Higher Learning Institutions Preparedness, Adoption and Implementation of E-Learning Programmes: A Conceptual Review

Joseph M. Mulwa[1], Hannington O. Owegi[2], Rael J. Too[3], Reuben W. Kikwatha[4]

[1]Ph.D Candidate, Department of Management Science and Project Planning, Faculty of Business and Management Science, University of Nairobi, Kenya

[2]Ph.D Candidate, Department of Management Science and Project Planning, Faculty of Business and Management Science, University of Nairobi, Kenya

[3]PhD Fellow Ohio State University, University of Nairobi, Research Scientist (Bacteriology) Centre for Microbiology Research, Kenya Medical Research Institute

[4]Lecturer, Department of Management Science and Project Planning, Faculty of Business and Management Science, University of Nairobi, Kenya

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ABSTRACT

The growing global demand for tertiary education and postgraduate education has led to the increased utilization of e-learning approaches around the World. This demand has increased most rapidly in Low- and Middle-Income Countries (LMICs) which accounts for half of the students currently enrolled in Higher Educational Institutions (HEIs). Nevertheless, the adoption and implementation of e-learning programmes in institutions of higher learning has not yielded the expected results. This conceptual study presents literature review on the preparedness of higher learning institutions on adopting and implementation of e-learning programmes. The claim advanced in this paper is that Institutions of higher learning have not adequately addressed critical components of e-learning thus low levels of uptake and adoption of e-learning programs. The conceptual model explaining this relationship posits that ICT infrastructure both hardware and software's, Management policies and guidelines, Development of quality content and quantity of content development and management systems have a direct relationship with the success of e-learning programs in higher institutions of learning. To explain this relationship, the unified theory of acceptance and usage of technology (UTAUT) becomes relevant. The methodology used in this study included desktop and online review of literature from previous studies not older than 10 years only, creating bias on generalizability of other studies. This review is categorized into four thematic areas: ICT infrastructure, Management policies, quality of content and management system. The paper concludes that if all the higher educational institutions will be fully prepared through equipped ICT infrastructures, clear management policies, adequate content and supportive management systems, adoption and implementation of e-learning programmes will be a success, hence giving chances to all students to be able to access the e-learning programmes. The study recommends that further studies can be done to understand the level of preparedness, adoption and implementation of e-learning programmes to Higher Educational Institutions (HEIs) to enable students access e-learning programmes and the general population at their phase.

Key word: e-Learning, Adoption, ICT infrastructure, Management systems

BACKGROUND OF STUDY

The global demand for higher education is rising rapidly, with over 150 million people estimated to be seeking tertiary education by the year 2025 (Suhail, Lubega and Maiga, 2014). This demand is particularly prevalent in

those 'low and middle-income countries' (LMICs), as defined by the World Bank, which account for half of the students currently enrolled in higher education institutions (World Bank, 2000). In particular, there is a rapidly increasing demand for global health related courses (Kerry, et al., 2011), which is reflected in the 34% growth in the number of recognized medical schools over the five years from 2007, many in LMICs (Duvivier, et al.,2014). This has been activated by Internet which brought changes in all walks of life including acquiring education through e-learning and distance learning. The globalization of higher Education is increasing rapidly; students attend courses of study from all over the world, employees work and study globally. Mirza and Al-Abdulkareem (2011) explains, that due to the inter-activity and ubiquity of the Internet, learning is possible without space and time barriers. The long-term implications are a worldwide network and a real market place for university and college level education. This will expand naturally into vocational and adult training as well and Education might become a major export factor between countries. Universities have been faced with the daunting task of having to re-adjust and re-organize themselves in preparation for the incorporation of e-learning within their institutions. Institutional leaders have also been faced with the challenge of having to align their institutional objectives to meet the needs and demands of the e-learning dispensation. When higher Education Institutions start the process of implementation of e-learning, a number of factors come into play; Some factors are about the technology, others about the protective users, still others about the local context of use and the associated costs (de Beurs, et al., 2015). The development of innovative ICTs, increased accessibility of the internet, and a growing global demand for tertiary education (Wende, 2003) has stimulated interest in e-learning **"**the use of digital or electronic technologies and materials to support teaching and learning" (Power, 2014) – in many countries (Tinio, 2002). Investment in e-learning has the potential to provide high quality teaching at a lower long-term cost per student (Bates, 1995; Olsen, 2015), though initial costs may be higher (Kumpu, et al., 2016).

According to Connolly and Stansfield (2006) e-learning has gone through three distinct generations. The first generation, from 1994 to 1999, was marked by a passive use of the Internet where traditional materials were simply repurposed to an online format. The second generation from 2000 to 2003 was marked by the transition to higher band-widths, rich streaming media, increased resources, and the move to create virtual learning environments that incorporated access to course materials, communications, and student services. The third generation, currently underway, is marked by the incorporation of greater collaboration, socialization, project based learning, and reflective practices, through such tools as e-portfolios, wikis, blogs, social bookmarking and networking, and online simulations. Additionally, the third generation is increasingly being influenced by advances in mobile computing. It is common sense to admit the fact that using technology in the educational process actually changed learning. The most agreed upon directions are: communication evolution, expanding audience, collaborative learning, multitasking, rapid access to information, random access to information (hyperlink), image versus text. These features led the theorist to come up with new learning theories such as rizomatic learning (Deleuze and Guattari, 1987), connectivism (G. Siemens, S. Downes, 2005), heutagogy (Hase and Kanyon, 2007), paragogy (J. Corneli and C. Danoff, 2011). E-learning has grown tremendously over the past several years as technology has been integrated into education and training. "Elearning" may be defined as instruction delivered electronically via the Internet, Intranets, or multimedia platforms such as CD-ROM or DVD (Hall, 2003; O'Neill, Singh, & O'Donoghue, 2004). Since many users today have access to direct Internet connections, e -learning is often identified with web-based learning (Hall, 2003). Many writers refer to "elearning," "online learning," and"web-based learning" interchangeably, an approach that will be taken in this paper. E-learning can be implemented in a variety of ways, such as through the use of self-paced independent study units, asynchronous interactive sessions (where participants interact at different times) or synchronous interactive settings (where learners meet in real time) (Ryan, 2001).

According to Materu [1], the number of tertiary students in Sub-Saharan Africa increased by 3.6 times between 1985 and 2002 led by Rwanda (55 percent), Namibia (46 percent), Uganda (37 percent) Tanzania (32 percent) and Kenya (27 percent). In Kenya specifically, public universities rose from 7 before 2010 to 30 by 2016 with total enrolment capacity in undergraduate programmes increasing from less than 50,000 in 2007 to over 400,000 in 2015 with an annual growth rate of 22.3% [3], [4].

Kenya recognizes that the education and training of all Kenyans is fundamental to the success of the Vision 2030. Education equips citizens with understanding and knowledge that enables them to make informed choices about their lives and those facing Kenyan society. The education sector will, therefore, provide the skills that will be required to steer Kenyans to the economic and social goals of Vision 2030. Vision 2030 is based on the creative talents capable of raising Kenya's international competitiveness through enhanced productivity at the microeconomic (industry) and national levels. The last few decades have witnessed rapid expansion of higher education institutions in Kenya. This can be attributed to increased demand for higher education, partly as a result of increased awareness of the positive benefits of education (Khan, 2001). Education, learning, and acquisition of knowledge and skills have never been of more central importance than they are today. It is becoming increasingly clear that our ability to cope with rapid changes will become the primary measure of success at both macro and micro levels (Khan, 1997). This increased demand has seen ODeL fast becoming an accepted and indispensable part of the mainstream educational platforms in both developed and developing countries, with particular emphasis in the latter (UNESCO, 2002).

Problem Statement

Many institutions of Higher Education and Training Institution are utilizing the eLearning platforms with a view to enhancing efficiency in higher education. While other institutions are hopping onto the bandwagon simply because they do not want to be left behind (Govindasamy 2012). Increasingly, a number of universities worldwide including some in Africa are making positive attempts to implement e-learning strategies. Biggs, (2011) posits that some of them have implemented e-learning systems but have not been quite successful whereas others have implemented successfully. The overall goal for these efforts has been to enhance equity, quality, share instruction technology resources, compete in global environment of higher education and meet the rising demand for tertiary education. Review of existing literature points to a number critical predictors to the success in the adoption of eLearning in higher education. However, Seale, (2013) points out that the e-learning frameworks available in the literature work were developed in developed world environment with less from developing countries. There are a number of surveys that have been carried out in both developed and developing countries and existing literature has identified several critical success factors in implementing an e-learning program and a number of studies that point out challenges and issues in implementing e-learning. Even though, the predictors have not been exhaustive done leaving a huge opportunity for further research especially in the developing counties.

This paper therefore develops a conceptual framework, review of supportive literature and a presentation of the theoretical framework underpinning the claims advanced in this paper. Analysis of the previous studies in the area identifies existing gaps in information and provides good basis for further studies

Objective of the Study

This review presents a conceptual review of the relationship between the Higher Learning Institutions Preparedness and the successful implementation of the eLearning programs.

LITERATURE REVIEW

Whereas the impact of ICTs on the education goals is still inconclusive, there is still very little literature available on the success stories in Kenyan context with regard to the implementation challenges on e-learning initiatives despite their promise and potential many aspects of the socio-economic and technological environmental such as connectivity (low bandwidth) and accessibility, inadequate telecommunications infrastructure, and lack of reliable power supply are not considered and therefore they need to be addressed during technological transformation in the context of Kenya which is a developing country (Seale, 2013).

The paper focus on reviewing main areas that are particularly relevant to provide the theoretical foundation information of the concept paper: i) Higher Learning Institutional preparedness, adoption and implementation, ii) ICT infrastructure, iii) management policies and guidelines, iv) content development and management

systems in e-learning programmes. Preparedness in this study refers to of being ready and accept the e-learning program while the adoption refers to taking up and using e-learning systems for academic and educational purpose.

Implementation of e-leaning in higher institutions of learning

The use of E-learning in Kenyan universities has gained a lot of popularity and not only because of the number of E-courses offered but also due to the increased interests it generates from researchers' side (Mihhailova, 2007). Tarus, Gichoya, and Muumbo (2015) asserts that E-learning initiatives have been introduced in Kenyan public universities in line with the government's policy requiring universities to introduce E-learning as an alternative delivery system. Waema and Kashorda (2014) E-readiness survey in thirty (30) universities in 2013, it was evident that most of the universities in Kenya were ready to use ICT for learning, teaching, research and management. As a result, the universities in 2013 achieved Internet bandwidth increase to 4.0 Mb/s per 1,000 students compared to only 0.431Mb/s per 1,000 students in 2008. Even with the above increase in internet bandwidth, it is unclear why this didn't translate into higher levels of e-readiness in most of the universities. Kashorda and Waema (2014); Tarus and Gichoya (2015) universities are not investing sufficiently in campus network backbone and wireless network infrastructure that will make it easier for students to use their own laptops and smartphones on campus to access E-learning materials and other student services. Tarus, Gichoya, and Muumbo (2015), universities started implementing e-learning since 2004 (Nairobi in 2004, Kenyatta University in 2005, Jomo Kenyatta University of Agriculture and Technology in 2006 and Moi University in 2007). However, there are few steps made for full preparedness, adoption and implementation on utilization of e-learning approach in these public universities due to unforeseen challenges. Most of these universities are using e-learning in blended mode since it's cheap in terms of implementation and requirements. Motteram (as cited in Tarus, Gichoya, and Muumbo, 2015) teachers and learners prefer the blended learning approach, which mixes the traditional face-to-face teaching with online collaboration due to technological, organizational and pedagogical benefits it offers.

Information, Communication and Technology (ICT) Infrastructure

The availability of ICT infrastructure will facilitate easy adoption and effectiveness of e-learning. Swarts and Wachira (2009) who in a situation analysis of ICT education in Kenya found that according to the National ICT in Education Strategy of 2006, "most secondary schools in Kenya have some computer equipment" but "only a small fraction is equipped with basic ICT infrastructure" necessary for teaching and learning. Bush and Jackson (2002) major cause of ineffectiveness in e-learning is the theories on educational training adopted by school leadership, mostly transferred from America. In other studies, the argument brought forward is that while ICT is available in schools, differences in geographical and economic conditions, different educational backgrounds and pedagogical views, language and content issues, usability and technical literacy issues, attitudes and prejudices hinder effectiveness of e-learning (Bitew, 2008; Masters, 2004). Liverpool (2002) further notes that though in a slow pace, schools are increasingly being equipped with ICT infrastructure. Though the ICT infrastructure is a vital element on the preparedness of adoption of e-learning, most of the higher learning institution has not yet equipped their facilities with both hardware and software which will necessity the adoption e-learning programme. The study intends to establish whether availability of ICT infrastructure in higher institutions influences the adoption of e-learning programs.

Management Policies and Guidelines

Management policies and guidelines play a major role in the implementation of the e-learning programmes. McCarthy and Berger (2008) indicated that a school's ICT policy greatly affected students' ability to adapt to e-learning. However, though the government of Kenya, through Sessional paper No.1 of 2005 introduced ICT education in Kenyan secondary schools, lack of reliable, quality data, in addition to the absence of standardized guidelines for establishing relevant and comparable indicators, hinder policy makers in making informed decisions or in demonstrating greater commitment to integrating ICT into education systems (Swarts and Wachira, 2009). Tedre, Bangu and Nyangava (2009) observes that even with the appropriate ICT policy

structures in place, students' reliance on rote learning incapacitates the students from finding information or coming up with answers or solution themselves, a key component of e-learning. Based on these findings it shows that the policies will play a vital role in the implementation of e-learning in higher institutions on the areas of usage, securities, and the framework of accessing the network.

Content and quality of e-learning materials

Numerous studies have demonstrated that a student's active involvement in the learning process enhances learning, a process often referred to as *active learning* (Benek-Rivera & Matthews, 2004; Sarason & Banbury, 2004). Active learning involves "instructional activities involving students in doing things and thinking about what they are doing" (Bonwell & Eisen, 1991, p. 5). Interactive instruction or "learning by doing" has been found to result in positive learning outcomes (Picciano, 2002; Watkins, 2005). Because many new technologies and web-based activities are interactive, online coursework has the potential to create environments where students actively engage with material and learn by doing, refining their understanding as they build new knowledge (Johnston, Killion & Omomen, 2005; Pallof & Pratt, 2003). As Driscoll (2002) observes, "When students become active participants in the knowledge construction process, the focus of learning shifts from covering the curriculum to working with ideas. And using technology tools 'to think with' facilitates working with ideas and learning from that process" (Scardamalia 2002).

In addition to active involvement, students better understand and apply material when problems and situations are set in the context of real-world issues and situations (Eble, 1988). Authentic situations and scenarios can provide a stimulus for learning, creating greater student motivation and excitement for learning, representing and simulating real-world problems and contexts, providing an important structure for student thinking (Quitadamo & Brown, 2001). Emphasizing authentic tasks in context rather than abstract out-of-context activities creates a greater likelihood of learning (Driscoll & Carliner, 2005). Technology and online instruction can facilitate learning by providing real-life contexts to engage learners in solving complex problems (Duffy & Cunningham, 1996; Honebein, 1996).

The use of real-world situations has the potential to promote deep learning through the development of critical thinking skills. Critical thinking involves the active and skillful analysis, synthesis, and application of information to unique situations (Scriven & Paul, 2004). Learning retention and performance improves as students are required to apply what they have learned and then reflect upon the learning (Bereiter & Scardamalia, 1989; Bransford, Brown, & Cocking, 2000).

Again, online instruction has the potential to provide opportunities to promote reflective thought and deep learning through realistically integrating and applying principles learned. Online instruction, such as a simulation, thrusts learners into a learning experience, increasing engagement and providing activities that actively engage learners to analyze, synthesize, and evaluate information while constructing knowledge (Driscoll & Carliner, 2005). Built upon a foundation of learning theory, e-learning can potentially provide many important payoffs. To learners, online instruction offers the flexibility and convenience to complete learning units when and where a learner desires. Additionally, online education has been used to reduce costs and to provide an efficient, standardized way to deliver content (McDonald, 1999-2000; "elearning," 2003; "The Pay-offs," 2003). The paper is guided by the following hypothesis

Ho_1: Hypothesis one: There is a direct relationship between the e-Learning infrastructure development and the implementation of e-leaning programs

Ho_2: Hypothesis Two: There is a direct relationship between the e-Learning management policies and the implementation of e-learning programs

Ho_3: Hypothesis three: There is a direct relationship between the quality of eLearning material content and the implementation of eLearning programs

Theoretical Framework

The relationship proposition in the conceptual framework is underpinned by the Unified Theory of Acceptance and Use of Technology (UTAUT). This theory UTAUT was published in September 2003 by researchers in the area of technology acceptance, based on empirical and conceptual similarities of the eight models/theories exposed in the previous section. The studies that led to its formulation empirically compared the models, using surveys with items to measure the variables in all of them, in four organizations of different industries that had set plans to introduce new systems. It is important to refer that, from the four systems, two of them were mandatory and the others were for voluntary.

They were longitudinal studies, conducted on three different occasions: after the training on the system, a month later and three months after implementing the system. The actual use of the system was measured six months after the training of users. Finally, the model was validated in two other organizations, being able to explain approximately 70% of the variation in technology acceptance behavior, a notable increase over the other models that on average stood at 40%.

The UTAUT defend that there are three variables that determine directly significantly the intention of using a particular system: performance expectancy, effort expectancy and social influence. Behavioral intention is the willingness shown by the user in using the system in the future the facilitating conditions influencing directly the user behavior. This can be graphically represented in figure 1.1 by Venketech et.al.

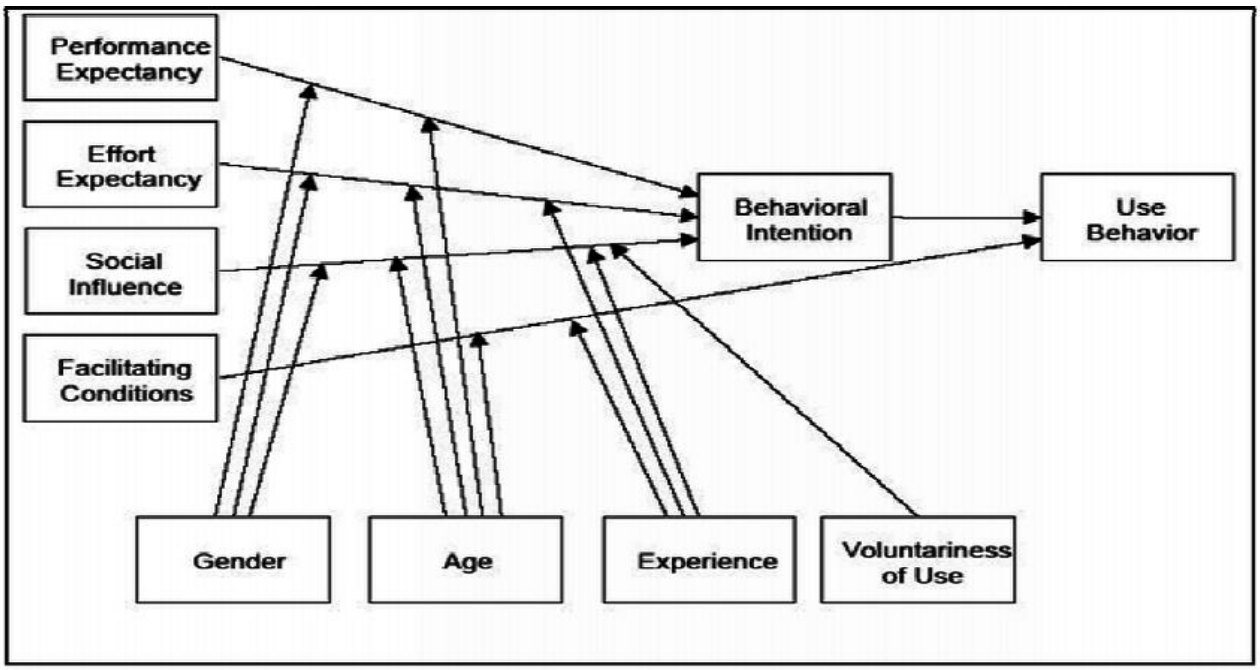

Figure 1.1 UTAUT model (Venkatesh et al., 2003)

Researchers have also integrated UTAUT with other theoretical models to study technology acceptance and use and related issues. Yoo et al. (2012) studied the impacts of extrinsic motivation and intrinsic motivation on employees' intention to use e-learning in the workplace. They conceptualized performance expectancy, social influences, and facilitating conditions as the components of extrinsic motivation, and effort expectancy as a component of intrinsic motivation. Guo and Barnes (2011, 2012) also adopted the same theoretical foundation to examine consumers' purchase intention in the virtual world, but they viewed performance expectancy and effort expectancy as components of extrinsic motivation. Venkatesh et al. (2011) integrated UTAUT beliefs into the two-stage expectation-confirmation model of IS continuance (Bhattacherjee & Premkumar, 2004) to study citizens continued use of e-government technologies. Other studies have integrated UTAUT with theoretical perspectives such as the equity-implementation model (Hess, Joshi, & McNab, 2010), IS success model (Kim, Jahng, & Lee, 2007), and task-technology fit (Zhou, Lu, & Wang, 2010).

REVIEW METHODOLOGY

The study adopted a desktop literature review design. Literature was sourced from the relevant book chapters, journal articles and periodicals. Materials were accessed from both library and online sources. Review of literature was done thematically as guided by the review variables and the related theoretical framework. Analysis, discussions, conclusion and recommendations was informed by the findings from the various empirical journal articles reviewed per specific variables.

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

The finding of the study showed that implementation of e-learning has not been given much priority in Kenyan universities. The study also showed that Kenyan universities are making much progress though attitude of academic staff should be improved and the staff receives more training so that their personal capability in using e-learning improves. The university administration also needs to improve the existing infrastructure and technology related to e-learning. e-learning implementations are costly and require significant and sustainable funding to ensure that adequate infrastructure is deployed at the start-up of the initiative and that on-going funding is available to support further development and growth. Implementations, if not properly managed, will be plagued by cost overruns. University administration should be able to link the vast investments in infrastructure and the use of that infrastructure in delivering educational benefits. The government's role should involve funding of research and developments of ICT infrastructures. Any single educational institution will only be concerned about its own autonomy and survival. The commitment from the government can foster greater commitment among academic leadership and staff. They can assist with funding and get the necessary support for the initiative in place. They can provide nation-wide infrastructure.

Technical skills to access computer technology and the e-learning system: although most of lecturers had attended training on e-content development and how to use e-learning in teaching, some felt they needed not only to be familiar with new technologies but also able to deal with technical problems encountered, for example, network bandwidths, computer facilities and storage and technology' operations. Similarly, some instructors reported their colleagues had difficulties using e-learning systems due to a lack of technical skills. Typically, they reported overcoming these problems by asking their colleagues or technical support staff for help. The quality of e-learning computer facilities and technology: Some respondents indicated that the available technology was slow and lacked the high-quality network bandwidth and facilities required on downloading huge files.

Conclusion and Recommendations

Various challenges touching on non-optimal utilization of programme facilities, delays in production of study materials, inadequate funding, and low teaching staff levels are identified. Efforts of the ODeL providers in Kenya are also not guided by national policies, posing a challenge in resource mobilization and programme quality issues. The integration of ICT in education in Kenya, on the other hand, is more recent and on a smaller scale. This is due to resource and infrastructural constraints.

Despite the various debates on the adoption and implementation of e-learning as well as the accompanying challenges, e-learning remains an indispensable pedagogical phenomenon in the 21st century and beyond Its ability to cater for a myriad of students seeking educational opportunities have made it the best medium through which lecturers can interact with students anytime anywhere. The utilization of e-learning has also cut distances which students in conventional learning institutions would have covered to access lecturers and learning materials. Incentives should therefore be accorded to HEIs to enhance e-learning facilities within their institutions. More financial resources should be devoted to the acquisition of resources and infrastructure for the promotion of e-learning facilities and infrastructure. Altitudinal change should also be inculcated in institutional leaders to keep abreast of technological innovations for their respective institutions for the advancement of both their lecturers and students. Given that the challenges encountered by IIEIs and the barriers that inhibit the implementation of e-learning within institutions are common across the educational

institutions, the obligation rests with institutional leadership whose thrust should be focused on providing the necessary resources and infrastructure with which to implement their respective institutional e-learning strategies.

Governments should also take it upon themselves to commit more funding for HEIs to be able to undertake training programmes for academic staffs, procure more computers and provide for bigger bandwidth for different HEIs. This should be reinforced by a reliable internet and network system that does not further provide further challenges like crashing or getting offline at a time when students and staff need it most. The large influx of students seeking tertiary education has also presented a challenge as HEIs have to contend with these students, some taking part time classes. Through availing adequate tutors and facilitators would help improve the situation. At the Universities the E-learning Department should have facilitators on standby to provide help to any e-learning-related problems throughout the year. The Department should also deploy its trained staff to visit different departments in the institution to help resolve any issues pertaining to the disbursement of e-learning. The problems associated with the wireless network should be addressed with the assistance of experts who ensure that the system does not let down students and lecturers, and efforts to be made to increase the number of access points where one can access the wireless facility. The research department within the institutions should undertake researches on challenges that those who utilize the e-1earning facilities within the institution encounter and bring these problems to the attention of appropriate personnel for resolution. Therefore, similar studies are warranted to pave way for wider generalization and acceptability of the outcome and recommendation of this research.

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