

CHALLENGES AND STRATEGIES ON ADOPTION OF E-LEARNING IN TANZANIAN HIGHER LEARNING INSTITUTIONS: LESSONS TO FUTURE ADOPTERS

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Abstract

Tanzanian Higher learning institutions are faced with challenges of adopting e-learning in education. This study used experts in e-learning to examine barriers of adopting e-learning and the best strategies to overcome them.

Five major barriers were identified: poor infrastructure; financial constraints; inadequate support; lack of e-learning knowledge and teachers' resistance to change. It is recommended that training in e-learning needs to be provided to teachers and administrators; provide financial, technical and managerial support geared towards adoption. Successful adoption of e-learning requires a strategic approach that factors out barriers identified in this study and, which involve all education stakeholders.

Keywords: e-learning, e-learning adoption, higher learning institutions.

Introduction

Over the past one decade, there has been a substantial Information and Communications Technology (ICT) development aimed at providing learning and teaching to a wider group of learners around the world. Throughout the world HLIs are increasingly turning to various electronic technologies (commonly termed as *e-learning*) to support and enhance their learning and teaching activities (Glenn 2008; Al-Senaidi *et al.*, 2009; Meenakshi 2013). Several factors have been documented to influence the adoption of e-learning in HLIs. These include accessibility to quality educational materials (Ally 2008); learning possibilities through simulations, multi-media presentations as well as electronic communication and collaboration (Sife *et al.*, 2007; Guri-Rosenblit 2009); and learning flexibility such that learners can have control over the content, learning sequence, and pace of learning to mention the few (Hill 2003; Bhuasiri *et al.*, 2012).

Despite the benefits e-learning can offer, the adoption of e-learning in HLIs faces a number of challenges (Rolfe *et al.*, 2008; Nagunwa and Lwoga 2012). The aim of this study was to gain further understanding of the barriers hindering adoption of e-learning in Tanzanian HLIs and exploring possible strategies to address them.

Literature Review

Many definitions of e-learning exist (see, for example, Farrell 2003, p.9; Holmes and Gardner 2006, p. 14; Weller 2007, p. 5; Sangra *et al.*, 2012, p. 152), but for the purposes of this study e-learning means all aspects of electronically supported learning (whether in networked/non-networked environments) whereby the learner is interacting with teachers, content and other learners regardless of place and time.

Challenges that hinder adoption of e-learning can be categorised into institutional and personal (Rolfe, et al., 2008). The most commonly cited institutional factor in earlier studies (Newton 2003; Sife et al., 2007; Nichols 2008) was poor ICT infrastructure in terms of communication, sources of power supply, computer laboratories as well as ICT technical support units; lack of ICT policy that sets milestones in place as well as lack of support from head of institutions (Gambari and Okoli, see Onasanya et al., 2010, p. 5), which has been associated with cost of ICT training to teachers, purchasing and maintaining technologies as well as equipment for electronic learning (Nasser and Abouchedid 2000; GESCI 2009). These factors are still apparent in most recent studies (Nagunwa and Lwoga 2012; Sanga et al., 2013).

Personal factors have also been associated with barriers to e-learning adoption in HLIs. Factor such as teachers' e-learning understanding can also have impact in e-learning adoption because through their past experiences and interactions with others, they can construct multiple meanings about e-learning, which eventually shape their attitude toward it (Ajzen and Fishbein 1980; Fazio 2007). Literature shows that if teachers do not understand the meaning and impact brought about by e-learning to education, then they are likely to resist or avoid using it resulting in institutional failure to adopt e-learning (Avidov-Ungar and Eshet-Alkay 2011).

Similarly, teachers' resistance to change has also been cited as a personal factor that impinges e-learning adoption (Rolfe et al., 2008; Glen 2008; Mnyanyi et al., 2010; Garrison 2011; Nihuka and Voogt 2012). Rolfe et al., (2008) refers to it as a culture of resistance, where teachers accustomed to traditional modes of instruction refuse to change. Teachers are reluctant to put their courses into an electronic format and in some occasions, they prefer the traditional methods despite having access to newer technologies (Nihuka and Voogt 2012). Literature associates teachers' reluctance to change with self-efficacy toward e-learning (Ong and Lai 2006), lack of ICT skills (Cavas et al., 2009; Buabeng-Andoh 2012), lack of incentives that motivate adoption (Mnyanyi et al., 2010; Saekow and Samson 2011), generational division between older and younger teachers in responding to e-learning (Jones and Shao 2011) and attitudinal factors (Teo and Ursavas 2012; Pynoo et al., 2012).

Methodology

Seven e-learning experts from two HLIs were involved in face-to-face, semi-structured interviews. They were purposively selected (Cohen et al., 2011; Bryman 2012) based on their professional roles, expertise, academic qualification and their direct involvement in e-learning programmes in a HLI (Table 1). Interviews were conducted in their offices at their own suggested time and lasted for about 35 minutes. Each interview session was digitally audio recorded with participant consent, and later on, transcribed for theme analysis.

Results

Table 1 displays demographic characteristics of participants.

Table 1: Respondents' demographic characteristics

Participant ID No	Characteristics				Institution ID No
	Job Title	Gender	Qualification	YoE	
E1	Instructional Designer	female	Masters	7	I1
E2	Computer Programmer		Bachelors	3	
E3	Online Programmes Coordinator	male	Bachelors	3	I2
E4	System Administrator		Bachelors	6	
E5	Telecommunication Engineer		Bachelors	8	
E6	Director of Computer Services		Doctorate	16	
E7	Multimedia Producer		Masters	10	

NB: *E1 to E7* :- E-learning expert one to seven; *YoE* :-Years of Experience

I1 and I2 :- First and second institutions

Five main themes emerged from semi-structured interview responses. They include according to the order of importance: poor infrastructure, financial constraints, inadequate support, lack of e-learning awareness, and teachers' resistance to change.

Barriers of E-Learning Adoption in HLIs

Analysis of responses revealed that problems related with infrastructure include inconsistent electrical power supply, insufficient Internet connectivity (bandwidth capacity) and inadequate computer laboratories and computers as exemplified by E1: "...we don't have enough computers or the Internet is slow... there is a problem of power too...". This was also echoed by E5 which suggests a practical reality in HLIs in the country. Similarly, financial constraints in terms of purchasing and installing ICT related facilities, operating costs of Internet services and students' economic status when it came to purchasing tools for e-learning was also cited: "there is lack of enough finance to facilitate this technology because all of these issues we have been talking about need financial support to implement"(E5). In contrast, interviewee E6 did not view finance as a problem to most institutions in the country but said that planning was the problem because "solutions are already there, but the thing is then how to get the solution and customize them in your environment."

Another aspect was lack of technical and managerial support. Technical experts are too few to support the entire community of e-learning users in HLIs. For example E4 remarked that: "our centre supports around 10,000 students across the University...while there are very few technical staff in the centre. Roughly, we are about 15". Expertise was also revealed to be another problem particularly "instructional designers to facilitate processing and content creation" (E7).

Along with these challenges was lack of knowledge about e-learning to most education stakeholders. Lack of computer knowledge to some teachers was claimed to slow down e-learning uptake in the studied institutions. Converting print-based materials to electronic format by most of teachers was a challenge. There is some indication that users of e-learning, particularly teachers did not want to show their weaknesses on ICT skills,

which led to another problem, that is, resistance to change. Resistance to change was associated with fear of adopting new technologies, fear of exposing one's ignorance, poor mind-set, old age, subject discipline, low attitude towards e-learning and a perception that e-learning is an extra load. Respondents accounted comments from teachers such as "I already have enough on my workload, don't add unnecessary things" and "it is not necessary for me to know computers, only blackboard and chalk are enough to me to deliver materials" to be practical indications that there is a lack of e-learning knowledge to some teachers. The next section presents strategies that can be used to address these barriers.

Strategies to Address Barriers of E-Learning Adoption in Hlis

Strategies to combat problems related to infrastructure included use of renewable energy (particularly solar power) and electric generators. Findings shows that institutions I2 had already invested in it: "...in our case we have tried to have a backup generator instead of relying on the national electrical power supply" (E7). Moreover, findings identified two approaches aimed at addressing insufficient Internet connectivity. First, was to simulate online learning activities in offline environments (intranet) and second, was to establish regional learning centres facilitated with computers and learning materials using CDs:

"Students in remote areas do not have electricity and they don't have access to... computers per se. But as an institution we have organised various centres that can help such students and provided some centres with the laboratories...and instead of sending students materials on hard copies we use the CDs" (E1).

These strategies also gave students insight of practical activities that can be experienced in online environment as well as provided access to education for learners who would not be able to attend courses at university campuses. Although use of regional centres was seen to be a reliable strategy particularly in offline environments, they had some limitations when it comes to Internet accessibility. When Internet was available, then the speed would be remarkably slow. This study suggests that Internet bandwidth capacity was still a constraint for a successful e-learning in such centres as well as their host institutions.

Other identified strategies were the extension of laboratories and construction of new buildings that would accommodate computer laboratories, classes as well as staff offices. In case of limitations in expansion, institutions would look for other alternatives including buying land elsewhere.

Moreover, findings suggest that Institutions cannot by themselves fight against these challenges without a substantial financial support from the government and other donor organizations. Nevertheless, instead of relying only on students' tuition fee and financial support from the government, which is always not enough, these institutions would engage in different initiatives including consultancies with different private and public sectors as well as designing projects, which can attract funds from different donor organization:

"the Moodle which we are using was sponsored by SIDA funds...and they always facilitate on the ICT development. So we must make sure that first of all there is a financial support. We normally write proposal to university administration that will assist to set financials" (E2).

Other strategies to enhance support were focused on raising e-learning awareness to teachers and management teams so that they see e-learning as crucial and part of learning and teaching: “without support from top management, you could be just a little section there trying to make a little business and getting nowhere” (E1). Awareness raising for teachers was conducted through professional training and would include, but not limited to applications such as multimedia, Internet services and orientation to different functionalities of Learning Management Systems. Professional training supplemented by motivation through incentives were also used as strategies to address problems related to teachers’ resistance to change,

“we had a short contract and gave them some remunerations that you create your materials, of course it will belong to the university but, at least you shall be paid a token...So that has motivated some of them” (E7).

In brief, the study suggests that institutions can enhance all strategies that are focused on providing awareness of e-learning to all stakeholders of higher education since awareness deepens perception on usefulness of e-learning approaches in education.

Conclusion

This study has sought to shed light on the barriers of e-learning adoptions in Tanzanian HLIs and strategies that can be used to address them. First, it is evident that until to date infrastructural problems, are still associated with barriers of e-learning adoption in HLIs as referred to by other studies (Sife et al., 2007; Nagunwa and Lwoga 2012; Sanga et al., 2013). However, evidence from these institutions shows that there were some measures taken to address these challenges including solar power systems, enhancement of Internet connectivity, and construction of new buildings and establishment of regional centres.

Furthermore, apart from the current government support, which is not adequate institutions are struggling to address financial constraints using their own initiatives. Strategies such as engaging in consultancies, developing funds attracting projects as well as collaborating with partner institutions and donor organisation were among them identified by the study. The third key factor was e-learning awareness. Effective adoption of e-learning in HLIs would also rely on the knowledge about e-learning including its potential benefits to the education. Trainings enhance knowledge and studies have shown that knowledge can also influence perceptions about the phenomenon under investigation (Fishben and Ajzen 1980; Fazio 2007). This study suggests that training can also be the most effective strategy to address financial constraints, lack of support and teachers’ resistance to change.

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