Instructor support services: An inevitable critical success factor in blended learning in higher education in Tanzania

Christina Raphael
Dar es Salaam University College of Education, Tanzania

Joel S. Mtebe
University of Dar es Salaam, Tanzania

ABSTRACT

The adoption of blended learning to widen access, reduce cost, and improve the quality of education is becoming prevalent in higher education in sub-Saharan Africa and Tanzania in particular. University of Dar es Salaam and the Open University of Tanzania offer various blended learning courses using Moodle system via regional centres scattered across the country. Despite the success of these courses, instructors' support has been unsatisfactory and habitually ignored regardless of the fact that institutions have established IT Units to provide such services. This study investigated the effectiveness of instructors' support services as a major success factor to the delivery of blended courses using mixed method design using questionnaire and semi-structured interviews from 65 instructors teaching blended learning courses at the University of Dar es Salaam and the Open University of Tanzania. The study revealed that lack of both technical and pedagogical support has been critical factors inhibiting instructors from facilitating blended courses effectively via the LMS. The findings from this study have a number of important lessons and implications for similar institutions running blended learning or wishing to implement blended learning specifically in sub-Saharan Africa.

INTRODUCTION

In recent years, institutions of higher education in Tanzania have been embracing various ICT solutions especially Learning Management Systems (LMS) to improve the quality of teaching and learning. These developments have been accelerated by the Government's efforts to improve ICT infrastructure such as implementation of the national submarine fibre-optic cable SEACOM. The SEACOM has reduced telecommunication costs by 95% (Swarts & Wachira 2010) and increased Internet speed up to 155mbps (Mtebe & Raisamo 2014). Moreover, the government exempted all value added tax to ICT facilities (Sife et al. 2007) as well as cutting mobile phones interconnection charges by 69% (ITU 2013).

As of 2011, 80% of institutions had adopted various LMS with Moodle being the most popular (Munguatosha et al. 2011). The LMS are systems that enable institutions to plan, administer, and to monitor student participation and progress via the Internet. They consist of tools for students' interaction with instructors and for authoring and sharing instructional materials. Furthermore, they have tools for asynchronous and synchronous communications such as email, chat, whiteboard, and discussion forums. The University of Dar es Salaam (UDSM) and the Open University of Tanzania (OUT) have been offering various blended distance courses via Moodle LMS (Mtebe & Raphael 2013; Bhalalusesa et al. 2013). Learning resources prepared by instructors' in form of lecture slides, notes, are uploaded in LMS for students to access, with the same copy burned on Compact Discs (CDs) and given to students for offline access. Instructors facilitate course delivery using LMS tools such as discussion forums, whiteboards, and chat

forums. At the middle of each semester, students are required to attend face-to-face classrooms at the nearest learning centre.

Despite these developments, challenges still exist. One of the main challenges is the provision of unsatisfactory support services to instructors who are facilitating these courses. While Institutions have established IT Unit to provide such services, students are normally given first priority while instructors are always ignored. Customarily, most of instructors at OUT and UDSM are new in blended learning environment, and according to Tedre et al. (2010), these instructors never used eLearning tools in their own studies, hence they do not have prior knowledge on the usage of these technologies. Without reliable, timely, and effective support, such instructors might spend more time learning new technologies than on facilitating students' learning (Ocak 2011). As a result, students may view them as being incompetent (Webster & Hackley 1997). Such perceptions have significant impact on the success of the courses offered via LMS.

Therefore, this study investigated the effectiveness of instructors' support services as a major success factor to blended learning courses using mixed method design. Questionnaire and semi-structured interviews were the main data gathering instruments from 65 instructors teaching blended learning courses at UDSM and OUT.

LITERATURE REVIEW

The adoption blended learning courses in higher education is becoming common (Porter et al. 2014). Blended learning is the thoughtful integration of educational technologies and face-to-face approaches with the aim of combining the best features of both delivery modes (Garrison & Vaughan 2013). Many institutions tend to opt blended mode of delivery in order to increase learning effectiveness, convenience and access, and to increase cost effectiveness (Graham 2009).

The success of blended learning depends on many factors. Stacey and Gerbic (2008) grouped them into three main factors: institutional success factors, instructors, students, and pedagogical factors. Similarly, Selim (2007) identified IT infrastructure, university support, learner characteristics, and instructor characteristics as four main critical factors for successful implementation of blended learning.

A study conducted at Muhimbili University of Health and Allied Science (MUHAS) in Tanzania revealed that the quality instructors, system quality, and information quality were found to be key determinants of success of blended learning courses (Lwoga 2014). The study was conducted with 408 first year undergraduate students who were taking various courses via the LMS at MUHAS. Generally, these studies and many others agree that the quality instructor has significant effect on the success of any courses offered via LMS at a given institution.

Instructors must have the technical skills to be able to use the LMS and pedagogical skills to facilitate courses offered via such technology (Porter et al. 2014). If they lack such skills and have little control over the LMS used, they will not be able to facilitate students learning. Many institutions have established IT Units that provide support services to students on how to use LMS and other related technologies. These Units provide services such as training, printing services, photocopying, Internet, and several on-going support services. The on-going support services include live telephone support, email, instant messaging, and informational websites containing documentation or tutorial videos (Moskal et al. 2013; Trindade et al. 2000). However, most of support services have been dedicated to students; and rarely for instructors (Garrison & Kanuka 2004; Ocak 2011).

It should be noted that reliable and effective instructors' support are key to promoting instructors receptivity to technology and significant contributions to the success of blended learning delivery (Webster & Hackley 1997; Selim 2007; Beaudoin 1990). Similarly, Ocak (2011) found that technical issues, lack of institutions support, and instructional processes were the main problems faced instructors with blended teaching in a study conducted to 117 instructors from 4 Universities in Turkey.

The IT Units support services to instructors should not be limited to merely how to use the LMS but also how to facilitate online interactions and to develop quality learning resources (Ocak 2011; Beaudoin 1990). Instructors must have the technological skills necessary to design online courses and to facilitate online interactions via the LMS. The reliable, efficient, effective and timely support reduces the instructor's workload, leading to courses with improved design, richer student engagement, and improved student outcomes (Moskal et al. 2013). They must also pose necessary pedagogical skills to be able to use a wide variety of instructional methods unique to blended learning (Porter et al. 2014).

A large and growing body of literature has suggested various requirements of instructor's support services. Trindade et al. (2000) for instance, suggested that institutions must provide specific in-house training, discussion groups, and committee work. Besides, instructors should be given opportunity to attend workshops, conferences, seminars and courses related to blended learning delivery. Beaudoin (1990) added that institutions should establish an academic computing services team or advisory board across departmental lines to keep information and training current. The author further added that, instructors should be provided with latest ICT equipment, long-term and short-term training opportunities, and financial compensation.

Profile of the student body is changing, and so is features of technologies used in teaching them. Institutions should be able to provide sufficient opportunities for professional development, incentives and other related motivations to instructors aspiring to teach using technologies. This study investigates the provision of support services to instructors as one of the critical determinant factors for the success of blended learning in higher education in Tanzania.

METHODOLOGY

The study is based on mixed research design using questionnaire and semi-constructed interviews as data collection instruments. Instructors teaching blended learning courses via Moodle LMS were selected on convenience basis sampling. The study was undertaken at UDSM main campus and OUT headquarters between July and December 2015.

The questionnaire was designed based on 5-Likert Scale ranging from Strongly Disagree to Strongly Agree along with demographic variables that would be used for detailed analysis of the data. Instructors were asked to rate their opinion on each question in the table matrix. It was considered that qualitative measures would usefully supplement and extend the quantitative analysis. Therefore, semi-structured interviews were conducted to five course instructors in each university. Data management and analysis was performed using Microsoft Excel 2010 package.

The demographic information indicates that 10 instructors were from UDSM and 55 instructors were from OUT making a total of 65 respondents. 80% of respondents from UDSM were males, and 20% were females. Similarly, 54.5% of respondents from OUT were males, and 45.5% were females. The majority of respondents were aged between 30 and 49. Figure 1 shows respondent's demographic information.
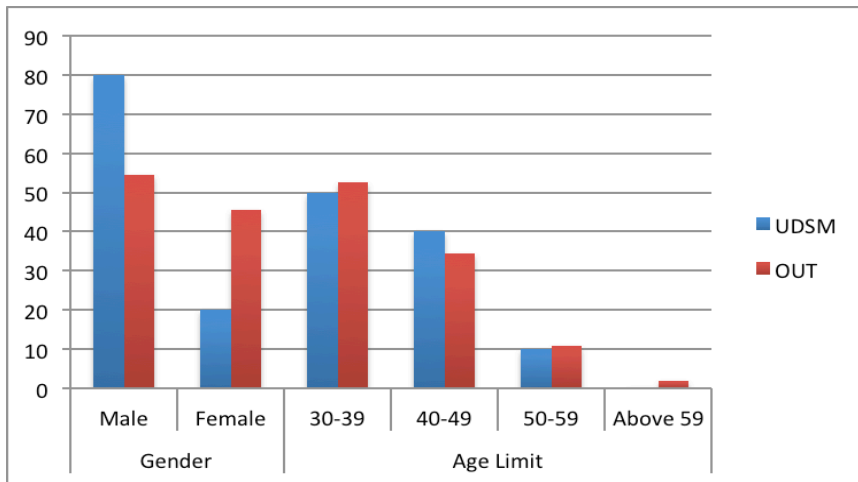
Figure 1: Respondents' Demographic Profile

RESEARCH RESULTS

Ability in using Moodle LMS features

The ability to use the majority of Moodle LMS features is a key ingredient for any instructor teaching blended courses via the LMS. While instructors have been teaching various courses using the LMS, we wanted to know their ability to use various features of the system. Therefore, respondents were asked to rate their ability to use Moodle LMS features such as discussion forum, chat and other related tools. Nearly half of instructors from OUT indicated that they were able to use various LMS feature effectively while 70% of instructors from UDSM indicated to be able to use the majority of LMS features (See Figure 2).
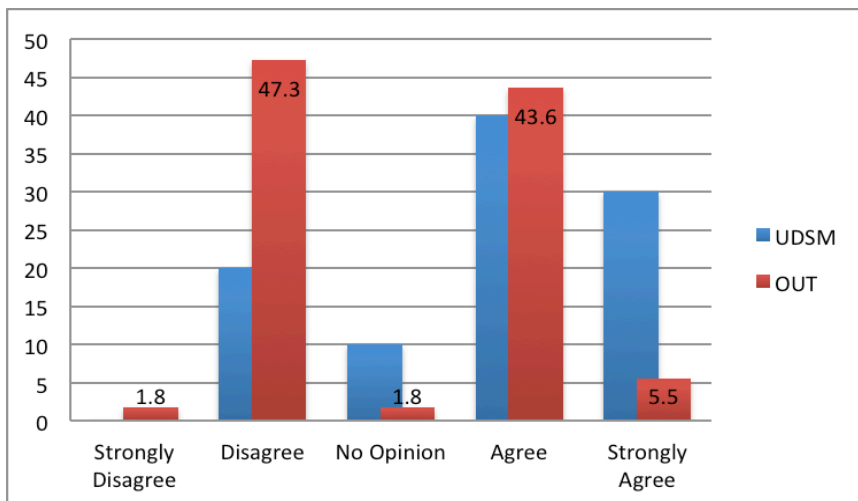

Figure 2: Ability in using LMS features

Prior experience as a distance learner

We were also interested to find out if instructors teaching these courses had any prior experience as learners in any course offered via the LMS. Respondents were therefore asked if they had first-hand experience as distance learners before becoming instructors in the same field. Only a small number of respondents (25.5%) from OUT did not have prior experience as a distance learner while nearly two-third of instructors had such experience. Similarly, 70% of instructors from UDSM did not have first hand experience as distance learners (see Figure 3).
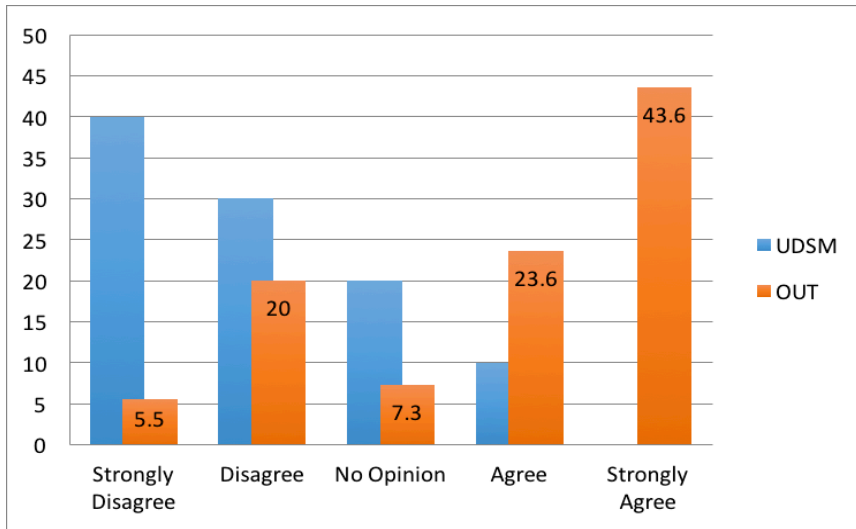

Figure 3: First-hand experience as a distance learner

The use of wide range of teaching approaches

The majority of respondents (87.3% from OUT, 70% from UDSM) indicated that they were using various teaching methods to meet different students' learning styles. They also indicated that they were willing to experiment new teaching approaches in the future. Figure 4 shows the distribution of respondents based on the use of various teaching approaches.
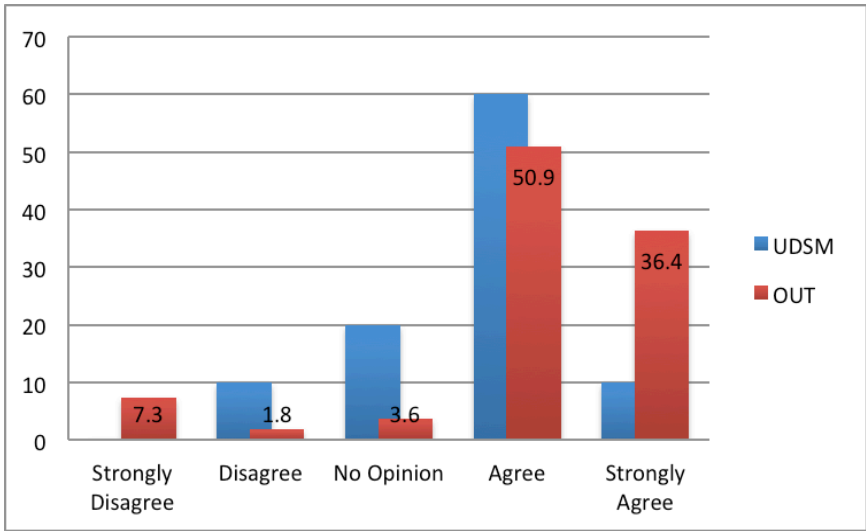
Figure 4: Use of various teaching approaches

Managing workload

Instructors require adequate time to redesign courses, learn new technologies, and facilitate online instruction in every semester (Garrison & Vaughan 2013). This is additional workload to many instructors who used to teach in face-to-face mode. Instructors were asked if they had skills on strategies of managing teaching workload. Almost half instructors from OUT indicated that they did not have skills to manage workloads. Similarly, 60% of instructors from UDSM said they did not have such skills (see Figure 5).
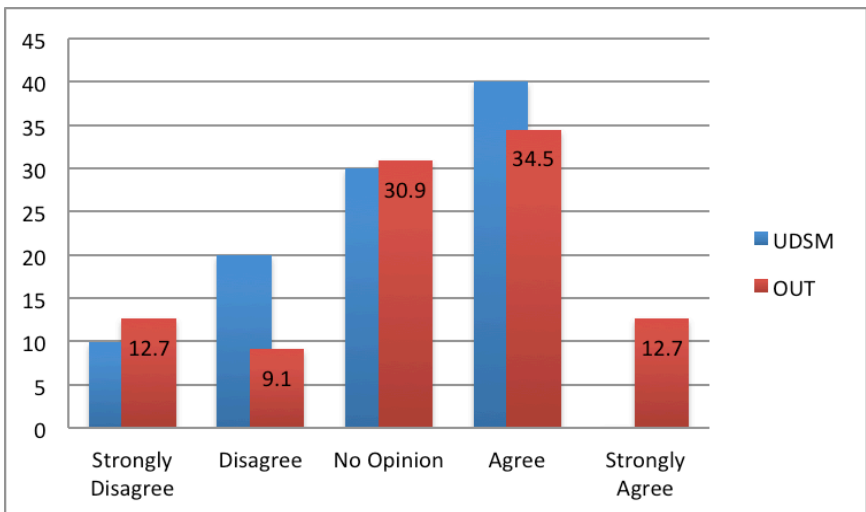

Figure 5: Skills on strategies to manage workloads

Interviews with those instructors who indicated that they possessed skills to manage teaching workloads revealed that if instructors follow the timetable as required, there should not be a lot of piling of activities related to supporting students especially for online students. One of the instructors from UDSM blended learning programme had this to say:

"…*It is a matter of following a timetable. UDSM online programmes have scheduled each instructor a specified timetable by which he/ she should meet her students online. If an instructor follows a timetable as scheduled from day one, he/she should be able to manage both her/ his online students as well as those in conventional classes. Some instructors find themselves overloaded as they wait too long before starting to teach online course and things pile up…*"

Support on using Moodle after training

Respondents were asked if they received enough and individualised support on using Moodle LMS after training. More than two-thirds of instructors from OUT indicated that they had not received enough support after the training on LMS and pedagogy were over. On the other hand, 70% of instructors from UDSM indicated that they received support after training on Moodle LMS (see Figure 6).
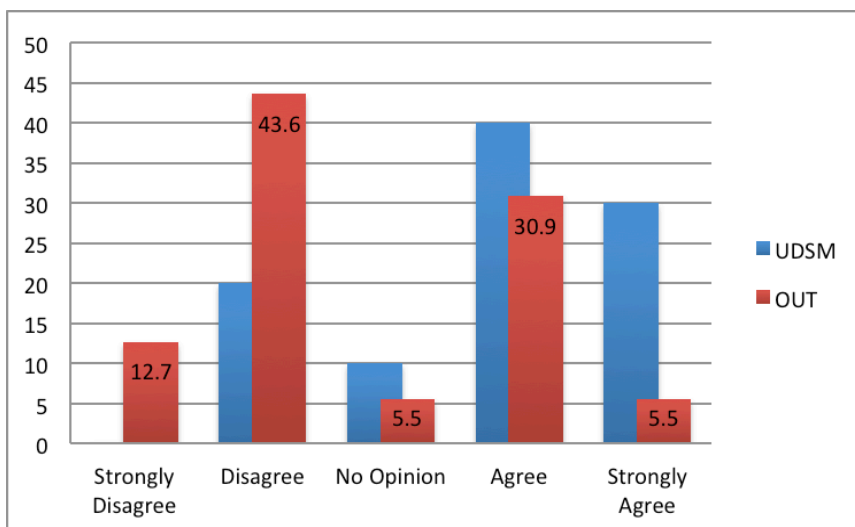

Figure 6: LMS user support and pedagogy support after Moodle LMS training

During interview sessions with blended learning instructors at UDSM and OUT, it was revealed that instructors follow -up support after Moodle LMS training is fundamental to instructors as it is naturally difficult for instructors to be able to use some tools until they practice several times. Some indicated that pedagogy behind Moodle becomes a challenge especially for first time users and it is very useful when they get follow-up support from specialists.
One of the instructors at the OUT had this to say:

"…*You know, these things seem very easy when one is in training but once you are left alone, you find you have forgotten some of the things you were taught and it really discourages one from continuing using some tools. Sometimes it is also embarrassing to ask for support from IT people all the time, so a person may decide to opt not to use Moodle at all or some of the tools.*"

"… I was taught how to develop forums during training. However, when I started using it, I found out that I had limited knowledge on how to create effective forums and how to actually use them for teaching. I came to realise that I had limited pedagogical knowledge on how to use the tools I was taught in actual classroom setting. I was glad when I got support from CVL technicians. I was given some links where I could further enhance my knowledge on how to develop quality forum and how to make sure my students learn effectively via forum…" said an instructor from UDSM.

The use of digital library

The study also revealed that more than 80% of instructors from OUT were using digital resources to enhance their teaching resources. On the other hand, a small number of instructors (10%) from UDSM were using digital library. Figure 7 shows the Instructors' use of digital library.
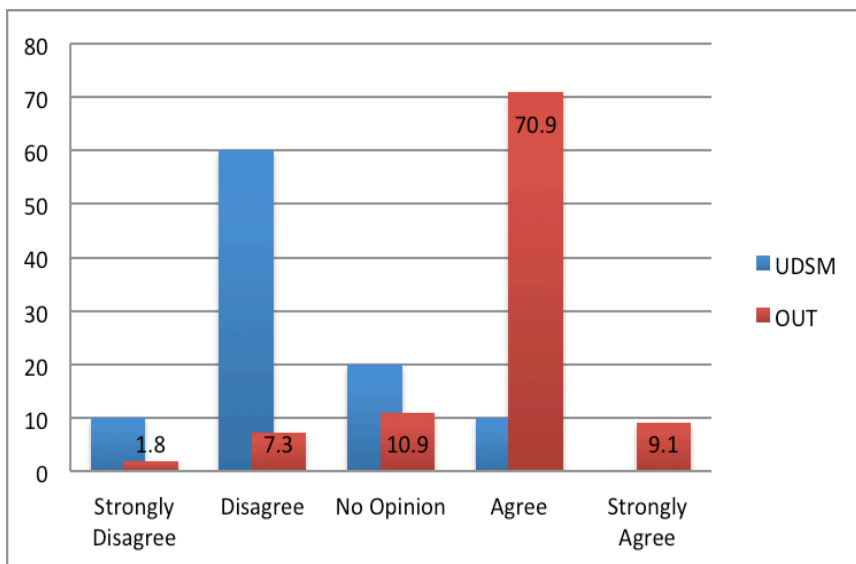

Figure 7: Instructor's use of digital library

Timely technical support

The two institutions have IT units that provide technical support to students and instructors. Respondents were asked to rate if they were getting timely technical support when they needed. It was revealed that nearly 70% of instructors from OUT were not receiving timely support from the IT Unit. However, 70% of instructors indicated that they were receiving timely technical support from IT unit at UDSM. See Figure 8 for more details.
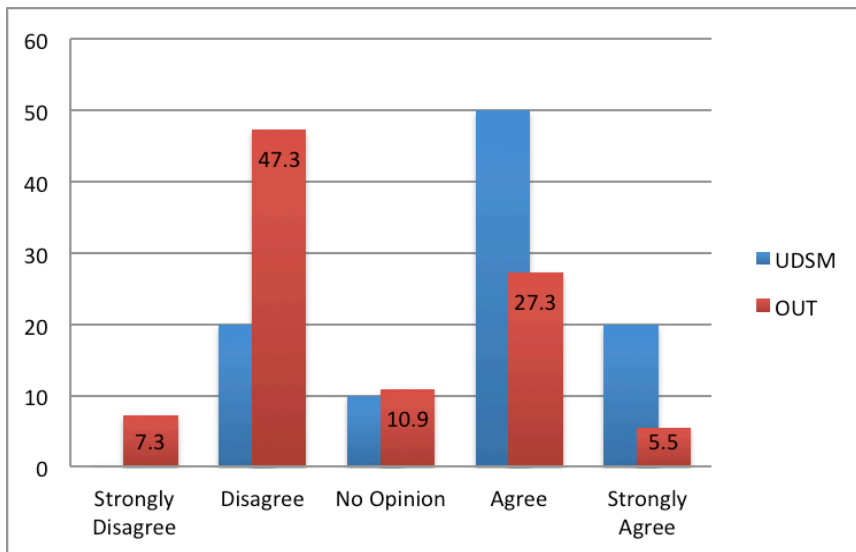
Figure 8: *Instructor's timely support services*

During interviews, it was obvious that instructors from UDSM were receiving timely support from IT specialists. At the UDSM, interviews revealed a presence of ICT help desk which is responsible to ensure that both blended learning students and instructors get the support they need both online or if they go to the help desk physically.

".. Yes, every time I get stuck with Internet facilities (network), I get the support I need from ICT help desk. I also get support from any technical support with my computer from the centre." said one instructor from UDSM.

"… CVL have indicated the mobile numbers of technical support on Moodle LMS which are very important whenever I am stuck. I normally call them whenever I am stuck on Moodle and they give me online support via phone or come to my office to check on the issue I raised…" Explained a respondent from UDSM.

Motivation from management

Providing incentives to early adopters has helped many institutions worldwide to motivate instructors to use eLearning technologies. Some institutions have provided instructors with financial incentives compensation, stipends, or buying them equipment (Porter et al. 2014). Similarly, the study wanted to know if instructors who were teaching blended learning via LMS were given any incentives or some kind of motivations.

Therefore, respondents were asked to indicate which kinds of motivations they were receiving from their management for teaching blended distance courses. The results show that, the majority of instructors were given opportunity to attend seminars and workshops as part of motivations. They were also given transport allowance during face-to-face teaching sessions. However, only OUT instructors were given teaching resources and a small number of instructors from both institutions were given loans and bonuses. Figure 9 shows the ratings of instructor per given motivation.
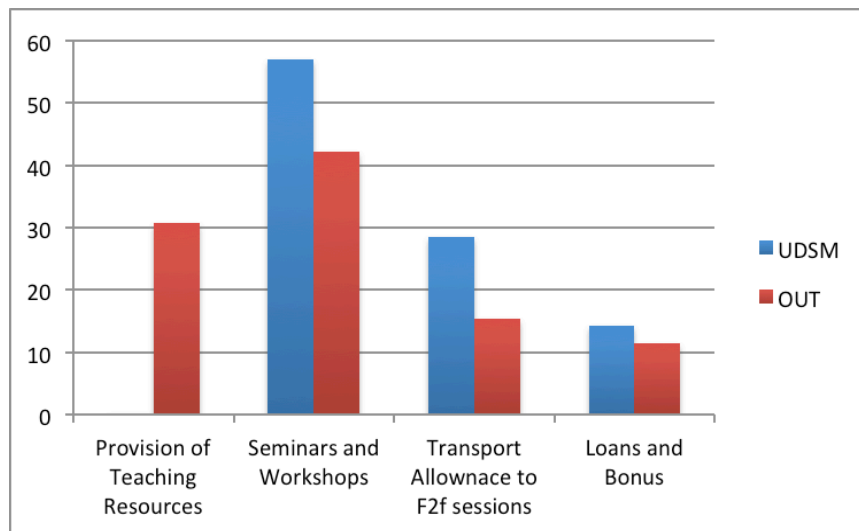
Figure 9: *Instructor's motivations from the management (multiple answers)*

Challenges faced during teaching blended distance courses

Studies have consistently described low Internet bandwidth, limited access to computers, and lack of technical support as major hindrance to the use of eLearning solutions in Tanzania (Tedre et al. 2010; Mtebe & Raphael 2013; Lwoga 2012). However, infrastructural and contextual challenges are improving very fast in Africa, thus findings of older than two years are effectively obsolete (Adkins 2013). Therefore, the study wanted to find out if these physical conditions were still barrier to the use of LMS in the selected institutions.

Respondents were asked to rate the challenges they faced during teaching blended distance courses. The majority of instructors from OUT indicated that large number of students, and shorter time during face-to-face delivery, were the major challenges. On the other hand, UDSM instructors rated limited ICT facilities and Internet connectivity, and lack of knowledge to use ICTs amongst students, were major problems. Moreover, instructors from both institutions were receiving enough technical support from IT Units. Figure 10 shows some of the challenges instructors are facing during the delivery of blended courses.
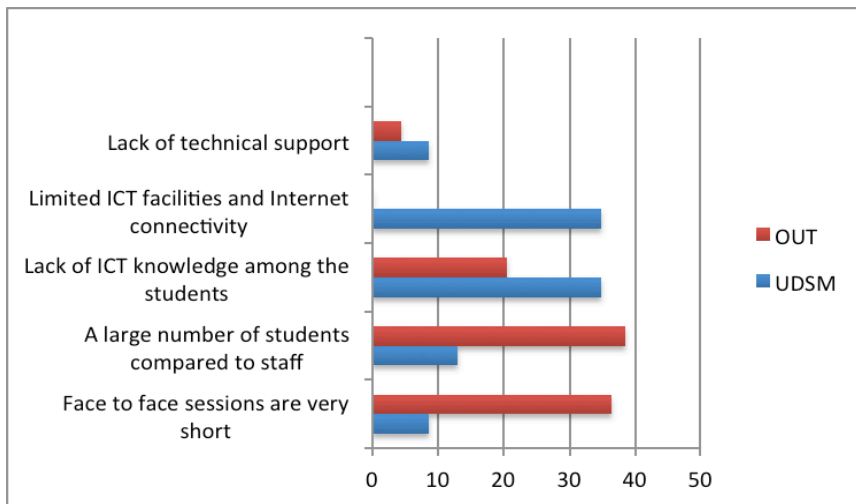
Figure 10: *Challenges faced during blended delivery (multiple answers)*

DISCUSSION

This study aimed to investigate the effectiveness of instructors' support services in blended learning courses at UDSM and OUT offered via Moodle LMS. Although these courses were offered via Moodle LMS, Wang and Chiu (2011) pointed out that learning is an interactive process between instructors and learners, not the interaction between LMS and users. Therefore, instructors have a vital role in facilitating learning process, shaping learners' behaviour, and thus their attitude towards using a technology may affect learners' behaviour (Cheng 2012). They need to be competent with the LMS they use for blended learning as well as how to use the system to facilitate students' learning. In order to do that, they must be well supported from the institutions through various support mechanisms. Investigating the effectiveness of support services that was provided at UDSM and OUT during the delivery of blended courses is important in order to help both institutions to find strategies that will ensure that instructors are equipped with both technical and pedagogical skills.

One of the main findings emerged from this study was that instructors from OUT did not have enough skills to use Moodle features more effectively. This might have contributed to the fact that nearly two-thirds (more than 70%) indicated that they had not received enough training on how to use the system. This finding corroborates with another study conducted at OUT by Bhalalusesa et al. (2013) in a survey of 90 instructors who were using Moodle to facilitate teaching and learning. They found that only 8% of instructors had used LMS to communicate with the students, and only 28.9% used the system to upload learning resources. It seems that the levels of training provided by many institutions to their instructors in sub-Saharan Africa is relatively low. As a result instructors tend to lack the practical experience to use such systems effectively (Unwin et al. 2010). Unwin and colleague added that in order for students to gain real benefits from using LMS, institutions should provide effective and appropriate training, as well as providing the opportunity for instructors to regularly practise using such systems (Unwin et al. 2010).

On the other hand, the study revealed that the majority of instructors from UDSM were competent in using the LMS. This might be because 70% of instructors from UDSM indicated to have received technical training on how to use the LMS. This finding is consistent with the study

conducted by Mtebe and Raphael (2013) which found that the majority of instructors indicated that they received reliable support to use the LMS more effectively.

Contrary to expectations, this study found that the majority of instructors (70%) at UDSM indicated that they do not use digital resources from the library to enhance their courses compared to their counterparts at OUT. Previous studies have found that learning resources uploaded into the LMS at UDSM were found to be outdated (Mtebe & Raphael 2013). This result is disappointing given the fact that there are thousands of freely available digital resources in the public domain that could be used to improve the quality of resources uploaded in the LMS. Therefore, there is a need for UDSM to equip instructors with necessary skills to use digital resources to improve the quality of existing courses. Moreover, instructors can be trained on the use of Open Educational Resources (OER) that can freely be adapted and reused to improve the quality of their courses.

The study also found that the majority of instructors from UDSM did not have first-hand experience as distance learners before becoming instructors compared with those from OUT. This is understandable given the fact that OUT is a purely distant learning institution, therefore, it is likely the majority of instructors were trained at the same institution.

It is somewhat surprising that both institutions used various mechanisms to motivate instructors who were involved in teaching blended learning courses. The biggest motivation was an opportunity to attend seminars and workshops followed by transport allowance during the delivery of face-to-face sessions. Additionally, instructors at OUT who used LMS more frequently could gain points that will enable them to be promoted (Bhalalusesa et al. 2013). Despite these motivations, there are very few instructors who are currently using Moodle LMS to facilitate distance courses especially at OUT. In another similar study, 50% of the respondents cited lack of training being the main reason for low usage of LMS at OUT (Bhalalusesa et al. 2013). Despite the provisions of such motivations to instructors, it seems that the lack of support services has hindered them from continuously using LMS to facilitate teaching and learning.

Another interesting finding emerged from the study was that the majority of instructors from OUT rated large number of students, and shorter time during face-to-face delivery, as the major challenges affected them to teach blended learning courses. This result is in line with that of previous studies (e.g. Bhalalusesa et al., 2013; Mnyanyi, Bakari, & Mbwette, 2010) conducted at OUT. For instance, Mnyanyi and colleague cited large number of students as compared to available human resources was the main barrier to the use of LMS. On the other hand, instructors at UDSM rated the number of students was not a hindrance factor for instructors to facilitate courses via the LMS. A possible explanation for this might be due to the fact that the courses offered in blended learning at UDSM are postgraduate courses. These courses normally have small number of students. OUT courses range from undergraduate to postgraduate which attract many students and therefore they impact on the staff workloads and other available resources.

The result of this study provides further evidence that there is a big difference in terms of the ICT infrastructure development between UDSM and other institutions in Tanzania. In this study, for instance, instructors from UDSM indicated that limited ICT facilities and Internet connectivity was not a barrier to the use of LMS whereas those from OUT rated them barriers. The findings of this study are consistent with another study by Mtebe and Raisamo (2014b) conducted in 11 institutions in Tanzania where it was revealed that Internet speed ranged between 7mbps and 20mbps with exception of UDSM that had Internet speed of 155mbps. The low Internet speed in institutions in Tanzania has also been reported by other studies conducted previously (e.g. Lwoga, 2012; Samzugi & Mwinyimbegu, 2013; Tedre et al., 2010).

Finally, it seems that both institutions have IT Units to provide support services on the use of LMS and related eLearning technologies. However, the results from this study provide further evidence that these Units have inadequate skilled staff to support instructors on both technical and pedagogical issues as indicated by other studies conducted previously (e.g. Bhalalusesa et al., 2013; Lwoga, 2012; Munguatosha et al., 2011). For example, 86% of respondents reported lack of enough technical support was the main barrier to use eLearning technologies in a survey conducted to 1,230 respondents in higher education in Tanzania (Munguatosha et al. 2011).

CONCLUSION AND RECOMMENDATIONS

This study set out to investigate the effectiveness of instructors' support services in blended learning courses at UDSM and OUT offered via Moodle LMS. This study has been conducted timely given the number of blended learning courses that has been adopted in sub-Saharan Africa. Without ignoring the other challenges, instructors' support services is a key component to the success of blended learning courses offered via LMS. Based on the findings from this study, we recommend the following:

- **Instructors to be trained on Open Educational Resources (OER):** The evidence from this study indicates that instructors do not use digital resources to improve the learning resources uploaded into the LMS. Given the availability of thousands of OER in the public domain, instructors to be capacitated with the skills to be able to locate, adapt and localize OER that can potentially improve the quality of their courses. It should be noted that students rely on learning resources as their major source of information during the learning process (Keats 2003). Therefore, the presence of quality learning resources has direct impact on the quality of learning outcome.

- **Use of Mobile Moodle:** Access to computer and Internet is still a challenge to many instructors and students who use Moodle as their main system that supports blended learning. However, the majority of them have access to smart phones connected to the Internet due to the continued penetration of mobile telephony in Tanzania. At the moment, there are 31milions mobile phone subscribers accounting to 69% of total population (TCRA 2015). Increased ownership and use of mobile phones has further being facilitated by the fact that the price of smartphones has decreased to as low as US$ 30 in many countries in sub-Saharan Africa (Deloite & GSMA, 2012; Ericsson, 2014). To increase LMS usage, institutions should adopt the use of Mobile Moodle that provides access to Moodle into users' mobile phones.

- **Recruiting instructional designers:** In this study it was clear that the two institutions have ICT Units dedicated to provide technical support to users who are using LMS and other eLearning solutions within their institutions. It was also clear that the majority of staff who are working in these Units do not have pedagogical skills required to support instructors on the best way to use LMS features to embrace teaching and learning. Unsurprisingly, they have been training instructor on technology side while leaving behind the pedagogical side of the technology. These skills are required for instructors in order to facilitate blended learning courses more effectively.

REFERENCES

Adkins, S.S., 2013. *The Africa Market for Self-paced eLearning Products and Services : 2011-2016 Forecast and Analysis*, Available at: http://www.ambientinsight.com/Resources/Documents/AmbientInsight-2011-2016-Africa-SelfPaced-eLearning-Market-Abstract.pdf.

Beaudoin, M., 1990. The instructor's changing role in distance education. *American Journal of Distance Education*, 4(2), pp.21–29. Available at: http://www.tandfonline.com/doi/abs/10.1080/08923649009526701.

Bhalalusesa, R., Lukwaro, E.E. & Clemence, M., 2013. Challenges of using elearning management systems faced by the academic staff in distance based institutions from developing countries: A case study of the Open University of Tanzania. *Huria Journal of OUT*, 14, pp.89–110.

Cheng, Y., 2012. *Effects of quality antecedents on e-learning acceptance*, Available at: http://www.emeraldinsight.com/doi/abs/10.1108/10662241211235699.

Deloite & GSMA, 2012. *Sub-Saharan Africa Mobile Observatory 2012*, Available at: http://www.gsma.com/spectrum/sub-saharan-africa-mobile-observatory-2012/.

Ericsson, 2014. *Sub-Saharan Africa Ericsson mobility report*, Stockholm, Sweden. Available at: http://www.ericsson.com/res/docs/2014/emr-june2014-regional-appendices-ssa.pdf.

Garrison, D.R. & Kanuka, H., 2004. Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), pp.95–105. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1096751604000156 [Accessed May 21, 2013].

Garrison, D.R. & Vaughan, N.D., 2013. Institutional change and leadership associated with blended learning innovation: Two case studies. *The Internet and Higher Education*, 18, pp.24–28. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1096751612000589 [Accessed March 28, 2014].

Graham, C.R., 2009. Blended Learning Models. In *Encyclopedia of Information Science and Technology*. Brigham Young University, USA. Available at: http://ebooks.narotama.ac.id/files/Encyclopedia of Information Science and Technology (2nd Edition)/Blended Learning Models.pdf.

ITU, 2013. Tanzanian govt may cut mobile fees by 69% to drive competition. Available at: http://www.itu.int/ITU-D/ict/newslog/Tanzanian+Govt+May+Cut+Mobile+Fees+By+69+To+Drive+Competition.aspx.

Keats, D., 2003. Collaborative development of open content: A process model to unlock the potential for African universities. *First Monday*, 8(2). Available at: http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/rt/printerFriendly/1031/952.

Lwoga, E., 2014. Critical success factors for adoption of web-based learning management systems in Tanzania. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 10(1), pp.4–21.

Lwoga, E., 2012. Making learning and Web 2.0 technologies work for higher learning institutions

in Africa. *Campus-Wide Information Systems*, 29(2), pp.90–107. Available at: http://www.emeraldinsight.com/10.1108/10650741211212359 [Accessed February 17, 2013].

Mnyanyi, C.B.F., Bakari, J. & Mbwette, T.S.A., 2010. Implementing E-learning in Higher Open and Distance Learning Institutions in Developing Countries : The Experience of The Open University of Tanzania. In *Fifth International Conference of Learning International Networks Consortium (LINC)*. Massachusetts Institute of Technology, Cambridge, MA,. Available at: linc.mit.edu/linc2010/proceedings/session6Mnyanyi.pd.

Moskal, P., Dziuban, C. & Hartman, J., 2013. Blended learning: A dangerous idea? *The Internet and Higher Education*, 18, pp.15–23. Available at: http://linkinghub.elsevier.com/retrieve/pii/S109675161200084X [Accessed March 25, 2014].

Mtebe, J.S. & Raisamo, R., 2014. Investigating perceived barriers to the use of Open Educational Resources in higher education in Tanzania. *International Review of Research in Open and Distance Learning*, 15(2), pp.43–65.

Mtebe, J.S. & Raphael, C., 2013. Students' experiences and challenges of blended learning at the University of Dar es Salaam, Tanzania. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 9(3), pp.124–136.

Munguatosha, G.M., Muyinda, P.B. & Lubega, J.T., 2011. A social networked learning adoption model for higher education institutions in developing countries. *On the Horizon*, 19(4), pp.307–320. Available at: http://www.emeraldinsight.com/10.1108/10748121111179439 [Accessed July 29, 2012].

Ocak, M.A., 2011. Why are faculty members not teaching blended courses? Insights from faculty members. *Computers & Education*, 56(3), pp.689–699. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0360131510002964 [Accessed March 28, 2014].

Porter, W.W. et al., 2014. Blended learning in higher education: Institutional adoption and implementation. *Computers & Education*, 75, pp.185–195. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0360131514000451 [Accessed March 24, 2014].

Samzugi, A.S. & Mwinyimbegu, C.M., 2013. Accessibility of Open Educational Resources for Distance Education Learners: The Case of The Open University of Tanzania. *Huria Journal of OUT*, 14(76-88).

Selim, H.M., 2007. Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers & Education*, 49(2), pp.396–413. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0360131505001338 [Accessed November 17, 2012].

Sife, A.., Lwoga, E.. & Sanga, C., 2007. New technologies for teaching and learning : Challenges for higher learning institutions in developing countries. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 3(2), pp.57–67.

Stacey, E. & Gerbic, P., 2008. Success factors for blended learning. In *Proceedings ascilite Melbourne*. Melbourne, pp. 964–968. Available at: http://www.ascilite.org.au/conferences/melbourne08/procs/stacey.pdf.

Swarts, P. & Wachira, E., 2010. *Tanzania: ICT in Education Situational Analysis*, Available at: http://www.gesci.org/assets/files/Knowledge Centre/Situational Analysis_Tanzania.pdf [Accessed February 19, 2013].

TCRA, 2015. *Quarterly communications statistics a quarter ending March 2015*, Dar es Salaam, Tanzania. Available at: https://www.tcra.go.tz/images/documents/telecommunication/telcomStatsMarch15.pdf.

Tedre, M., Ngumbuke, F. & Kemppainen, J., 2010. Infrastructure , human capacity , and high hopes : A decade of development of e-Learning in a Tanzanian HEI. *Redefining the Digital Divide in Higher Education*, 7(1).

Trindade, A.R., Carmo, H. & Bidarra, J., 2000. Current Developments and Best Practice in Open and Distance Learning. *International Review of Research in Open and Distance Learning*, 1(1), pp.1–25.

Unwin, T. et al., 2010. Digital learning management systems in Africa: myths and realities. *Open Learning: The Journal of Open and Distance Learning*, 25(1), pp.5–23. Available at: http://www.informaworld.com/openurl?genre=article&doi=10.1080/02680510903482033&magic=crossref||D404A21C5BB053405B1A640AFFD44AE3 [Accessed May 6, 2012].

Webster, J. & Hackley, P., 1997. Teaching effectivess in Technology-Mediated Distance Learning. *Academy of Management*, 40(6), pp.1282–1309.

Original article at: http://ijedict.dec.uwi.edu/viewarticle.php?id=2099