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Challenges of introducing e-learning at Botswana University of Agriculture and Natural Resources: Lecturers' perspective

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ABSTRACT:

The integration of technology in the education process has immensely improved the acquisition and retention of knowledge. Although e-learning initiatives bring many advantages to the education system, these rewards have not been fully realised in developing countries like Botswana. Therefore, in the current study, authors set out to identify issues that may impede the introduction of an e-learning initiative at the Botswana University of Agriculture and Natural Resources. This paper presents findings from a survey of 50 academic staff of the university, to which 88 % (44/50) of the sample satisfactorily responded. Data was collected using a questionnaire and analysed using Microsoft Excel package. Four major challenges that should be addressed before an e-learning initiative can be introduced successfully are identified as: poor infrastructure, inadequate IT support, lack of e-learning policy, and lack of university management support. Recommendations are made on the basis of the main findings, and can further be applied to other universities in a similar situation.

Keywords: *e-learning, academic staff, challenges, teaching and learning, developing countries.*

INTRODUCTION

Information and Communication Technology (ICT) has brought new opportunities and challenges for instructors and learners in an e-learning environment. In the e-learning environment, teaching and learning happens differently than in the traditional classroom setting, hence some challenges are encountered by those participating. Thus, there is a need to identify the challenges encountered in an e-learning environment in order to come up with best practice solutions to ensure success of both the instructor and the learner. As Rana and Lal (2014) put it, "*Understanding issues and challenges in respect of e-learning is of significant importance to the research communities involved in e-learning and will have a significant role in forming future practices*" (p. 20).

Many definitions of e-learning have been offered, but central to these definitions is the use of digital technology and media in education. Clark and Mayer (2011) define it as lectures and practice delivered by instructors to the learners through any technological mode, with the intention of promoting learning. Rosenberg (2001), on the other hand, defines it as the use of technologies such as the Internet and World Wide Web to give a broad array of solutions that enhance knowledge and performance. E-learning has the potential to increase instructor's effectiveness and efficiency (Munezero, Irura, Kirongo, Etiegni, & Suhonen 2016) and encourage "*learners to take responsibility for their learning and build self-knowledge and self-confidence*" (Tarus, Gichoya, & Muumbo 2015, p.121). Because of its ability to use a device connected to the network, e-learning is available in various forms such as computer-mediated learning, blended or hybrid learning, web-based learning and mobile learning (Pani, Srimannarayana, & Premarajan 2015).

As can be expected, there are many challenges to be faced by users in the introduction new technology. This is expected to hold true regarding the use and success of e-learning in an

academic setting. Islam, Beer, and Slack (2015) divided challenges associated with the introduction of e-learning at a university in five categories: pedagogical e-learning, technology, learning styles and culture, technical training, and time management challenges. Edinger, Reimer, and van der Viles (2013) identified three teaching challenges that lecturers at higher education instructions should expect to face when dealing with e-learning. The first challenge to expect is that of learning how a specific new tool works. Secondly, the lecturers will have to find out how they can integrate the associated teaching and learning material educationally. The final challenge may be that lecturers will need to be competent in the associated tools, like for example learning management systems.

E-learning can help in the achievement of intended objectives in the teaching and learning environment. In view of this, the researchers wanted to identify challenges that may be encountered by lecturers when introducing e-learning systems at Botswana University of Agriculture and Natural Resources (BUAN). The researchers are based at BUAN hence the choice to investigate it. The objectives of the study were to:

a) Evaluate the current ICT infrastructure and usage at BUAN,
b) Investigate if BUAN lecturers perceive e-learning as desirable for learning,
c) Investigate if BUAN lecturers perceive functions of e-learning system as important to course administration,
d) Survey whether there is a general awareness and/or concern among BUAN lecturers regarding security and data privacy of accessing and sharing material in an e-learning system,
e) Investigate motivation and how it will impact e-learning being introduced and implemented at BUAN.

The principal research question for this study was: *What are the challenges that BUAN lecturers anticipate to encounter if e-learning system was to be introduced at their university?* This was supported by the following specific research questions:

a) Does BUAN have appropriate infrastructure and resources for e-learning environment?
b) Do BUAN lecturers have appropriate skills and willingness to use e-learning systems?
c) Are BUAN lecturers aware of the existing standards which can be used to support privacy/data protection requirements?
d) Do BUAN lecturers consider functions of e-learning system important to course administration?

LIRETARURE REVIEW

Challenges of implementing e-learning in developing countries

Several studies (e.g. Andersson 2008; Rana & Lal 2014; Tarus et al. 2015; Pani et al. 2015; Munezero et al. 2016) have shown that implementing e-learning systems in higher education institutions in developing countries has not always been successful; this is due to many challenges, mainly lack of infrastructure. Qureshi et al. (2012) identified other impeding factors as social structure, cultural acceptance and financial capacity. Other challenges that have been found to impede effective implementation of e-learning include lack of appropriate computer skills among learners and their instructors, inconsistent and unreliable Internet connection, and lack of consistent and affordable electricity, just to mention a few.

Andersson and Grönlund (2009) undertook a research that sought to understand how to implement e-learning in developing countries. They did this by conducting a broad literature review on e-

learning challenges. In total, their study reviewed 278 papers which were condensed to 60 based on exclusion and inclusion criteria designed to find papers of best quality as well as papers that clearly investigated well-defined challenges. They found 30 specific challenges which were grouped into four categories: courses (content, design and delivery), individual's characteristics (student or instructor), technological and contextual (organisational, cultural and societal). For developing countries, specific challenges to e-learning were found to be access to technology and context. By comparison with developed countries, they found that most challenges concern the individual since cost of infrastructure support and maintenance is not an issue. Naidu (2003) found out that on top of lack of access to technology, developing countries also lack appropriate training of staff to enable them to use the little technology that is available.

According to Sife,Lwoga, and Sanga (2007) there are many socio-economic and technological challenges to the integration of ICTs in higher learning institutions in Tanzania. They identified such challenges as lack of systemic approach to ICT implementation, poor awareness and attitude towards ICTs, lack of administrative and technical support, lack of e-learning policies, poor ICT skills for staff and lack of financial resources. Their findings are consistent with those of Oroma, Wanga, and Ngumbuke (2012) who found that in Uganda ICT infrastructure in universities is poorly developed and inequitably accessed. Other challenges they identified were insufficient technology skills and knowledge and pedagogical issues. In a study on factors that have the most influence in instructor participation in an e-learning process, Ahmed (2013) found that because of the immaturity of e-learning systems in developing countries, instructors do not see the importance of e-learning. Other challenges the study identified were poor supporting culture towards e-learning, lack of incentives to motivate instructors, lack of related Internet and computer training and lack of flexible and easy-to-use e-learning applications.

In their study, Naresh and Reddy (2015) identified main challenges to e-learning in developing countries as lack of infrastructure, financial support, Government e-learning policies, proper training on technology and awareness of e-learning, and less student readiness. By comparing the e-learning environment between developing and developed countries, they argue that as long as the success factors of developed countries can be adopted, then e-learning can also flourish in developing countries. Omidinia, Masrom, and Selamat (2011) conducted a study by reviewing e-learning and ICT infrastructure in Iran. The objective of their study was to analyse what was achieved to that point and what was needed to make e-learning a major success which could transform Iran and accelerate it towards its growth targets. Factors that the study identified as hindering the success of e-learning projects in Iran were process focus, implementation expertise, technology focus, open-source technology and one-time funding.

E-learning in higher education

The high growth in the use of ICTs has driven many institutions of higher learning into introducing e-learning systems in order to make learning effective. Such endeavours are favourable because majority of the learners in higher education institutions are technology-savvy (Barnes, Marateo, & Ferris 2009) and have known and probably used digital technologies and the Internet all their lives (Roodt & de Villiers 2012). These students, the Net Generation or Millennial as they are referred to by McCrindle (2006) and Oblinger & Oblinger (2005) respectively, learn better through discovery than being told what to do and can use a variety of digital technological devices (Roodt & de Villiers 2012). Net generation students arrive at university expecting a transformative form of education because technologies that instructors see as revolutionary are usually just routine to these students.

Although there are challenges of resources in developing countries like Botswana, Millennials in these countries still have the same characteristics as those from developed nations. From a study

of 117 young people (18-24 years old) from different colleges in Botswana, Batane (2013) found that ICT and Internet access is very low, and mainly occurs at college campuses. The study also revealed that young people in Botswana use 75 % of their Internet time for entertainment and communication, and not necessarily for education. This shows that these young people have the skills and enthusiasm to use ICTs just like their counterparts in developed countries, hence the challenge now is to find ways of effectively utilising these technologies for learning purposes, and e-learning may be one such platform.

ICT infrastructure and status of e-learning in Botswana

The government of Botswana realises the need to improve quality of education through the use of ICT. In light of this, through its national ICT policy, it has recommended that ICT programmes, projects and applications that can provide learning and guidance be adapted to meet the country's needs of education (Maitlamo 2007). As a result of this, the government has introduced ICT fundamentals subjects in secondary schools, and as core courses in tertiary institutions. Government schools from primary through tertiary are also equipped with computer laboratories where both learners and their instructors can work to improve their ICT skills. Despite this, Leteane and Moakofhi (2015) found out that 57.9 % of primary school teachers lack skills on using computers for instructional or teaching purposes. This is despite 78.9 % of them being aware of the advantages of technology in an educational and instructional environment. This notwithstanding, of the three public universities in Botswana, the University of Botswana (UB) has some form of e-learning initiatives introduced. The other two, Botswana International University of Science and Technology (BIUST), a relatively new university that started operating in 2011, and the BUAN, formerly Botswana College of Agriculture until February 1 2016, do not have any e-learning initiative introduced yet.

The UB proposed their e-learning initiative called UBel in 2001 (Thurab-Nkhosi, Lee, & Gachago 2005) and first implemented e-learning in 2002 (Thurab-Nkhosi et al. 2005; Gachago, Mafote, Munene-Kabanya, & Lee 2007; Nkhukhu-Orlando 2015). UBel is a strategic plan that aims at developing education that is enhanced by technology. Through UBel, the university focuses its e-learning on blended approach that integrates various modes, methods and media such as using PowerPoint software to present lectures in a traditional class to entirely offering courses online (Thurab-Nkhosi et al. 2005). Other media, methods and modes introduced are creation of e-learning 'smart classroom' with a video conferencing system, learning management systems and platforms (like WebCT, Blackboard and Moodle), e-learning support centre that has advanced network facilities, semi-embedded computers, a data projector and a mimic board. The blended-learning approach is appropriate for the UB because it is currently at a stage where students gradually need to get accustomed to new ways of teaching, which is consistent with the findings from Qureshi, Ilyas, Yasmin, and Whitty (2012).

Status of e-learning at BUAN

BUAN currently has a population of 1, 210 students and is located in Sebele on the outskirts of the city of Gaborone. The university has full-time professionals and students some of whom stay far away from the university, hence would like to continue with their work whether they are within or not. BUAN offers most of its courses in the traditional classroom setting with very limited use of ICTs. Mostly ICTs are incorporated in lecture delivery through the use of computers, projectors and interactive white boards. The university also has a facility of depositing study materials like lecture notes and test revision papers on a reserved space in the university network, popularly referred to at BUAN as *student drive*. All first year undergraduates at BUAN take two ICT courses which expose them to the use of computers in learning. There are also several points at which students

can access computers and Internet facilities on campus. These interactions with technology has assured the authors that academic staff at BUAN possess basic skills to operate computers and its associated technologies. It also assured them that academic staff have the capability of absorbing and implementing new technologies in education. The university has also made strides to improve its Internet infrastructure by providing faster access through purchase of 30 Mbps bandwidth (from 6 Mbps) and installation of Wireless Internet access. In addition, the university has plans to introduce the Moodle Learning Management System (LMS) in order to strengthen the use of ICT in its educational operations. Moodle is selected as a pilot LMS because of its open source nature, which means it will be effective in terms of financial costs to BUAN. Moodle also "*offers an opportunity for customised interaction*" (Munezero et al. 2016) and it was found to be a preferred LMS by University of Botswana staff (Motshegwe & Thomas 2012). So, BUAN currently has no functional e-learning system or platform. This state of affairs has motivated this study.

From the consulted literature and authors' observations, although e-learning systems have many advantages in the educational space, its implementation in developing countries is faced with many challenges. Chief among these challenges are lack of infrastructural resources and deficiency in ICT skills. Since BUAN aims to be a university of international repute, and being cognisant of the type of students currently enrolled, it was important to first try to determine what lecturers think might impede e-learning introduction and implementation at the university. This was done by soliciting the lecturers' opinions on challenges likely to be encountered. From their opinions, challenges were derived and some recommendations made on what should be dome in order for e-learning to be smoothly introduced at BUAN. General conclusions were drawn on what challenges universities in developing countries can expect to face when introducing e-learning systems.

METHODOLOGY

This was a qualitative study where a survey of BUAN academic staff was conducted. In-depth interviews with Educational Technology lecturers at BUAN were conducted to examine the validity and reliability of the research model. These lecturers were purposively selected as the researchers knew that they would give the information required on the research model.Then, a questionnaire was developed based on the survey instruments from literature and feedback from interviewees. The questionnaire was given to BUAN lecturers from Statistics and Educational Technology Units to improve face and content validity. Questions were structured using a five-point Likert scale designed as follows: 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree and 5 = Strongly Disagree. The respondents were asked to rate their level of agreement to closed questions using this scale. The questionnaire also had three open-ended questions at the end which solicited comments on any other relevant e-learning issues. A pilot test of the questionnaire was conducted with 12 lecturers (2 each from the university's 6 academic departments). A copy of the questionnaire can be obtained by email from the authors.

This questionnaire was adopted from Munezero et al. (2016), with some modification to suit the researchers' context. Munezero et al. (2006) surveyed 17 lecturers at the University of Eldoret, a public university in Kenya, who were exposed to Moodle training hence familiar with it, on their perceptions on challenges and solutions to providing online courses in Kenya. Their questionnaire included questions on the current ICT infrastructure and policies at the university and also asked lecturers to identify challenges they face in combining conventional face-to-face education with e-learning. It also asked the lecturers to recommend solutions to the identified challenges. In the current study, questionnaires were printed and self-administered as hard copies by the researchers. A sample of 50 academic staff was randomly selected as respondents drawn from all the 6 academic departments of the university. 46 questionnaires were completed with 2 of those completed not considered useful for analysis, hence only 44 were used. This gives a response rate

of 88 %. The university academic staff were used as the population sample because they are the ones involved with subject matter development and interact with learners during their day to day duties. The researchers also further believed that each respondent had the required ICT skills due to the nature of their work. In this research, Microsoft Excel 2013 was used to analyse the data. Descriptive statistics were used to summarise and interpret the data collected from the respondents. These statistics included frequencies, means and standard deviations.

As is the case with all empirical research, this study has some limitations that should be considered when interpreting the results. The respondents to the survey are lecturers from only one Faculty, that of Agriculture. Most of these lecturers are trained in Agriculture, and have less knowledge of technological developments. Hence, this will not reveal any differences between those with and those without prior training in technology. Other Faculties are not used as they are not yet developed and functional. BUAN is a public university, and the fact that this study does not survey lecturers from private universities might not be fully representative of higher education institutions in Botswana. Nevertheless, the results of this study should be a very good starting point for research on challenges of implementing e-learning systems in higher institutions of learning in developing countries in general, and Botswana in particular.

RESULTS

BUAN academic departments have academic staff ranging from tutors, lecturers, senior lecturers, associate professors and full professors. The study targeted at least 5 academic staff members from each department. From these departments the respondents were distributed as follows: 7 each from Agricultural Economics, Education and Extension (AEE), Agricultural Engineering and Land Planning (AEL) and Animal Science and Production (ASP), 14 from Basic Sciences (BS), 6 from Crop Science and Production (CSP), and 3 from Food Science and Technology (FST). The distribution for gender was 32 males and 12 females, giving 73 % and 27 % respectively.

In terms of age, the respondents were distributed as follows: 21-30 age bracket had 2 (4.55 %), 31-40 age bracket had 7 (15.91 %), 41-50 age bracket had 17 (38.64 %), 51-60 age bracket had 15 (34.09 %) while those over 60 years of age were 3 (6.82 %). The university requires a minimum qualification of Bachelor's degree for a tutor and Masters' degree for a lecturer upwards. There were 4 tutors, 20 lecturers, 15 senior lecturers and 5 associate professors, giving 9.09 %, 45.45 %, 34.09 % and 11.36 % respectively. Even though the departments have full professors, it was noted that those given the questionnaires did not complete them. The respondents' highest qualifications were distributed as follows: Bachelor's degree (4), Master's degree (16) and Doctoral degree (24), translating into 9.09 %, 36.36 % and 54.55 % respectively.

The results for the closed questions that sought to identify perceptions of academic staff on issues related to the introduction of e-learning at BUAN were identified using descriptive and frequency analysis. The mean values of the items, together with their standard deviations were calculated to help in interpreting the issues. The results were focused on five of the seven main challenges that have an effect on the provision of e-learning as identified by Munezero et al. (2016).

ICT Infrastructure and Support

For e-learning to be successful, there has to be sufficient and adequate ICT infrastructure in place. The respondents were asked to give their views on the current ICT infrastructure and support at BUAN. These views are summarised in Table 1. The statements in Table 1 are described as follows:

Infrastructure & Support1: The frequent power outages will interfere with using e-learning system. (Reverse Codified)
Infrastructure & Support2: Student-computer ratio is adequate to support the number of students for accessing e-learning.
Infrastructure & Support3: The number of computer laboratories will be adequate to support the number of students for e-learning.
Infrastructure & Support4: Access to Internet is reliable (available every day).
Infrastructure & Support5: The speed of the Internet is convenient to download or upload course materials.
Infrastructure & Support6: The University does provide adequate IT support for academic staff.
Infrastructure & Support5: The University does provide adequate IT support for students.

Table 1: *Responses on ICT Infrastructure and Support*

Item	Mean	Standard Deviation	Response %				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Infrastructure & Support1	4.32	1.01	2.27	6.82	4.55	29.55	56.82
Infrastructure & Support2	4.14	1.03	4.55	4.55	4.55	45.45	40.91
Infrastructure & Support3	4.27	0.90	2.27	4.55	2.27	45.45	45.45
Infrastructure & Support4	4.07	1.21	4.55	13.64	0.00	34.09	47.73
Infrastructure & Support5	3.68	1.27	2.27	27.27	4.55	31.82	34.09
Infrastructure & Support6	3.36	1.37	6.82	34.09	0.00	34.09	25.00
Infrastructure & Support7	3.48	1.13	2.27	25.00	13.64	40.91	18.18

From Table 1 it can be seen that the first four items are considered serious issues, with mean values well over 4.00. Academic staff do not believe that the constant power outages will be good for e-learning initiative. They also believe that the current lecturer-student ratios and number of computer laboratories are not healthy for the introduction of e-learning at BUAN. Although the respondents feel very negative about the availability of the Internet, 29.54 % believe that the times when it is available, its speed is good enough for downloading and uploading course materials. As can also be seen from Table 1, over half of the respondents (59.09 %) believe that BUAN does not provide adequate IT support for both staff and students. This is a concern because according to previous studies (Andersson 2008; Browne, Hewitt, Jenkins, & Walker 2008; Birch & Burnett 2009; Qureshi et al. 2012) support for e-learning from university management has been identified as critical for its successful implementation.

ICT Skills

According to Tarus et al. (2015) possession of relevant technical computer skills is a crucial factor necessary for adoption of technology. This view is shared by Qureshi et al. (2012), who say that having "*confidence in skills and ability to use e-learning contributes significantly to use of technology*". Thus in the current study, respondents were asked about their skills level with regard to computer and Internet usage, and the results are in Table 2 below, with statements therein described as follows:

Skills1: I have skills in accessing the Internet.

Skills2: I have skills in working with a computer.
Skills31: I have sufficient skills to provide course material on e-learning systems

Table 2: *Responses for ICT Skills*

Item	Mean	Standard Deviation	Response %				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Skills1	1.48	0.63	56.82	40.91	0.00	2.27	0.00
Skills2	1.48	0.63	56.82	40.91	0.00	2.27	0.00
Skills3	2.73	1.35	25.00	25.00	9.09	34.09	6.82

It can be seen from Table 2 that in terms of Internet and computer usage skills, 97. 73 % of BUAN academic staff both strongly agree and agree that they possess them. This is not surprising when one considers that the university has supplied each academic staff member with a computer that is connected to the university network. Thus, through their day to day use of the computer and Internet, 97.73 % of respondents both strongly agree and agree that they have sufficient skills to provide course material on e-learning and convert it from hard-copy to electronic content. Only 2.27 % respondents reported that they are deficient in such skills.

Security, Privacy and Copyright

The purpose of questions on security, privacy and copyright were to investigate whether academic staff at BUAN were aware of the effect of transmitting and sharing material on an e-learning platform. The results of such are shown in Table 3 below. The statements in Table 3 are described as follows:

Security1: I am aware of the standards which can be used to support privacy/data protection requirements.
Security2: I would feel safe when downloading assignments from students.
Security3: The University has guidelines (policy) for using e-learning system.
Security4: I will be comfortable providing my course material in an e-learning platform and/or online.

Table 3: *Responses for Security, Privacy and Copyright*

Item	Mean	Standard Deviation	Response %				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Security1	3.59	1.17	2.27	22.73	13.64	36.36	25.00
Security2	2.86	1.25	9.09	43.18	13.64	20.45	13.64
Security3	3.84	1.01	2.27	11.36	11.36	50.00	25.00
Security4	2.27	1.19	22.73	54.55	4.55	9.09	9.09

From Table 3, it can be seen that a lot of academic staff are not aware of standards for data protection and privacy. The results show that 61.36 % of the respondents both disagree and

strongly disagree that they are aware of these standards and guidelines. Table 3 also shows that 75.00 % of respondents are not aware of any e-learning policies put in place by the university. This points out that either BUAN does not yet have policies and guidelines for e-learning, or they have not been made available or communicated satisfactorily to academic staff. While their existence will not necessarily translate into proper e-learning awareness, they are important to be put in place and made available to staff. Lack of awareness for both data protection standards and e-learning policy notwithstanding, academic staff are positive that they would be comfortable downloading assignments from students and providing their course material on an e-learning platform.

Motivation

This part aimed to investigate academic staff's enthusiasm and self-drive to use e-learning system were it to be introduced at BUAN. The results are displayed in Table 4 below. The statements in Table 4 are described as follows.

Motivation1: I have no difficulty in accepting the idea of e-learning.
Motivation2: I have interest in using e-learning systems.
Motivation3: I will be committed to using e-learning systems.
Motivation4: Providing course material through e-learning systems will be a good idea.
Motivation5: I am interested in providing courses on e-learning systems.
Motivation6: I will be confident in using e-learning systems.
Motivation7: e-learning systems are user-friendly.
Motivation8: I will have enough time to convert course material from hard-copy to e-content.
Motivation9: It is important to me that I be compensated for putting content on e-learning system.
Motivation10: Implementation of e-learning systems will result in loss of work for some people.

Table 4: *Responses for Motivation*

Item	Mean	Standard Deviation	Response %				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Motivation1	1.41	0.58	63.64	31.82	4.55	0.00	0.00
Motivation2	1.57	0.79	54.55	38.64	4.55	0.00	2.27
Motivation3	1.61	0.69	47.73	45.45	4.55	2.27	0.00
Motivation4	1.48	0.55	54.55	43.18	2.27	0.00	0.00
Motivation5	1.57	0.66	50.00	45.45	2.27	2.27	0.00
Motivation6	1.95	0.94	34.09	47.73	6.82	11.36	0.00
Motivation7	2.30	1.05	22.73	45.45	11.36	20.45	0.00
Motivation8	2.77	1.27	15.91	38.64	4.55	34.09	6.82
Motivation9	2.66	1.27	18.18	40.91	4.55	29.55	6.82
Motivation10	3.66	1.24	9.09	11.36	9.09	45.45	25.00

The results show that academic staff are enthusiastic and motivated to use e-learning. This is shown by a mean value of 1.41 for the issue of being open to accepting the idea of e-learning. None of the respondents showed negative inclination to e-learning being introduced at BUAN. Almost all of the respondents (97.73 %) both strongly agree and agree that the introduction of e-learning at BUAN will be a good idea, and are further positive that they will be interested and

confident in using the platform/system. The results further indicate that 68.18 % of the respondents believe e-learning systems are user-friendly, with only 20.45 % disagreeing.

Even though the results show that the respondents are enthusiastic about e-learning, they are still expecting to be paid for their efforts in migrating course content to the new system. This is shown by a mean value of 2.66, with 59.09 % both strongly agreeing and agreeing that they desire to be compensated for putting content on e-learning system. The majority of respondents (70.45 %) do not believe that the implementation of e-learning system will result in loss of work for some people. This might explain the enthusiasm mentioned earlier as they are not afraid of being replaced by the e-learning system.

Social Aspects

The part on social aspects intended to investigate if e-learning is a desirable system for teaching. The results are shown in Table 5, with its statements described below.

Social Aspects1: Engaging with students in an e-learning system will be fun.

Social Aspects2: e-learning will inspire learners.

Social Aspects3: e-learning will motivate learners

Social Aspects4: Online discussions are important (learner-learner) for learning.

Social Aspects5: Online discussions are important (learner-lecturer) for learning.

Social Aspects6: Using e-learning systems will make it easier for learners to communicate with lecturers.

Social Aspects7: I prefer more face-to-face interaction.

Table 5: *Responses for Social Aspects*

Item	Mean	Standard Deviation	Response %				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Social Apects1	2.02	1.05	36.36	40.91	6.82	15.91	0.00
Social Apects2	2.61	1.20	13.64	50.00	4.55	25.00	6.82
Social Apects3	2.61	1.20	13.64	50.00	4.55	25.00	6.82
Social Apects4	1.68	0.83	50.00	36.36	9.09	4.55	0.00
Social Apects5	1.68	0.83	50.00	36.36	9.09	4.55	0.00
Social Apects6	1.95	0.99	34.09	50.00	4.55	9.09	2.27
Social Apects7	2.39	1.17	22.73	45.45	4.55	25.00	2.27

From Table 5, it can be seen that 77.27 % of the respondents feel that an e-learning system will be fun to use. Respondents are also positive that e-learning will inspire and motivate learners, as shown by 63.64 % who both strongly agree and agree to this. Higher mean values of 1.68 in both “Social Aspects4” and “Social Aspects5” and of 1.95 in “Social Aspects6” show a significant positive belief by the respondents that e-learning will provide a good communication platform. This notwithstanding, a significant number (68.18 %) will still prefer face-to-face interaction. This points

out that the type of e-learning they prefer will be that of a blended nature, and consistent with findings from Munezero et al. (2016).

Course Administration

Course administration here investigated the handling of assignments, structuring and sharing of course material. The results are shown in Table 6, with its statements described below.

CourseAdmin1: It is important to receive assignments from students on e-learning system.

CourseAdmin2: It is important to provide feedback to students on e-learning system.

CourseAdmin3: It is convenient to receive assignments from students on e-learning system.

CourseAdmin4: It is convenient to provide feedback to students on e-learning system.

CourseAdmin5: It will be easy to layout/structure course material on e-learning system.

CourseAdmin6: Some courses will be difficult to teach using e-learning system.

CourseAdmin7: Density of the curriculum will create problems in the e-learning process.

CourseAdmin8: An e-learning system will not allow me to gauge the level of motivation in class.

CourseAdmin9: e-learning systems might encourage academic dishonesty.

The results in Table 6 show that 84.09 % of respondents both strongly agree and agree that it is important and convenient to receive assignments and provide feedback to learners on an e-learning platform. This means academic staff perceive e-learning system to be a platform that will make it easier for learners to submit assignments and for them as their teachers to provide learners with feedback. Although 61.36 % of respondents feel that structuring of courses will be easy in e-learning, 36.36 % both disagree and strongly disagree to this. This is consistent with finding from Munezero et al. (2016), who found out that lecturers are apprehensive about e-learning for abstract or practical courses. This is shown by the 81.82 % of respondents who both strongly agree and agree to “CourseAdmin6”.

Table 6: *Responses for Course Administration*

Item	Mean	Standard Deviation	Response %				
			Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
CourseAdmin1	1.98	0.79	25.00	59.09	9.09	6.82	0.00
CourseAdmin2	1.98	0.79	25.00	59.09	9.09	6.82	0.00
CourseAdmin3	2.00	0.94	29.55	54.55	2.27	13.64	0.00
CourseAdmin4	2.00	0.94	29.55	54.55	2.27	13.64	0.00
CourseAdmin5	2.70	1.32	15.91	45.45	2.27	25.00	11.36
CourseAdmin6	2.07	1.13	31.82	50.00	4.55	6.82	6.82
CourseAdmin7	2.91	1.22	13.64	31.82	9.09	40.91	4.55
CourseAdmin8	2.50	1.17	18.18	47.73	2.27	29.55	2.27
CourseAdmin9	2.93	1.32	13.64	36.36	4.55	34.09	11.36

Respondents were neutral on “CourseAdmin7” as shown by a mean value of 2.91. This might be explained by the fact that some of the respondents are only responsible for courses that deal with basics while others deal with courses for applied concepts, hence varying degree of densities. 65.91 % of respondents believe that an e-learning system will not allow them to measure the level of motivation in class, hence they prefer more face-to-face interaction as reported above. The respondents were neutral on “CourseAdmin9” as shown by a mean value of 2.93.

Contextual Issues

The respondents were asked to state any other issues, besides the ones captured above, that they felt might impede the introduction of e-learning at BUAN. Among the issues they stated were the need for development of an e-learning framework/policy for the university. Buy-in by both staff, students and senior management is identified as crucial in this endeavour. Respondents also stated that there will be a need for educational technicians who will be detached from the Information Technology (IT) department as they understand educational tools better. Another concern raised was that some courses will be difficult to teach through e-learning. It was observed that clinical, practice-based and abstract courses like surgery, parasitology, anatomy, mathematics, physics and chemistry are some of those that will not be favoured by e-learning.

Almost all the respondents (93.18 %) believe that BUAN’s current infrastructure is poor, old and insufficient for e-learning. They are particularly concerned with Internet service, speed and capacity. With regard to quality of students, 86.36 % of respondents believe that although current BUAN students are of reasonably good quality, they are not motivated enough about learning. Hence they believe that if e-learning is introduced, their level of enthusiasm might increase. After all, it is believed that since most of them are millenials, they are likely to respond positively to e-learning setup as confirmed by previous numerous studies. Some respondents also feel that e-learning might encourage academic dishonesty hence compromising quality. Other issues of concern raised by respondents were inadequate financial commitment from the university and not-up-to-scratch technical support. All respondents believed that the university should provide short term training to staff about e-learning in order to raise awareness, updates and clear any ‘glitches’. This they believe is particularly important to IT staff so that they could give adequate support to other staff members and students.

CHALLENGES AND RECOMMENDATIONS

The purpose of this study was to solicit opinions of BUAN academic staff members on challenges that may impede introducing e-learning at their university. Based on the responses from the questionnaires, the challenges identified were: poor infrastructure (constant power outages, inadequate computer laboratories, and poor Internet services), inadequate IT support, lack of e-learning policy as well as lack of university management support.

The high frequency of power outages is believed to be going to impact negatively on introducing e-learning system, with the current situation cited at atleast once a week for atleast 30 minutes. Hence it is imperative for BUAN to either have a fully functional emergency and standby generator and full time in-house staff (or third-party contractor) to service and maintain this equipment. Poor infrastructure and inadequate IT support points to the need for more university pragmatic budgetary interventions in the area of infrastructure, equipment and manpower. In developing countries, availability of computers at home is an issue, hence most learners will depend on university computer laboratories to use the e-learning systems. Literature from Sife et al. (2007) and Oroma et al. (2012) show that for African countries in general, ICT infrastructure is poorly developed and is unevenly accessed. This means BUAN will have to provide enough computers to learners

together with a proper working environment. Making e-learning system available over mobile phones is also recommended as it has been observed that majority of learners have smartphones.

Whilst majority of academic staff are satisfied with the speed of the Internet for uploading and downloading, they have concerns about its availability. This is not good for e-learning system as Internet access must be right for learners and their teachers in this kind of environment. BUAN can mitigate this by introducing monitoring systems and having bandwidth allocation for each learner in order to monitor its use to ensure that it is used for learning purposes. Jethro, Grace, and Thomas (2012) identified availability of Internet, faster Internet connectivity/improved bandwidth as some of the ways that can make e-learning more effective. There is also a need to have IT personnel available on standby at all times to help with Internet issues, especially after a power outage since it is observed that that is when the Internet normally becomes unavailable.

The lack of e-learning policy at BUAN, coupled with lack of appreciation and support by management is a concern because according to previous studies (Andersson 2008; Browne et al. 2008; Birch & Burnett 2009; Qureshi et al. 2012) support for e-learning from university management has been identified as critical for its successful implementation. This is consistent with findings by Naresh and Reddy (2015) who also found that developing countries normally lack Government e-learning policies. As stated in the literature review above, Sife et al. (2007) got similar findings on lack of e-learning policy for Tanzanian universities. As a recommendation, there is a need for BUAN to develop an e-learning policy and create a plan to rationalise e-learning activities such as optimisation of existing resources. BUAN may also consider having a dedicated member of staff from the IT department who will be able to offer support to the e-learning community at the university.

The results also showed that some members of the academic staff are worried that academic dishonesty might skyrocket due to the introduction of e-learning. This comes about because of concerns that the system might allow unauthorised people to access learning material and plagiarism increases. As Marais, Minnaar, and Argles (2006) advised, because of possibilities of plagiarism in the use of e-learning systems, post checking should be incorporated into e-learning systems to reduce its corrupt use. They also suggested that e-learning systems should have "*integrated integrity checking that can be used by lecturers in an easily manageable interface*" (p. 3). In extreme cases, academic staff believe that unauthorised learners may participate in course discussions and submit assignments for other learners. As a recommendation, the e-learning policy can include the penalties of misusing the system. The policy should clearly state that learners are responsible for their accounts and should not allow third-parties to log onto the system on their behalf. It should also be a policy that course material is only available to BUAN bona fide learners, hence a need to integrate e-learning and registration systems.

It is however interesting that, contrary to similar studies (e.g. Sife et al. 2007; Oroma et al. 2012) in developing countries, ICT skills was not one of the challenges identified. Majority of academic staff believe that with their level of ICT skills, they just need training on specific aspects of e-learning to be able to use the system were it to be introduced.

CONCLUSION

ICT has a huge potential in improving the provision and acquisition of education and learning. It is with tools like e-learning that this potential can be realised. Higher education institutions in developing countries already have basic ICT infrastructure such as computers, Internet, local network, CDs and video facilities which form the foundation for e-learning set-up. These institutions must pursue a more active role in the development and formulation of policies to promote e-learning. Developing countries must also help in this endeavour by coming up with national ICT

policies that may help their higher education institutions realise the huge benefits of e-learning establishment and implementation.

It is argued that BUAN, as a higher education institution in a developing country, should adopt e-learning system to improve its teaching and learning processes. The many benefits of e-learning should allow BUAN to meet its mission of producing high quality graduates. The high level of e-learning awareness by academic staff members means that they will accept it as a mode of delivering instruction to their learners. Thus, if e-learning initiative was to be introduced, the challenges identified above will have to be addressed. E-learning cannot be applied in every case, but only in many cases. There are times where direct interaction with learners in more traditional ways is superior to e-learning. But BUAN has to move with the times and incorporate e-learning for all that is worth.

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