around college is always a challenge	87	3.60	.836
Most student do not have personal computer/laptop of their own	87	4.06	.571
Online learning is difficult for most of students at the college	87	3.74	.716
Most online materials are not relevant with the course content taught	87	2.76	1.212
Too big number of students in one class hinder an online learning	87	2.65	1.046
Course instructors do not have any online teaching programs throughout their courses	87	3.01	1.173
It is always easy to access internet around college environment	87	3.37	1.132
It is mandatory for student to have personal computer at our college	87	2.97	1.274
It is very easy to adopt online learning to most students in our college	87	2.93	1.118
Online materials are relevant and can easily be accessed	87	3.39	1.134
Number of students in one class does not hinder online learning	87	3.07	1.175
Course instructors normally do have online teaching programs	87	2.40	1.023
Average score	**87**	**3.16**	**1.03**

Source: Survey Data (2022)

The findings in Table 4 revealed that the average of mean score was 3.16 with a standard deviation of 1.03, implying that majority of respondents were neutral or in undecided side on the attitude of students towards participating in online teaching and learning, and respondent perceptions differ significantly. Also, the study findings implied that the respondents were not much aware or familiar with the online teaching and on learning process.

4.4 The college online teaching and learning facilities and course content development

The study found that 14 (16.1%) of respondents agreed that the college has adequate facilities for online teaching and learning while 73 (83.9%) disagreed. About whether college had policy and guidelines for the online teaching and learning, the findings revealed that 90.8% of respondents said the college had no policy and guidelines while only 9.2% agreed that the college had the policy and guidelines for online teaching and learning. With regard to whether The College had conducted orientation training to staff about how to conduct online teaching and learning, all (100%) respondents disagreed as detailed in Table 5. These findings imply that the college had inadequate online teaching and learning facilities. The findings concur with the study done by Becker (1997) and Katz and Becker (1999) who found that inadequate online resources as major hindrance of online training.

Table 5: The summary of results on college online teaching and learning facilities

	Statements	Frequency	Yes	No	Mean	Std. Deviation
1.	The college has appropriate facilities for online teaching and learning	87	14(16.1%)	73 (83.9%)	1.82	.934
2.	The college has policy and guidelines about the online teaching and learning	87	8(9.2%)	77(90.8%)	1.97	.956
3.	The college has conducted orientation training to staff about how to conduct online teaching and learning	87	0(0.00%)	87(100%)	2.00	.000
	Average scores	87				

Source: Survey Data (2022)

V. CONCLUSION AND RECOMMENDATIONS

Online Teaching and Learning was seen as very important strategy especially during COVID-19 pandemic outbreak. Although the findings revealed that most of students were ready to adopt the online teaching and learning during COVID-19 pandemic, the strategy failed for implementation among Tertiary Learning Institutions in Tanzania due to lack of online learning and teaching facilities; absence of policies, regulatory framework and guidelines for online teaching and learning. Thus the study concludes that the Tanzania Public College did not conduct online teaching and learning during COVID-19 pandemic. For the successful implementation of online teaching and learning strategy, the study recommends the government through ministry of education and technology to develop and ensure effective implementations of policies and guidelines and legal framework for online teaching and learning. Also, the study recommends to the teaching and learning institutions to invest by acquiring the necessary resources for effective practices of online learning and teaching programs. This can be done by having stable internet, computers, and other facilities.

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