Impact of E- Learning Management System Adoption at Mbarara University of Science and Technology

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Abstract *- The wider adoption of Information Communication Technologies (ICTs) has provided opportunities to utilize electronic teaching and learning environments (e-learning) such as Learning Management System (LMS) in Higher Institutions of learning. However, evaluating LMSs especially in developing countries has largely been focusing on acceptance issues, while giving less attention on impact evaluation. This study qualitatively assessed the impact of using LMS on teaching and learning based on interviews with ten (10) students and en (10) lecturers of Mbarara University of Science and Technology (MUST). In May 2016, participants took part in individual interviews that mainly focused on their experiences and benefits of using LMS at MUST. The digitally recorded interviews were transcribed, and analyzed using thematic analysis. Reported impacts of LMS include: 1). improved engagement and interactions using discussion boards and chatting forums as LMS tools; 2). offering unlimited accessibility of teaching and learning materials; 3) being cost-effective; and 4) improved management of teaching and learning resources. Overall LMS is useful for offering enriched teaching and learning experiences.*

Keywords – *Information Communication Technologies (ICTs), Electronic Learning (e-Learning), Learning Management Systems (LMS).*

I. INTRODUCTION

Advancements in Information Communication Technologies (ICTs) as a new way of teaching and learning have made revolutionary changes in the traditional teaching process [4]. Using ICTs to conduct electronic learning (e-learning) has increased the opportunity to introduce a new learning environment such as Learning Management Systems (LMS).

E-learning plays a vital role in the provision of education services and extending them to even the remotest of the places in developing countries like India [2].

LMS is defined as a web based software consisting of courses that contain electronic tools including a discussion board, files, grade book, electronic mail, announcements, assessments, and multimedia elements, it is a useful content distribution system, where lecturers can distribute course materials and interact with students at a distance [6].

LMS are deployed in various Universities around the world such as University of Cape Town in South Africa. Makerere, Kyambogo and MUST in Uganda as one of the developing countries [11].

Full utilization of all the LMS tools can lead to student-centered teaching approaches which can lead to increased accessibility, assessment and evaluation features, and improved management of course content and administrative tasks.

However research carried out by authors in [13] indicates that despite of an increase in adoption rates of LMS in institutions in developing countries, their potential to support e-learning has not been fully exploited and little or no research has been carried out on the impact of LMS adoption in higher institutions of learning.

A Unified Theory of Acceptance and Use of Technology (UTAUT) model [9] has commonly been deployed in the field of e- learning to account for a user's intention and subsequent use of technology. It involves four constructs as the key factors that determine usage intention and behavior, performance expectancy, effort expectancy, social influence, and facilitating condition. These constructs in the UTAUT model served as a guide to the research questions in this study and helped in measuring the outcome of the study.

A. Research objectives.

The main objective of this study was to evaluate the impact of LMS adoption at MUST, by identifying the

challenges that influence the adoption and utilization of E-learning.

B. Specific Objectives.

The specific objectives of this study were;

1. To examine the factors influencing the adoption of e-LMS at MUST.
2. To assess the impact of e-LMS adoption at MUST.

C. Statement of the Problem.

E-learning plays a vital role in the provision of education services and extending them to even the remotest of the places in developing countries like India [2]. Despite the increased adoption of e-LMS by institutions in developing countries, their potential to support
e-learning has not been fully exploit and little research has been carried out on the impact of e-LMS adoption in higher institutions of learning [13]. Hence need to assess both positive and negative effects of e-LMS adoption in higher institutions of learning.

II. LITERATURE REVIEW.

This section overviewed and categorizes the literature related to e- Learning, e-LMS adoption into several parts of the world i.e globally, in Africa and Uganda as a whole. This section reviewed various definitions of LMS and some Technology Adoption models.

A. E- Learning.

E-learning is a computer based educational tool or system that enables you to learn anywhere and at any time. To have an e-learning system means having people talking, writing, teaching, and learning with each other online, via computer-based systems and in this case we shall look at LMS as one of the heart of e-learning [1].

B. Learning Management System (LMS).

LMS is a web based software consisting of courses that contain electronic tools including a discussion board, files, grade book, electronic mail, announcements, assessments, and multimedia elements [6].

C. LMS adoption in different Universities.

WebCT Vista was mainly introduced to enhance teaching and learning environment at Monash University. This LMS was focused on increasing student centered learning, creativity and increase the collaboration between the students and the lecturers. Despite of all the available resources, support and training given to the teaching staff at Monash University the adoption rate was relatively low [5].

The University of Zambia, according to [13], has implemented two learning management systems: Moodle and CMAP (only for its Cisco programme). The university hoped to de-congest classrooms, conduct distance learning and reduce training costs by re-using training materials provided on Moodle. It has been noted that their objective have not been achieved reason being that, the system is only used by a few lecturers and students, mainly from the science faculty.

At Makerere University, there have been three different LMS-supported e-learning initiatives in the last four decades that is the Blackboard, Kewl, and Moodle. Moodle has now been customized and branded MUELE6 (Makerere University E-Learning Environment). However, LMS adoption is still fairly low.

Claroline as a Learning Management System was implemented at MUST in 2009, and this LMS is specifically used for course content delivery. This is where the Lecturer uploads the notes for students to download and at times some announcements, chats and forums are used to engage students as well. Currently there are 266 courses registered on LMS and 1744 users (students and lecturers) yet MUST has about 6000 students and about 2000 lecturers, and this indicate that there is low adoption level of LMS usage at MUST ever since it was deployed. There has been less or no research carried out about the impact of LMS adoption in the previous studies carried out.

A. Technology Acceptance Theories and models.

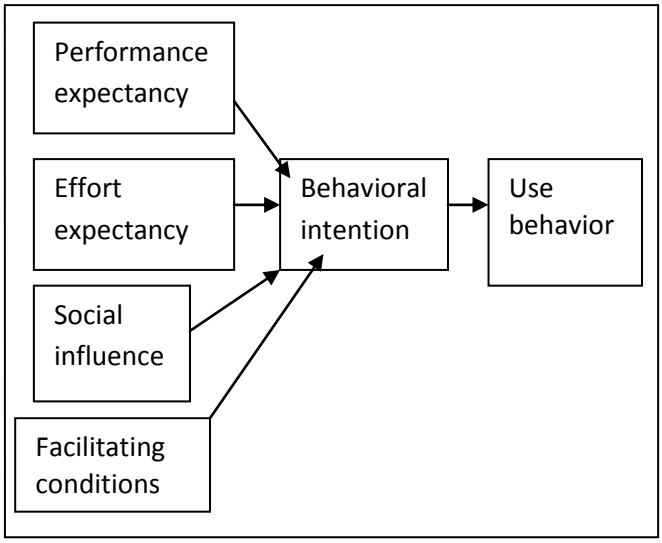
There are several models or theories that have been developed in the past to try to expose constructs that could be influencing LMS adoption such as: Technology Acceptance Model (TAM); Theory of Reasoned Action (TRA); Motivational Model; Theory of Planned Behavior (TPB); Innovation Diffusion Theory (IDT) and Social Cognitive Theory as outlined by [9].

Technology Acceptance Model (TAM) was developed by [10] according to which the user's attitude towards technology is mainly influenced by perceived usefulness, attitude and perceived ease of use. The user's motivation can be explained by three factors: perceived ease of use, perceived usefulness, and attitude towards the system. The attitude of the user is in turn believed to be influenced by two major beliefs: perceived usefulness and perceived ease of use, with perceived ease of use having a direct influence on perceived usefulness [3].

Diffusion of Innovation Theory (DOI) was developed by [12], Diffusion, on the other hand, is "the process by which an innovation is communicated through certain channels over time among the members of a social system". Therefore, the IDT theory argues that potential users make decisions to adopt or reject an innovation based on beliefs that they form about the innovation. IDT includes five

significant innovation characteristics which may include; relative advantage, compatibility, complexity, trialability and observability.

FIGURE I. UTAUT Model [9]



The Unified Theory of Acceptance and Use of Technology (UTAUT) model, which was developed by [9], it is commonly used in the field of e-learning, and it has identified four constructs that are believed to influence user's technology acceptance.

We choose to use this model because it has been proved to be the best of all other technology acceptance models to the biggest percentage it got after being tested with other models. UTAUT model accounts for 70% of the variance in usage intention and about 50% in actual use.

III. DESIGN/METHODOLOGY.

The purpose of this section was to describe the methods that were used to carry out the study. The researcher gives a description on the data collection tools and techniques that were used to carry out the study, the study population, data analysis tools and the desired theoretical framework used.

A. Study Population

This study was carried out from Mbarara University of Science and Technology in Mbarara Municipality along the Kabale - Ntungamo highway, 286 kilometers, from the capital city of Uganda (Kampala). Twenty (20) respondents were purposively sampled from two faculties and three institutes which are; Faculty of Medicine and Faculty of Science: Institute of Computer Science, Institute of Management Science and Institute of Interdisciplinary Training and Research.

TABLE I. Respondents

Faculty/Institute	Number of Lecturers	Number of Students
Faculty of Medicine	2	3
Faculty of Science	1	1
Institute of Interdisciplinary Training and Research	1	2
Institute of Computer Science	3	4
Institute of Management Science	1	2
Total	8	12

B. Inclusion, Exclusion and Enrollment criteria.

We enrolled students in their second and first year of study and their Lecturers in the above mentioned faculties. They were above 18 years of age, had ever used LMS and were willing to consent and share information about their experience with LMS at MUST. We excluded those that were not qualifying as the inclusion criteria highlights above.

C. Data collection

Qualitatively Data was collected from both students and lecturers in two faculties and three institutes from MUST as in III B above. A well designed interview guide was used by the researcher to get an in depth information from respondents about the impact of e-LMS usage at MUST in terms of user satisfaction, interactiveness, accessibility, cost effectiveness and student-lecturer relationship. Focus groups (group discussions) and individual interviews were conducted. Qualitatively the researcher engaged into open discussions with the respondents and gave them time to express their feelings on how LMS implementation has really impacted their teaching and learning both positively and negatively and an audio recording was done by the help of a digital recorder. This was conducted in the first week of the month of May 2016.

IV. FIND ANALYSIS AND DISCUSSIONS.

The digitally recorded interviews were transcribed, and analyzed using thematic analysis [14], then interpreted to extract meaningful patterns which also required an understanding of how to make sense of text so that the researcher could form answers to the research questions [7].

The analysis revealed that e-LMS has high performance expectancy and less effort expectancy. This was mentioned by one lecturer whose identity is preferred to be anonymous;

"E- LMS is a platform that helps course lecturers and students to be able to interact… lecturers upload notes, announcements and the students download them at their time of convenience …"

It has been noted that most users never found it hard to learn how to use e- LMS since most of them had a good computing background as reported by one student whose identity was also anonymous;

"….with my computer or IT background. I found e- LMS easy to use after the beginning/ training."

A good number of respondents showed that e-LMS usage had improved their teaching and learning skills by making life easy in a way that lecturers just upload notes for students of which the students do not need to go for classes instead they visit e-LMS and download notes and do their assignments in time.

"E- LMS has made life very easy for me to disseminate course content…"
"I create a chat room that connects students so that they can discuss their assignments and help each other."
" ..it has also helped me to get some feedback from the lecturers…"

E-LMS has been proved to be a better communication platform, where by the lecturer finds it very easy to reach many students at ago;

"I have found e- LMS actually quit helpful especially when I want to reach big numbers of students… "

It was found out that e- LMS increased users' engagement by allowing students and lecturers to freely interact via chat rooms and discussion boards;

"I created a chat room where I receive students work and we discuss without fearing anything at any time we agree".

However much the students and Lecturers have tried to use the e-LMS it was found out that very few of them use it. Reasons being that the file size to be uploaded and downloaded is limited to only 2Mbs, Electricity is always on and off and there is limited access to computer labs more especially on the student's side as expressed by some of the respondents below;

"One thing I dislike about a bout e-LMS is that it limits the size of files one is to upload… "

"..as a student, it is not easy to access the system because of limited access to computer labs…"

V. CONCLUSIONS.

There were limited facilitating conditions that hindered e-LMS adoption at MUST. We highly recommend the University to provide more facilitating conditions, carry out routine training sessions on e-LMS usage. Facilitating conditions could be some of these but not only limited to: computers, standby generator, Internet and training.

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