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Examining eLearning system self-efficacy amongst instructors at the University of Dodoma, Tanzania

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Abstract

Higher learning institutions in Africa have been investing in various eLearning systems (also referred to as learning management systems) aiming at improving the quality of teaching and learning. However, non-use or low usage of these systems amongst users is a significant setback for their success. Studies indicate that first-order barriers such as unreliable electricity power, shortage of computers, and Internet connectivity inhibit users from using these systems. This study examined system self-efficacy amongst instructors using mixed sequential explanatory design with data collected from 357 instructors at the University of Dodoma through questionnaires followed by focus group discussions. The adapted independent factors: performance accomplishments and vicarious experience from Bandura (1977), and organizational support from Higgins and Compeau (1995) were subjected to linear regression analysis to determine the causal relationship with system self-efficacy. The study found that vicarious experience and organizational support had a significant effect on system self-efficacy amongst instructors. These findings show that examining system self-efficacy amongst instructors is critical to help those who are implementing eLearning systems in finding strategies that will increase system usage.

Keywords: self-efficacy, computer self-efficacy, eLearning systems, learning management systems, system self-efficacy, LMS, academic development, online learning, higher education

Introduction

Higher learning institutions in Africa have been investing in various eLearning systems (also referred to as learning management systems) aiming at improving the quality of teaching and learning. The eLearning systems such as Blackboard, Moodle, WebCT, and Desire2Learn are web-based software used for managing course delivery over the Internet (Bervell & Umar, 2018; Zheng, Wang, Doll, Deng, & Williams, 2018). They have features for sharing digital content, managing online groups, communication, assessments, and in some cases connect with systems that keep students' examination records (Althobaiti & Mayhew, 2016; Reshad, 2018). Many universities adopt and use these systems for enhancing traditional face-to-face delivery giving learners access to a wide range of learning materials electronically (Bervell & Umar, 2018; Unwin et al., 2010). Other universities use these systems to complement distance education offered by many open universities in Africa to reach more learners across different countries (Mtebe, 2015). With the increased improvement of ICT infrastructure in many African countries, the number of eLearning systems implemented in Africa will continue to expand

In Tanzania, for instance, nearly 50 percent of higher learning institutions (of approximately 60 higher learning institutions) had installed one type of eLearning system, with Moodle being the most popular (Mtebe & Raisamo, 2014). Some of these universities include the Open University of Tanzania (Bhalalusesa, Lukwaro & Clemence, 2013), Mzumbe University (Lwoga & Komba, 2015), Muhimbili University of Health and Allied Sciences (Lwoga, 2014), Sokoine University of Agriculture,

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University of Dar es Salaam, Ardhi University (Mtebe & Raphael, 2018), and Mbeya University of Science and Technology (Mwalumbwe & Mtebe, 2017).

Despite the high implementation levels of these systems in African Universities, there is a lack of usage on the part of instructors, which raises a concern about their success. For instance, studies indicate the non-use or low usage of eLearning systems at Makerere University (Mayoka & Kyeyune, 2012), the University of Nairobi, University of Zambia (Ssekakubo, Suleman & Marsden, 2011), National University of Science and Technology of Zimbabwe (Dube & Scott, 2014), Open University of Tanzania (Bhalalusesa et al., 2013), University of Dar es Salaam, Institute of Finance Management (Mtebe & Raisamo, 2014), Mzumbe University (Lwoga & Komba, 2015), Eduardo Mondlane University, Maseno University (Unwin et al., 2010), and Ghanian University (Bervell & Umar, 2018).

The non-use or low usage of eLearning systems amongst users in African universities is a significant setback for its success. Nearly 80 percent of information systems value is realized during system use (Marchand, Kettinger, & Rollins, 2000). Therefore, the anticipated benefits will be hard to achieve if users do not use them (Bervell & Umar, 2018; DeLone & McLean, 2016; Yi & Hwang, 2003). Moreover, users must be able to use the majority of system features (Burton-Jones & Volkoff, 2017), and use them habitually (Limayem, Hirt & Cheung, 2007) to bring about the intended benefits.

Studies show that first-order and second-order barriers have been hindering users from using eLearning systems across African universities. The first-order barriers being extrinsic to users and include lack of access to computers (Bhalalusesa et al., 2013; Tedre, Ngumbuke & Kemppainen, 2010; Unwin et al., 2010), insufficient time to plan instruction (Mtebe & Raisamo, 2014), inadequate technical and administrative support (Ssekakubo et al., 2011; Tedre et al., 2010), and poor Internet connectivity (Lwoga, 2012; Tedre et al., 2010). The majority of first-order barriers have been eliminated in many universities in Africa due to improved ICT infrastructure and the proliferation of mobile phones. Nonetheless, non-use or low usage of these systems has continued to be a problem.

While the majority of first-order barriers may be eliminated by securing additional resources and providing training, confronting second-order barriers, i.e., intrinsic to users, is much more difficult. The second-order barriers require challenging one's belief and the institutionalized routines of one's practice (Ertmer, 1999). It is evident from the fact that the majority of studies conducted in universities in Africa found that second-order barriers were the main hindrance factors towards using these systems (Bhalalusesa et al., 2013; Lwoga, 2012; Mtebe, 2015; Ssekakubo et al., 2011; Tedre et al., 2010; Unwin et al., 2010). For instance, in a systematic review of 31 articles conducted in sub-Saharan Africa found that attitude, perceived usefulness, performance expectancy, perceived ease of use, social influence, and self-efficacy were the significant determinants of eLearning system usage (Bervell & Umar, 2017).

Similarly, the University of Dodoma (UDOM), being of the most prominent university in Tanzania, implemented the Moodle system since 2008 (Ngeze, 2017). The university adopted this to supplement traditional face-to-face delivery by offering students more to access learning materials electronically. Specifically, instructors use the eLearning system as an electronic repository of learning materials by uploading learning resources, assignments, and conduct some discussion activities using system features. To ensure smooth implementation and use of the system, the university established the School of Virtual Education. The school is responsible for managing the eLearning system, training users, and providing pedagogical support to instructors for effective development and delivery of technology-enhanced courses.

By the end of 2019, a total of 841 instructors were trained, and 191 courses were uploaded into the system. Even though a good number of instructors were trained, relatively few of them continued to use it more regularly. For instance, only 103 instructors were actively using the system by the end of 2014 (Mtebe & Raisamo, 2014). The recent audit of 2019, indicated that out of 204 courses

uploaded into the system, 160 courses had few contents where most of them were created during the training and never used beyond that. Other courses were created with some content, but some courses were active in one or a few semesters before being inactive. Even those courses where instructors seemed to be active, their lecture notes and assessment activities (quizzes, assignments) were outdated (Ngeze, 2016). In general, 62 instructors were found to be active users of the system by the end of 2019. Therefore, the need to examine the barriers that affect users from using these systems is essential.

In this study, instructors' beliefs in their capacity to work effectively with eLearning system-in other words, their system self-efficacy amongst instructors were investigated. The study adopted a mixed sequential explanatory design with data collected from 357 questionnaires at the UDOM followed with focus group discussions with 32 key participants. The adapted independent factors: performance accomplishments and vicarious experience from Bandura (1977), and organizational support from Higgins and Compeau (1995) were subjected to linear regression analysis to determine the causal relationship with system self-efficacy. These findings show that examining system self-efficacy amongst instructors is critical to help those who are implementing eLearning systems in finding strategies that will increase system usage.

Literature Review

Self-efficacy is "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). It is beliefs about competencies—what we know about the world and what we know how to do in the world (Maddux & Volkmann, 2010). Self-efficacy beliefs influence many aspects of behavior, such as the choice of a course of action, the amount and duration of effort put forth, and the emotional response to the success of an endeavor (Bandura, 1977). In other words, individuals who distrust their capabilities are easily discouraged by failure. In contrast, those who are highly assured of their efficacy for goal attainment will intensify their efforts when their performances fall short and persevere until they succeed (Igbaria & Iivari, 1995). Self-efficacy beliefs have been used in explaining behavior in a variety of contexts, including health behaviors, treatment of phobias, self-regulation of pain, academic performance, and career development (Tsai, Chuang, Liang & Tsai, 2011).

According to Bandura (1986), self-efficacy beliefs develop in response to four sources of information. The most powerful influence on self-efficacy is "performance accomplishments," in which self-efficacy for behavior is increased by successfully performing the behavior. Bandura added that successes raise mastery expectations while repeated failures lower them, mainly if the mishaps occur early in the course of events.

The second most powerful influence of self-efficacy beliefs is "vicarious experience," which is gained by observing others perform activities successfully (Staples, Hulland & Higgins, 1999). Seeing others perform some activities persuade themselves that if others can do it, they should be able to improve their performance by learning from what they have observed (Bandura, 1989; Maddux & Volkmann, 2010). The third source of influence is verbal persuasion (or social persuasion), which refers to activities where people are led, through suggestion, into believing that they can cope successfully with specific tasks (Staples et al., 1999). People are led, through suggestion, into believing they can cope successfully with what has overwhelmed them in the past (Bandura, 1989). Coaching and giving evaluative feedback on performance are common types of social persuasion (Bandura, 1977).

The last source of self-efficacy beliefs is physiological and affective states (Bandura, 1977). People rely partly on their state of physiological arousal in judging their anxiety and vulnerability to stress (Maddux, 1995). For instance, emotional reactions to such tasks (e.g., anxiety) can lead

to negative judgments of one's ability to complete the tasks (Bandura, 1989). Therefore, when individuals become aware of unpleasant physiological arousal, they are more likely to doubt their behavioral competence than if the physiological state were pleasant or neutral (Maddux & Volkmann, 2010).

Higgins and Compeau (1995) derived from Bandura's theory in the computer context. Authors defined computer self-efficacy as a judgment of one's capability to use a computer in the accomplishment of a task. It is an important personal trait that influences an individual's decision to use computers (Higgins & Compeau, 1995). The authors indicated that computer self-efficacy beliefs develop in response to three sources of information. The first source of information is the encouragement of others within the individual's reference, group-the people to whom an individual look at obtaining guidance on behavioral expectations-can be expected to influence. This source of information is similar to "verbal persuasion," described in one of the four major sources of efficacy information (Bandura, 1977). Generally, individuals rely, in part, on the opinions of others in forming judgments about their abilities (Higgins & Compeau, 1995).

Higgins and Compeau (1995) described the second source of influence on individuals' judgments of self-efficacy is the support of the organization for computer users. Since individuals need more resources to help them become more proficient, it is expected that higher organizational support would result in higher judgments of self-efficacy on the part of individuals (Igbaria & Iivari, 1995). Therefore, the availability of assistance to individuals who require it should increase their ability and, thus, their perceptions of their ability (Higgins & Compeau, 1995). Finally, Higgins and Compeau (1995) encouragement of use is one source of influence on self-efficacy and outcome expectations. The actual behavior of others concerning the technology is a further source of information used in forming self-efficacy and outcome expectations. In other words, the higher the use of the technology by others in the individual's reference group, the higher the individual's computer self-efficacy (Higgins & Compeau, 1995).

As computer applications vary depending on application-specific levels, self-efficacy has been conceptualized in slightly different to meet specific application domains (Tsai et al., 2011). In the context of this study, system self-efficacy is the belief of an instructor in his/her ability to use eLearning system features to upload learning resources for student access as well as to use system features such as discussion forums, assessment tools, chats, etc. to facilitate their interactions with students in an online environment (Zheng et al., 2018). Instructors with high eLearning system self-efficacy will perceive themselves as able to access and use advanced system features as well as display greater confidence about their ability to successfully use each of the eLearning system features for enhancing their teaching activities (Higgins & Compeau, 1995). Therefore, understanding system self-efficacy amongst instructors provide insight into how they are likely to use them in complementing teaching activities in the future.

Given the Bandura theory and the theory proposed by Higgins and Compeau (1995) in the computer context, this study adapted relevant factors that could influence the eLearning system self-efficacy amongst instructors at UDOM. The description of the adapted factors follows next.

Methodology

Research Model and Hypotheses

The study adopted factors from Bandura (1977) and Higgins and Compeau (1995) that could influence the eLearning system self-efficacy amongst instructors at UDOM. The adapted factors are shown in Table 1, and the description of each factor and its associated hypothesis follows next.

Table 1: Adapted factors for examining self-efficacy amongst instructors

No.	Factors	Source
1.	Performance accomplishments	(Bandura, 1977)
2.	Vicarious experience	(Bandura, 1989; Higgins & Compeau, 1995)
3.	Organizational support	(Higgins & Compeau, 1995)

Organizational support has been found to increase users' self-efficacy in using various computer applications (Henry & Stone, 1995; Higgins & Compeau, 1995; Zheng et al., 2018). In this case, the university can increase system self-efficacy amongst instructors through providing support such as training, facilities, and formulating favorable policies that encourage the utilization of the system. The university could also employ instructional design specialists, computer specialists, and trained assistants to provide both technical and pedagogical support to instructors (Zheng et al., 2018). Insufficient organization support was one of the reasons for the failure of eLearning systems in various universities in Africa (Lwoga, 2012; Ssekakubo et al., 2011; Tedre et al., 2010; Unwin et al., 2010). Therefore, it was essential to include organizational support as one of the factors that can influence system self-efficacy amongst instructors. Thus, the proposition for this factor is derived as follows:

> Hypothesis 1: Organizational support has an effect on the eLearning system self-efficacy amongst instructors.

Similarly, performance experiences, in particular, success or failure, are the most powerful sources of self-efficacy information (Bandura, 1977). Success at a task, behavior, or skill strengthens self-efficacy expectancies for that task, behavior, or skill, whereas perceptions of failure diminish self-efficacy expectancy (Maddux, 1995). Therefore, performance accomplishments with information systems have a significant direct positive impact on the users' sense of system self-efficacy (Henry & Stone, 1995). In this study, performance experiences represent instructors' perception that using the system will be easy and free of effort. Therefore, the proposition for this factor is derived as follows:

> Hypothesis 2: Performance accomplishments has an effect on eLearning system self-efficacy amongst instructors.

Finally, people learn vicariously by observing other people's behavior and its consequences (Maddux, 1995). According to the social influence theory, people tend to comply with other essential referees' opinions as well as the encouragement they receive in forming judgments about their abilities (Igbaria & Iivari, 1995). Those opinions or encouragement could be in the form of verbal persuasion or observation of others' using a similar system (Bandura, 1977). Previous studies have shown that vicarious experience enhanced instructors' self-efficacy in using various systems for enhancing teaching activities (Wang, Ertmer & Newby, 2004). Therefore, when instructors are encouraged or observe people who are important to them (such as heads of departments, colleagues) use the system, they are likely to increase their self-efficacy and eventually use it. Therefore, the proposition for this factor is derived as follows:

> Hypothesis 3: Vicarious experience has an effect on eLearning system self-efficacy amongst instructors.

Finally, the proposed research model based on factors adapted from this study is shown in Figure 1.

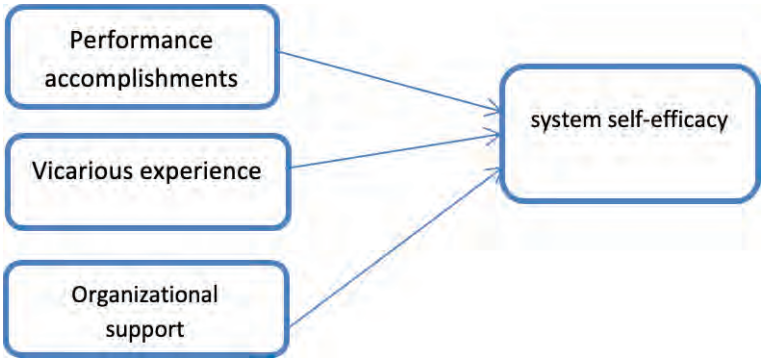

Figure 1: Proposed research model.

Research Design

This study adopted a mixed sequential explanatory design to explain the causal relationship between the adapted independent factors: performance accomplishments, vicarious experience, organizational support, and an observed dependent factor (system self-efficacy) through empirical data collected from instructors at UDOM in Tanzania. In the sequential explanatory design, quantitative data are collected and analyzed, followed by qualitative data (Hanson, Creswell, Clark, Petska & Creswell, 2005). More specifically, the quantitative approach involved data collection through a questionnaire followed by qualitative data collected through focus group discussions. The focus group discussions were conducted as a follow up on the factors that were found to be significant. The description of each data collection instrument is explained next.

Questionnaire

There is no all-purpose measurement of perceived self-efficacy, and that scales must be tailored to suit the specific context of a given study (Bandura, 2006). Consequently, items for each of the three factors were adopted from similar studies but tailored for this study. The instrument uses a 5–point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 2 shows part of the data instrument used for data collection (excluding the demographics).

Table 2: Part of the questionnaire used to collect data

Factor	Code	Item
Performance accomplishments	PA1	My interaction with the system is clear and understandable.
	PA2	Learning how to use the system is easy for me.
	PA3	I find the system easy to use
	PA4	It is easy for me to become skillful at using the system.
Vicarious experience	VE1	People who influence my behavior will think that I should use the system
	VE2	People who are important to me will think that I should use the system.
	VE3	People whose opinions that I value prefer that I use the system.

Continued

Table 2: Continued

Factor	Code	Item
Organizational support	OS1	I am supported and encouraged by my organization to use the system in my job
	OS2	The training provided by my university helped me get familiar with the system
	OS3	When I have difficulty using the Moodle system, I can exchange information with others who know how to use the system functions better
	OS4	When I have difficulty using the system, I can discuss with others who know how to make better use the system features
System self-efficacy	SE1	I am confident about my ability to use the system to complete my work
	SE2	I believe in my capability of using the system to complete my work
	SE3	I have mastered the skills necessary for using this system in my job

Note. Scale labels: 1 – Strongly Agree, 2 – Agree, 3 – Neutral, 4 –Disagree, 5 – Strongly Disagree

Questionnaires were distributed to 500 instructors who had attended various training in the Moodle system at seven colleges at UDOM. The formula proposed by Green (1991) was adopted to obtain the minimum sample size of this study. The formula states that the minimum sample size should be N > 50+8m, where m is the number of factors. Since the study had four factors, the minimum sample size required for this research was 50 + (8*4) = 82.

Of the 500 respondents given questionnaires, 357 respondents returned usable questionnaires, with 59% of respondents being males, and the remaining were females. In terms of the highest educational level, the majority of respondents had master's degrees (65.8%) followed by those with doctoral degrees (17.4%), and bachelor degrees (14.1%).

Focus Group Discussions

After obtaining data from questionnaires, the focus group discussions were held with selected instructors to complement findings obtained from the questionnaire and to get a broad range of viewpoints on factors found to be significant. According to Mcquarrie and Krueger (2006), in focus group discussions, a set of 6-9 participants is recommended for each group. Therefore, four sets of groups were formed, and each group consisted of 6-9 participants making a total of 32 instructors who participated in focus group discussions.

Findings

Of 357 instructors who completed questionnaires, 30.1% indicated that they were using the system once per week, while 5.3% had never used the system since they were trained. The distributions of instructors based on system access are shown in Figure 2.

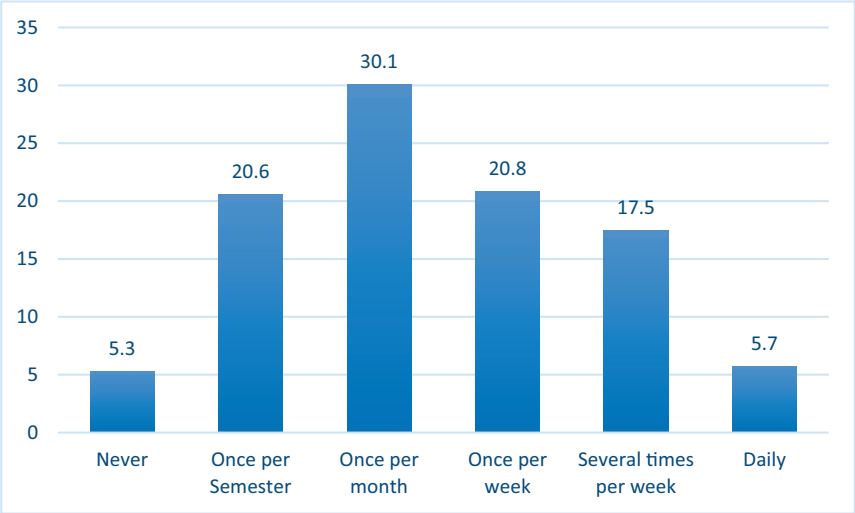

Figure 2: Distribution of instructors per eLearning system access.

Reliability and Validity

Cronbach alpha was used to measure the reliability of the instrument used for this study. Based on the SPSS results, the Cronbach alpha coefficient for the 16-item instrument was 0.884, which is above 0.700, as suggested by Nunnally (1978). Moreover, Cronbach's alpha value for each of the four factors is above 0.700 (See Table 3), indicating that the instrument was reliable. The overall questionnaire was considered valid as it used the same items from previous studies.

Table 3: Cronbach's alpha coefficients for reliability measurement

	Factor	Cronbach's alpha
1.	Performance accomplishments	.835
2.	Vicarious experience	.795
3.	Organizational support	.804
4.	System self-efficacy	.841

Identifying the factor structure

Factor Analysis (FA) was performed using the principal component analysis extraction method on 16 items using direct oblimin rotation with Kaiser normalization. The loadings per each item were above 0.3 (See Table 4), as suggested by Hair, Black, Babin and Anderson (2009).

Table 4: Factor loadings on each factor

Factor	Items in Direct Oblimin Rotation	Loadings
Performance accomplishments	PA1	.836
	PA2	.822
	PA3	.872
	PA4	.722

Continued

Table 4: Continued

Factor	Items in Direct Oblimin Rotation	Loadings
Vicarious experience	VE1	.879
	VE2	.899
	VE3	.375
	VE4	.79
Organizational support	OS1	.815
	OS2	.827
	OS3	.842
	OS4	.658
System self-efficacy	SS1	.824
	SS2	.855
	SS3	.787
	SS4	.825

Research Model Summary

Three factors were subjected to linear regression analysis to measure the success of the model and predict causal relationships between these factors and system self-efficacy. The three factors are performance accomplishments, vicarious experience, and organizational support. Using enter method of linear regression analysis in SPSS, a significant model emerged: $F(3,353) = 23.22$, $p < .0005$. The model explains 15.8% of the variance (adjusted $R^2 = .158$) in system self-efficacy amongst instructors at UDOM.

Moreover, vicarious experience and organizational support were found to have a significant effect on the system self-efficacy amongst instructors at UDOM, while performance accomplishments did not have an effect. The beta values for each factor are shown in Table 5.

Table 5: Unstandardized and standardized regression coefficients for the constructs

Construct	B	*SE*	Beta	*P*
Organizational support	.252	.056	.252	.000
Performance accomplishments	.045	.053	.045	.398
Vicarious experience	.203	.055	.203	.000

A summary of how the hypotheses were tested is shown in Table 6.

Table 6: Summary of results hypothesis testing

		Results	Conclusion
Hypothesis 1	Organizational support has an effect on system self-efficacy amongst instructors	Beta = .252, $p < .000$	Supported
Hypothesis 2	Performance accomplishments has an effect on system self-efficacy amongst instructors.	Beta=.045, $p < .000$	Not Supported
Hypothesis 3	Vicarious experience has an effect on system self-efficacy amongst instructors.	Beta = .203, $p < .000$	Supported

Note. Statistically significant values at p< .05 or p< .001

In addition to testing the hypothesis, the focus group discussions were conducted to gain more insight on hypothesis 1 and hypothesis 3. These were hypotheses with factors that were found to be statistically significant on system self-efficacy amongst instructors.

Hypothesis 1: Organizational support has an effect on system self-efficacy amongst instructors

Organizational support was found to be statistically significant in system self-efficacy amongst instructors. In the focus group discussions, it was clear that the lack of organizational support from the university hindered the use of the system:

> *"I was trained in this system in 2014, together with my colleagues from our department. But, using the system increases workloads to me. I have a class of 500 students and therefore teaching, marking, and at the same time using this system is more difficult for me"* (Respondent 1, Group 4).

> *"There is no incentive in using the system, those who are currently using is because of their interest, and probably they do not have big classes to teach. Remember, it is double work for me to use the system as I am comfortable teaching in the current mode."* (Respondent 6, Group 1).

> *"The school of virtual education does not have enough technical staff to visit and support all academics in the university. They normally organize training at the beginning of the semester, but everyone can't attend. They need to find ways of training us even during the semester"* (Respondent 4, Group 4).

> *"The University has been providing ICT facilities to almost all instructors. For instance, every instructor has a good working laptop that we can access the system without any problem. I have been using Moodle for a few years and helped me to improve my teaching activities"* (Respondent 2, Group 8).

> *"It is not a requirement to use the Moodle system for teaching. We are just told to use our benefits. Then, one wonders, why should I use the system if I can teach without it. If it was a requirement or people who are using it are rewarded, maybe some of us would be using it more regularly. As of now, I just use it at my convenience."* (Respondent 1, Group 1).

Hypothesis 3: Vicarious experience has an effect on system self-efficacy amongst instructors.

The vicarious experience was found to have an effect on system self-efficacy amongst instructors at UDOM. Some comments from focus group discussions are indicated hereunder:

"Sometimes, I need help from my colleague on how to use various features within the system when I face any difficulty. But, there are very few colleagues who have the skills to use the system effectively. So, I have to go around the office to ask those who have the skills. It is difficult" (Respondent 2, Group 7).

"I don't know how to use all the features which are in the system, and I only use it for uploading the learning resources for students to download" (Respondent 4, Group 4).

"Our head of department is not using the system. The examination officer is not using the system. If the leaders do not see this system as important, then it is difficult for us to use it. I thought our leaders should be using it and showing us by examples" (Respondent 3, Group 1).

"I wonder if, at this age, I still want to use new technologies for teaching a course that I have been teaching for many years. Many of us, of my age, are not all technologically intelligent. These ICT systems need a lot of time and learning. As you can see, few of my age at the department is using the Moodle system" (Respondent 6, Group 2).

Discussion

The current study investigated system self-efficacy amongst instructors at UDOM. The study adopted a mixed sequential explanatory design with data collected from 357 questionnaires followed with focus group discussions with 32 key participants. The adapted independent factors: performance accomplishments and vicarious experience from Bandura (1977), and organizational support from Higgins and Compeau (1995) were subjected to linear regression analysis to determine the causal relationship with system self-efficacy. Of the three factors: vicarious experience and organizational support were found to have a significant effect on system self-efficacy amongst instructors at UDOM. In contrast, performance accomplishments did not have an effect.

Generally, organizational support was found to have a strong effect on system self-efficacy amongst instructors contributing to 25.2% of the research model (Beta = .252, $p < .000$). This finding implies that procuring computers, increasing Internet speed, and other facilities are not enough for instructors to use the system. University management in Africa should find ways of increasing system self-efficacy amongst instructors by providing reliable technical support, such as assistance from technicians to enhance instructors' use of the system (Zheng et al., 2018). Universities should also plan regular training, to improve the usability of the system, and providing mechanisms for helping instructors solving system problems when they are using the system (Henry & Stone, 1995; Zheng et al., 2018).

University management can also set favorable policies and reward mechanisms that will encourage the utilization of eLearning systems. For instance, the University of Ghana and the Kwame Nkrumah University of Science and Technology set policies to reward those who use the system as part of the promotion criteria (Ngugi, 2011). By doing so, many instructors were able to use the system for complementing their teaching activities. The same can be done at UDOM. In the focus group discussions, for instance, it was revealed that UDOM does not provide incentives for those who use the system.

Consequently, the majority of interviewed instructors perceived the use of the system as an additional workload to already existing teaching activities. Therefore, rewarding instructors who are using the system could potentially increase their system self-efficacy. The rewards can be in the form of praise, promotions, and money (Mitchell, Gagné, Beaudry & Dyer, 2012).

This study also found that vicarious experience has an effect on system self-efficacy amongst instructors contributing to 20.1% in the research model (Beta = .203, $p < .000$). This finding confirms the fact that instructors also rely on the opinions of others or through observing others' in forming judgments about their abilities to use the system. Universities should ensure that people who are important to instructors such as senior academics, heads of departments, examination officers, and some colleagues are trained and use the system in order to increase system self-efficacy amongst instructors. If these people use the system, instructors will persuade themselves that if these people can do it, they should be able to use at least some features of the system.

The university could adopt the Trainer of Trainees approach, where few selected staff to be trained so that they could teach their colleagues in their departments. The trained staff could encourage others within their departments through verbal persuasion or other means when using the system. Another recommended approach for increasing vicarious experience amongst instructors could be conducting on-the-job training where technical staff could be regularly visiting departments to provide coaching and mentorship services to instructors. The on-the-job training approach is essential as many instructors are always busy, and therefore they may not have time to attend formal training. For instance, poor attendance of instructors in workshops conducted in several universities in Tanzania was noted due to lack of time (Bhalalusesa et al., 2013; Lwoga, 2012; Tedre et al., 2010; Unwin et al., 2010). As a result, only a few instructors were trained in the use of these systems.

Conclusion and suggestion for future research

As ICT infrastructure continues to improve in Africa, the use of eLearning systems to enhance teaching and learning will continue to expand. However, low or non-use of these systems is becoming a common phenomenon despite massive investments made by these universities. In this study, the system self-efficacy amongst instructors at UDOM was investigated. The study adopted a mixed sequential explanatory design with data collected from 357 questionnaires followed with focus group discussions with 32 key participants. Generally, the study has found system self-efficacy amongst instructors hindered instructors from using the system as the proposed model was able to explain 15.8% of the variance (adjusted $R^2 = .158$) in system self-efficacy amongst instructors. In other words, the vicarious experience and organizational support contribute to 15.8% of system self-efficacy amongst instructors at UDOM. Therefore, 84.2% of system self-efficacy amongst instructors can be contributed by other factors that were not included in this study.

Further research in this topic should include additional variables when investigating system self-efficacy amongst instructors in a given context. Some of the factors to be considered include others' use (Higgins & Compeau, 1995), physiological states, and emotional states (Maddux, 1995). Despite these limitations, the findings from this study show that examining system self-efficacy amongst instructors is essential to help those who are implementing eLearning systems in finding strategies that will increase system usage.

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