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Research Article

Strengthening of an Effective eLearning Management System in Tanzanian Higher Learning Institutions

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Abstract

The spread of the global COVID -19 pandemics has impacted the education ecosystem across the globe. Most learning institutions have experienced a substantial disruption of the academic calendars by temporarily suspending teaching and learning activities as a measure of preventing the spread of the Coronaviruses among society. Application of educational digital technology remains a knowledge gap for safeguarding the filed of education in this era. This study used a survey questionnaire to investigate the feasibility and perceptions of teachers and students of implementing effective eLearning Management System in Tanzanian higher learning institutions to transform a face to face teaching into learning practices. Findings revealed that most learning institutions require a high dedicated internet connection to implement an effective and reliable e-learning system. To enable learners to adapt to the new pedagogical learning tool, the system should support multimedia file formats to facilitates interactive learning environments. Additionally, the study recommended academic institutions to innovate their ICT infrastructures to minimize technical support.

Keywords: Education Ecosystem; eLearning Management System; Global COVID -19 Pandemics; Tanzanian Higher Learning Institutions

Introduction

eLearning management system (eLMS) is a software-based platform that facilitates practices of delivering quality educational knowledge in a virtual space using digital devices connected on the internet [1]. The eLMS is considered to be an effective, reliable, and efficient pedagogical tool of bridging the gap between traditional classroom teaching methodology into a virtual classroom [2]. In contrast to traditional classroom learning, eLearning management system provides the flexibility of students to attend lessons remotely.

Due to an increase of access to the digital contents, eLMS has emerged as one of the fastest-growing educational technology that is replacing traditional classroom learning by enabling universities to offer degree and certificate programs across the world through online [3]. The tool simplifies the process of tracking students' academic progress by saving time for the class containing a larger number of students [4,5]. Additionally, eLearning management system has potentially changed the way teachers teach, assess students, learn, and the way students sit for an examination by reducing costs related to distance travel and invigilation for an examination [4]. With an application of eLearning, instructors spend less time making and compiling reports for students compared to the traditional teaching technology [6]. Different educational scholars [7,8] explored some significant benefits of eLearning Management System in academic institutions. The following are some of them:

Reduction of teaching costs

For the academic learning institutions having more branches and students off campuses, the use of eLearning management system enables one instructor to teach many students at once without organizing students in one class. Instead, they can attend a

class session at their home places [9]. Moreover, it saved a sizable amount of money related to printing costs of hand out materials for students [10].

Unlimited access to learning materials

Once the instructor has uploaded and published the learning materials, students can use their own time, smartphones, tablet, and their laptop to login into the system for unlimited access despite their geographical location and time zones. Students can learn, cover the syllabus and excel in new knowledge while they are at home [5].

Effective tracking of students' academic progress

eLearning management system enables instructors to use features contained into the system which includes reporting and analytics tools to effectively track students' academic progress with high accuracy and less time [11].

Reduces an impact related to social gathering

During a strange time of the lockdown caused by the global COVID-19, the eLearning management system can reduce the spread of the virus which can be transmitted from one person to another through social gathering. The system significantly reduces the meeting frequency between instructors and students [12].

Generally, eLearning management system can be categorized into the synchronous and asynchronous model [13]. The synchronous learning model is more effective than asynchronous as it enhances classroom chatting and whereby students can ask questions to teachers or fellow students and they discuss the answer, by sharing ideas with fellow students through instant messaging [14]. The asynchronous learning model can be done online and offline. It does not provide students' instant messaging chat rooms. However, it facilitates students with a self-paced [15].

Related works

The global demand for shared knowledge, skills collaboration, and an increasing number of motivated learners have resulted in the high number of open source eLearning management system [16,17]. However, some of them have a limitation that hinders effective eLearning practices. Enhancing effective eLearning to students remained a critical gap that imposed technical challenges to users and developers of the system [3]. Globally, no international organization for standardization has created a standard model or international framework of implementing eLearning Management System [18,19]. That situation has lead to some learning institutions fail to enhance interactive learning environments [8].

Review of eLearning in Tanzania

Over the past few years, Tanzania has witnessed an improvement of ICT infrastructures and the decrease of cost of internet connection, a situation that has to lead to ICT integration in education for teaching and learning [20]. Most universities such as the University of Dar es Salaam (UDSM), Open University of Tanzania (OUT), and Mzumbe University have been taken initiatives by offering online courses for some postgraduate programs on various campuses [19].

Challenges that hinder effective use of eLearning management system in Tanzania

Like other developed countries, most developing countries including Tanzania still face several challenges for ICT integration in education specifically on the use of effective eLearning management system [21]. These challenges include low internet connection, unstable power supply, lack of system features that support students who have a visual impairment, low vision, or no sight at low [21-23].

Materials and Methods

Study area

This study was conducted in Tanzanian higher learning institutions from February 2020 to April 2020. All higher learning institutions are monitored and controlled by the Tanzania Commission for Universities (TCU) [24]. The figure 1 is a Tanzanian map with an extension of its seven districts.

Figure 1: A Tanzania map.

Sampling techniques

This study acknowledged that all public and private learning institutions and their educational stakeholders were having an equal chance of being included in the study. To minimize the costs of data collection, the study used a simple random sampling technique to obtain a smaller number of Tanzanian higher learning institutions from a large number to represent other learning institutions for the study. According to [25], a simple random sampling technique is the best method that can be used in research to enhance the accuracy of the generalization of the large sample of the study.

Sample size

To ensure the validity and reliability of data collected from academicians and students of the university, College, and other academic institutions of higher learning, the study used a Cochran formula to obtain a sample size for data collection from an infinity population of academicians and students of Tanzanian higher learning institutions. The equation one below represents a Cochran formula for the computation of the sample size, whereby *n* stands for the sample size, *z* for the *z*-score, *p* for the population proportion, and *me* for the margin error.

This study used a *z*-score of 1.96 for the confidence level of 95%, and a margin error (*me*) of 8% and a population proportion p of 50% to obtain a sample size of one hundred and fifty representatives of the study as the equation two below shows.

Data collection methods

For the study to reach a large number of respondents with a measure of avoiding physical contact, the study used a google tool to prepare and to distribute a survey questionnaire for collecting data from lecturers, instructors, tutorials, and students of both public and private-owned higher learning institutions.

Data analysis and interpretation

The collected data was analyzed using Pandas Python data analysis software packages and the results were revealed and interpreted to address the imposed research questions derived from the specific research objectives.

Results

One of the research objectives of this study was to identify the number of higher learning institutions that were using the eLearning Management System (LMS) software package for teaching students during a lockdown of time caused by COVID 19. After data analysis findings revealed that, only 32.8% of the academic institutions use eLearning Management System. While 67.2% of the academic institutions do not use eLearning Management System for teaching and learning practices. Figure 2 shows the results obtained from the study.

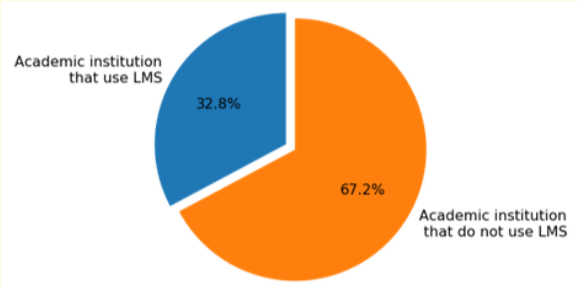

Figure 2: Uses of LMS in learning institutions.

The study investigated the reliability and efficiency of the eLearning management system to those higher learning institutions which use e-learning systems in various academic activities. After data analysis, findings revealed that 94.2% of the respondents said that, although their institutes have implemented an e-Learning Management System still they face challenges of system reliability and efficiency. While 5.8% of the respondents said their eLearning management system is reliable and efficient. Figure 3 shows the results obtained from the study.

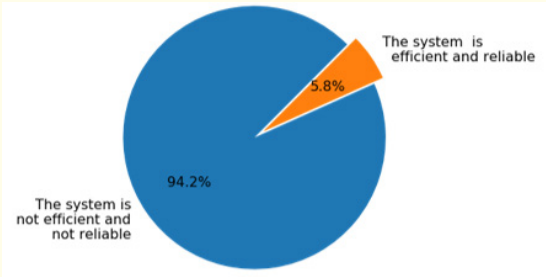

Figure 3: Reliability and efficiency of the LMS.

Moreover, the study investigated the other challenges which face learning institutions on the usage of the eLearning management system. After data analysis findings revealed that, 59.2% of the learning institutions face financial constraints of managing the monthly payment of internet connection. While 33.5% of the

learning institutions have poor ICT infrastructures for supporting a reliable eLearning management system. And 7.1% of the learning institutions their instructors failed to get timely technical support from vendors. Figure 4 shows the results of the challenges faced by the learning institutions on the usage of the eLearning Management System.

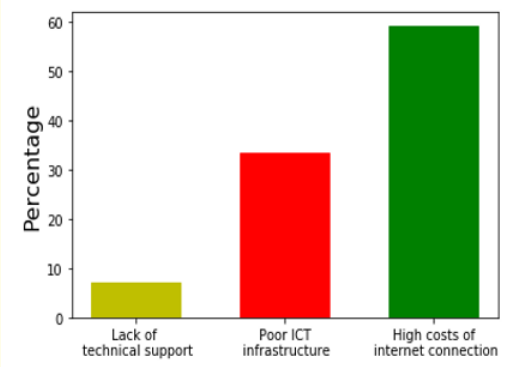

Figure 4: Challenges faced by institutions on the use of LMS.

Additionally, the study investigated the number of learning institutions that initiated the project of implementing the eLearning management system and the status of whether their project failed or succeeded. Findings revealed that 64.2% of the learning institutions their project failed and 23.5% of the learning institutions they are succeeded. While 12.3% of the learning institutions never tried to implement the eLearning management system due to various factors which include high initial costs of implementing ICT infrastructures required to support practices of delivering an educational digital system to the students. Figure 5 shows the results obtained from the study.

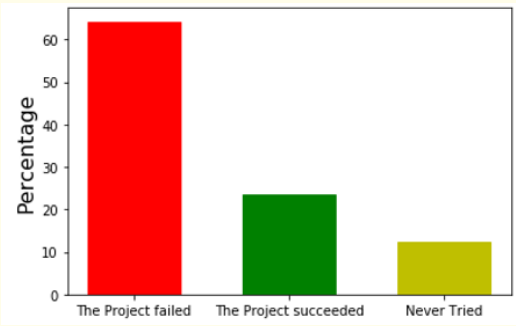

Figure 5: Status of the implemented LMS projects.

Discussion

Based on the findings presented above, the study noted that several academic institutions have implemented eLearning Management System, however, most of the system does not provide effective learning. Moreover, the study acknowledged that some institutions tried to initiate the project of implementing the eLearning Management System, but the project failed due to several notable factors which include poor support from the management and lack of conducting an effective feasibility study. Since modern education requires the flexibility and interactivity learning environment, most users of the system who are instructors and students lead to complaining about the efficiency, reliability and lack of technical support from the IT support Help desk.

Conclusion and Recommendation

Strengthening an effective eLearning management system in Tanzanian higher learning institutions remains a significant factor not only at this era of COVID-19 pandemics but all the time. Since the delivery of quality education remains a key tool for sustainable development, the study recommends all academic institutions to implement the effective eLearning management system that supports multimedia file contents, enhances learning interactivity and that supports students of disability.

With the growing number of open-source eLearning management system, this study concluded by motivating academic learning institutions to conduct the feasibility study before opt to implement any e-learning software to minimize costs related to project failure.

Bibliography

1. Ghirardini, Beatrice. "E-Learning Methodologies: A Guide for Designing and Developing e-Learning Courses". Food and Agriculture Organization of the United Nations (FAO) (2011).

2. Weaver Debbie, *et al*. "Academic and Student Use of a Learning Management System: Implications for Quality". *Australasian Journal of Educational Technology* 24.1 (2008): 30-41.

3. Anaraki Firouz. "Developing an Effective and Efficient ELearning Platform". *International Journal of the Computer, the Internet and Management* 12.2 (2004): 57-63.

4. Atkinson Doug and Siew Leng Lim. "Improving Assessment Processes in Higher Education : Student and Teacher Perceptions of the Effectiveness of a Rubric Embedded in a LMS Research Model". *Australasian Journal of Educational Technology* 29.5 (2013): 651-666.

5. Kulshrestha Tanmay. "Benefits of Learning Management System (LMS) in Indian Education". *International Journal of Computer Science and Engineering Technology (IJCSET)* 4.08 (2013): 1153-1164.

6. Green Lucy Santos and Bree Denton. "Examination of Factors Impacting Student Satisfaction with a New Learning Management System". *Turkish Online Journal of Distance Education*-13.13 (2012): 189-197.

7. Nayak Malaya Kumar and Poonphon Suesaowaluk. "Advantages and Disadvantages of ELearning Management System". *International Conference on E-Learning for Knowledge Based Society* (2007): 1-7.

8. Lwoga E. "Critical Success Factors for Adoption of Web-Based Learning Management Systems in Tanzania". *International Journal of Education and Development Using Information and Communication Technology* 10.1 (2014): 4-21.

9. Dobre Iuliana. "Learning Management Systems for Higher Education - an Overview of Available Options for Higher Education Organizations". *Procedia - Social and Behavioral Sciences* 180 (2015): 313-320.

10. Coates Hamish., *et al*. "A Critical Examination of the Effects of Learning Management Systems on University Teaching and Learning". *Tertiary Education and Management* 11.1 (2005): 19-36.

11. Fathema Nafsaniath. "Expanding The Technology Acceptance Model (TAM) to Examine Faculty Use of Learning Management Systems (LMSs) In Higher Education Institutions". *Journal of Advanced Management Science* 11.2 (2016): 92-97.

12. Gautreau Cynthia. "Motivational Factors Affecting the Integration of a Learning Management System by Faculty". *The Journal of Educators Online* 8.1 (2011): 1-25.

13. Ogbonna Chinyere Grace., *et al*. "Synchronous versus Asynchronous E-Learning in Teaching Word Processing: An Experimental Approach". *South African Journal of Education* 39.2 (2019): 1-15.

14. Sharifrazi Farnaz and Suki Stone. "Students Perception of Learning Online: Professor's Presence in Synchronous versus Asynchronous Modality". *ACM International Conference Proceeding Series* Part F1482 (2019): 180-183.

15. Kasim N N M and F Khalid. "Choosing the Right Learning Management System (LMS) for the Higher Education Institution Context: A Systematic Review". *International Journal of Emerging Technologies in Learning* 11.6 (2016): 55-61.

16. Beatty By Brian and Connie Ulasewicz. "Faculty Perspectives on Moving from Blackboard to the Moodle Learning Management System". *TechTrends* 50.4 (2005).

17. Kalinga Ellen A. "Customization of Moodle Open Source LMS for Tanzania Secondary Schools Use". *International Journal of Educational and Pedagogical Sciences* 9.2 (2015): 463-472.

18. Ouadoud Mohammed., *et al*. "Learning Management System and the Underlying Learning Theories : Towards a New Modeling of an LMS". *International Journal of Information Science and Technology* 1.1 (2018).

19. Mtebe Joel S. "A Model for Assessing Learning Management System Success in Higher Education in Sub-Saharan Countries". *The Electronic Journal of Information Systems in Developing Countries* 61.7 (2014): 1-17.

20. Swarts Patti and Mwiyeria Esther Wachira. "Tanzania: ICT in Education Situational Analysis". *Global E-Schools and Communities Initiative* (2010).

21. Kamaghe Juliana., *et al*. "The Challenges of Adopting M-Learning Assistive Technologies for Visually Impaired Learners in Higher Learning Institution in Tanzania". *International Journal of Education Technology* 10.1 (2020): 140-151.

22. Twaakyondo Hashim M and Mulebwa Munaku. "A Steady Progress Towards E-Learning in Tanzania". The Case of CVL-UDSM (2012): 1-7.

23. Ngeze Lucian V. "Learning Management Systems in Higher Learning Institutions in Tanzania : Analysis of Students' Attitudes and Challenges towards the Use of UDOM LMS in Teaching and Learning at the ... Learning Management Systems in Higher Learning Institutions in Tanzan". *International Journal of Computer Applications* 136.11 (2016): 8-12.

24. URT. Tanzania Commission for Universities (2019).

25. Garcia Christine and Jha Gaurav. The Ultimate Guide to Effective Data Collection. Edited by W. Edwards Deming, Socialcops (2015).