Facilitating Condition for E-learning Adoption—Case of Ugandan Universities

Kasse John Paul, Moya Musa and Annette K. Nansubuga

Department of Business Computing, Faculty of Computing and Management Science, Makerere University Business School

Abstract: Integration of technology and education has created dramatic and lasting impact on education provision and consumption and thus a paradigm shift from conventional means to modern education supported by technology. The concept of e-learning is not new in Uganda, but its implementation and integration in the education processes is worth noting, and efforts to that effect have not gone without challenges. Ugandan universities have implemented e-learning as means to increase student enrollment, access and quality of education. This paper adopted a cross sectional explorative research approach to present the challenges encountered and proposes facilitating conditions for smoother e-learning implementation based on the UTAUT model. The outcome of the paper is a modified UTAUT model.

Key words: E-learning, technology adoption, UTAUT, facilitating conditions.

1. Introduction

By far ICTs have created a big impact in education systems in the world at large and specifically in Uganda. The rise of a technologically driven generation X-ers has given birth to a paradigm shift in the way education is provided and consumed. Emerging trends in technology like smart phones and i-devices, the reduction in cost of computers and internet, the easy means of internet subscription are responsible for this shift. The current generation of learners no longer want to face the black/white board all the time or even have the time to sit in class, but would rather face their devices. The rise in social networks like face book, twitter and many others has taken away students attention from learning to social interactions. Learners prefer to face the devices while learning than facing the board.

Learning has shifted from teacher centre to learner centredness, and as such that attention of the learner can be regained by pushing the learning environment to where the attention of the learner lies. Blending conventional learning with technology is suggested as

means to create enthusiasm, interest and attention among learners. This is possible through adoption and use of e-learning. The term e-learning according to Ref. [1], it refers “the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaborations”. E-learning concentrates on use of electronic means to deliver learning, training or education.

Universities in Uganda are higher institutions of learning and composed of varying forms of learners at different levels with various intentions of learning. Many of these students have varying motivators to being active learners. Some are self-driven, others induced by sponsors while some are learners by circumstance. Regardless of the type of learner, universities must conveniently provide education across the board to create, share knowledge and transform the learner. More still, in such higher institutions of learning, knowledge is co-created. Learning is rather an active process where both the learner and facilitator are involved to generate knowledge. Therefore e-learning can be considered as

Corresponding author: John Paul Kasse, M.Sc., lecturer, research fields: e-learning, ICT4D, BPM.

an appropriate learning method that supports active involvement and engagement of the learner to co-create knowledge at convenience and flexibility. This paper presents the conditions that would facilitate adoption and integration of e-learning in Ugandan universities. The paper is organized as follows: Section 2 presents the methodology used in the survey; Section 3 discusses the UTAUT model; Section 4 contains challenges VS facilitating conditions and Section 5 is the conclusion.

2. Methodology

The researchers adopted an explorative research method to accomplish the study and employed a cross sectional approach to arrive at the findings. A simple random sampling method was used to give a chance to all possible number of respondents and generate as wide views as possible. Six (6) universities (MUK a—Makerere University Kampal, MUBS — Makerere University Business School, KIU — Kampala International University, Nkumba University - NU, Kampala University and Islamic University in Uganda - IUIU) were purposively selected as case studies and respondents included both lecturers and students. The UTAUT (unified theory of acceptance and use of technology) was used to assess the adoption of e-learning in Ugandan institutions of higher learning

(universities). The intention was to study challenges and establish the facilitating conditions that permit e-learning to prevail amongst these institutions of learning.

3. The UTAUT (Unified Theory of Acceptance and Use Model)

UTAUT and its constructs is a resultant model from a cross examination of technology acceptance models whose intention was to improve the predictive powers of behavior of intentions to use a technology [2]. Performance expectancy, effort expectancy, social influence and facilitating conditions are used to determine behavior intention to use a technology moderated by gender, age and experience [2]. Fig. 1 illustrates the UTAUT model.

UTAUT model was relevant for the researcher the underlying behavioral intention to adopt e-learning using the model variables as discussed below.

3.1 Performance Expectancy

PE (performance expectancy) refers to a conceived belief that one's adoption and use of a technology will lead to performance gains on the job [3]. When users expect a technology's performance to be ideal in terms of improving productivity, output and quality of work, adoption of such technology becomes a priority and

Fig. 1 UTAUT model .source: Ref. [2].

the opposite is true. Low performance expectancy of a technology from the probable users implies low adoption or resistance of such technology.

3.2 Effort Expectancy

Effort expectancy can literally be explained in terms of the comfort and ease by which people adopt and employ a technology for their jobs [4]. When a technology calls for less cognitive effort to use and apply, adopters will take it on with ease after all less effort is required to learn, apply and use it. However, if a lot of effort must be devoted to learning, using or implementing such technology, the level of resistance is likely to be high.

3.3 Social Influence

As the old adage goes, old birds teach the young ones how to fly applies here. Social influence from elders, senior employees (advanced users), top management buy-in/support, peers highly eases intention and the process of technology adoption. Social influence gives confidence to new users of the technology of its usefulness and value, thus new users will easily buy in to adopt it [5]. Vannoy and Palvia [6] present confirmatory findings in relation to intention to accept high-tech innovations as being positively affected by social influence.

3.4 FC (Facilitating Conditions)

These are considered to be perceptions of individuals that technical and organizational infrastructure required to use and support an intended system are available and thus intention to adopt new technologies should not be an issue. FC represents the external constraints on intention to adopt. This is rather contrary to the reality. Many studies have attempted to study technology adoption using UTAUT but the variable of facilitating conditions has been understudied. This paper therefore dwelt on FCs that exist in Ugandan universities and how they have supported or limited the adoption and use of

e-learning.

In this aspect, the existing challenges are discussed and presented along with remedies as facilitating conditions in the following section from a practitioner's perspective since the writers are part of the e-learning implementation team at one of the universities.

4. Challenges vs. Facilitating Conditions

The implementation of technologies like e-Learning into education systems suffers challenges like financing, skills, capacity among others [7]. In Ref. [7], e-learning framework presents its implementation challenges in developing countries under four categories of individual characteristics (both students and teachers), technological challenges, course challenges, and contextual challenges. Additionally, Annika and Ake [8] present e-learning challenges among institutions of learning in terms of inequality in access, pedagogy, skills and training and equipment. However, the above authors consider challenges in relation to ICT as a subject of learning as opposed to ICT as an aid to learning.

In this paper focus is on e-learning as teaching aid while being specific to the Ugandan setting to provide a full understanding of such challenges and make any propositions for purpose of mitigation as presented in the paragraphs below.

4.1 Bandwidth

Bandwidth refers the speed of connection and access to internet and its services. Bandwidth has remained a big challenge that hampers growth of e-learning and access to it. Sustainability of e-learning systems highly depends on internet bandwidth since most of the content lies online or will have to be pulled from internet, some of which includes videos and audio files that are normally heavy to download or play online. Additionally, bandwidth is not evenly spread across regions in Uganda; some areas have fiber access whereas others remain on data dongos

which are expensive and very slow. The national fiber network efforts have remained in towns or in central business districts without extension to remote areas where most institutions have campuses or annexes. To extend this fiber to institution locations calls for a heavy budget that is beyond what such institutions can afford yet use of satellites is equally expensive. Therefore the regional imbalance in the distribution of bandwidth and fiber access has hugely hampered e-learning efforts in institutions of learning in Uganda.

Bandwidth as a facilitating condition: The government should take further efforts to extend fiber access to remote areas where institutions and business units are located. This will enable such institutions to tap on to the fiber network to improve speed of internet access as well as cutting on the cost of access. There are agencies in Uganda that have attempted to extend such efforts, for instance the RENU (research and education network) Uganda. RENU brings together public and private research and higher education institutions in Uganda whose core mission is to provide a better education and research environment. Among other benefits RENU provides tariff-free traffic (data, voice & video) exchange among campuses in Uganda as well as flexible bandwidth optimized for R&E applications such as peering with other R&E institutions and supporting video conferencing. Such efforts when extended country wide will create a high positive impact to e-learning efforts by breaking the barrier imposed by bandwidth challenges.

4.2 Financial Resources

Implementation and promotion of e-learning requires intensive and massive financial resources on the part of the institutions to acquire the necessary hardware, software, bandwidth, people skills and training. Availability of finances to fund e-learning is a facilitating condition. However, lack of financial resources has suffocated the slightest of efforts taken by some institutions because they cannot sustain what

has been started.

This challenge has been endorsed by lack of e-learning policies and strategies as well as poor planning where e-learning has not been included in the budgetary processes of these institutions but simply bundled on ICT budgets.

4.3 Finance as a Facilitating Condition

Institutions should put in place e-learning coordination teams as recommended by best practice. The team should be composed of senior management members for purposes of support at strategic and management level. Such teams would be responsible for developing the e-learning policy, strategies and road map that should be followed in the implementation of e-learning. In such case, e-learning budgets would be in place and supported to overcome the challenge of lack of funding and lack of management support

4.4 Infrastructure

UTAUT assumes available of infrastructure but reality indicates that many institutions in Uganda are grappling with the problem of poor or non-existent infrastructure in terms of necessary hardware, electricity and other interconnectivity devices. Such have led to unreliable access to e-learning resources and low speed of access. Experience shows that the slow access and continuous downtimes of e-learning sites is the major cause of lack motivation in adopting and use of e-learning. Users would consider such sites as unreliable and therefore would not want to invest their time and energy into something that may not be available the next day.

4.5 Infrastructure as a Facilitating Condition

There is therefore need to ensure and sustain availability of e-learning sites 24/7 by reducing the down times to less than 1%, and improving access to a reasonable speed to encourage users and build their confidence that the system is available when needed.

Institutions should as well consider alternative sources of electricity like solar, use of inverters and power generators as means to sustain availability of e-learning systems.

4.6 Human Resource Capacity

The lack of competent people to manage and use e-learning systems has equally retarded smooth transition from conventional learning methods to e-learning. Until recently, most facilitators in higher institutions in Uganda were people of 50 years and above who have been found to be resistant and reluctant to adopt technology. That notwithstanding, the lack of people with technical competence to support, manage and maintain e-learning systems cannot be underestimated. Because e-learning is not ordinarily part of the main stream university policy in these institutions, development of staff to manage and maintain e-learning systems remains lacking. For most of e-learning managers in these institutions their development has been on sole efforts and self-initiatives which have limited exposure and innovation.

4.7 Human Resource Capacity Building as a Facilitating Condition

Institutions should devote deliberate efforts to

identify and develop staff to support e-learning implementation. The lack of support whether technical or otherwise renders e-learning systems unusable. Intensified training should be enforced for both ordinary users and technical support personnel to enable competent usage and support in order to benefit from the e-learning systems.

4.8 Educational Content

Coupled with lack of pedagogical skills, a lot of learning content is non-digitized making it practically impossible to directly make them available for e-learning. Additionally there is lack of appropriate software to create/transform and manage electronic content. Besides the software, the skills to create and preserve this e-content still presents an insurmountable challenge.

4.9 Educational Content as a Facilitating Condition

Institutions should invest in appropriate softwares to create e-content. Versions of the same exist in open source form but these may have limitations as compared to the commercial ones. Teams should be set up to create e-content and these can be composed of subject matter experts and professional instruction designers.

Based on the discussion in the previous section

Fig. 2 The modified UTAUT model.

regarding facilitating conditions for e-learning to thrive in Ugandan universities under study, and in light of the UTAUT model, antecedents have been assembled as parameters to expound on the facilitating conditions variable on the UTAUT model. This therefore implies that institutions while optimizing e-learning should pay attention to the facilitating condition as shown on the modified UTAUT model in Fig. 2. The moderating factors of gender and age were not considered because they were not regarded important given the rational of the paper.

5. Conclusions

This paper has presented some presented some facilitating conditions for e-learning adoption in Uganda's higher institutions of learning. Learning demands and styles have changed from the perspective of the learners and so should the education. A practical understanding of e-learning implementation challenges is important to provide or suggest practical solutions. In this approach the researchers being practitioners present a practical perspective of the challenges as well as suggesting facilitating conditions using the UTAUT model. The output from the paper are the antecedents of facilitation conditions that must be quantitatively or qualitatively tested to prove their contribution in facilitating the adoption and utilization of e-learning.

References

- [1] Alkhatabi, M., Neagu, D., and Cullen, A. 2011. "Assessing Information Quality of E-learning Systems: A Web Mining Approach." *Computers in Human Behavior* 27 (2): 862-73.
- [2] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. 2003. "User Acceptance of Information Technology: Toward a Unified View." *MIS Quarterly* 27 (4): 425-78.
- [3] Kamal, G. 2012. "The Effect of Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions on Acceptance of E-banking Services in Iran: the Moderating Role of Age and Gender." *Middle-East Journal of Scientific Research* 12 (2): 249-54.
- [4] Jung, K. P. J, Su, J. Y. S., and Lehto, X. 2007. "Adoption of Mobile Technologies for Chinese Consumers." *Journal of Electronic Commerce Research* 8.
- [5] Vannoy, S. A., and Palvia, P. 2010. "The Social Influence Model of Technology Adoption." *Communications of the ACM* 53 (6): 149-53.
- [6] Kulviwata, O., Bruner, G. C., and Alshuridahc, O. 2009. "The Role of Social Influence on Adoption of High Tech Innovations: The Moderating Effect of Public/Private Consumption." *Journal of Business Research* 62: 706-12.
- [7] Annika, A., and Ake, G. 2009. "A Conceptual Framework for E-learning in Developing Countries: A Critical Review of Research Challenges." *Electronic Journal of Information Systems in Developing Countries* 38: 1-16.
- [8] Josephat, O. O., Herbert, W., and Ngumbuke, F. 2012. "Challenges of E-learning in Developing Countries: The Ugandan Experience." In *Proceedings of INTED2012 Conference*.