

# Factors for Effective E-learning Integration in Higher Education in Sub-Sahara Africa

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***Abstract:** This article discusses factors that contribute to effective e-learning integration in higher education in the context of Sub-Sahara Africa. It involved retrieving articles using key words such as e-learning, perceptions, knowledge, skills, implementation, facilities, access, support, learning management system and higher education from major educational search engines. Results have revealed firstly that, first there are as many conceptions of the concept of e-learning as there are types of technologies that can support it to improve delivery of higher education. Secondly, several factors contribute to effective integration of e-learning in higher education in Sub-Sahara Africa. These include (i) institutional factors (ii) instructors and students' factors and (iii) support factors. Based on the results, it is argued therefore that higher learning institutions must make efforts towards addressing these factors for successful integration of e-learning.*

**Keywords:** E-learning, higher education, information and communication technologies and Sub-Sahara Africa

## INTRODUCTION

The use of modern technologies in enhancing delivery of education is increasingly becoming a common phenomenon in most higher education institution in developing countries (Mbvette, 2011; Moyo, 2003; Nihuka, 2011). This emanates from the desire to benefit from potentials that modern technologies have in enhancing education delivery (Nihuka, 2011). Elsewhere, advancement in e-learning technologies has caused numerous changes in higher education institutions, especially with respect to educational delivery and support processes (Dublin, 2003). In the context of Sub-Sahara, it is clear that the full potential of such technologies in the delivery of higher education and distance education in particular has not been fully exploited so far. Many reasons that are hampering the full realisation of this potential have been suggested in the literature (see for example in Siritongthaworm *et al.*, 2006; Moyo, 2003; McNaught *et al.*, 2000; Fisser, 2001). This implies that there is urgent need to establish clear understanding of the criteria that should inform universities when deciding on what technologies fit well into existing environment in an institution. Therefore, for technology integration to be successful, a clear understanding of factors and conditions that can influence effective implementation becomes critical. This paper discusses reviewed literature on factors for effective integration of e-learning technologies in higher education in Sub-Sahara Africa.

The purpose of the study reported in this paper was to understand factors and conditions that contribute to effective integration and implementation of e-learning in higher education in the context of Sub-Saharan Africa. The outcome of the review was to provide powerful insight about the factors and conditions that needed to be addressed for successful integration of e-learning in higher education in Sub-Saharan Africa. Furthermore, outcomes of the review would provide useful inputs that could be considered when deciding which technologies to integrate in education and the kind of strategies that could be appropriate in addressing the factors and conditions. Also the review would provide a basis for recommendations regarding future technology integration and implementation strategies, and support requirements for instructors in designing and delivery of education through e-learning technologies. The literature search was guided by a question: “what factors are necessary for effective integration of e-learning in higher education in Sub-Saharan Africa?” Specifically, the following sub-questions were used for literature search:

- How is e-learning conceived?
- What institutional factors contribute to successful implementation of e-learning?
- How do knowledge, skills, perceptions and access to e-learning technologies by instructors and students lead to effective integration of e-learning?
- What kind of support is necessary for instructors and students during e-learning integration?

## **METHODOLOGY**

The strategy for conducting this literature review was to use keywords such as e-learning, perceptions knowledge and skills, integration, implementation, facilities, access, support, design, course management system, higher education, Sub-Saharan Africa, and developing countries. These keywords were then searched through education, sociological and psychological literature databases such as Eric, PiCarta, Scirus, Scopus, Psycho INFO, [Google scholar](#), Google and the website and repository of The Open University of Tanzania. Research based articles, reports and speeches that focused on e-learning integration in higher education were sought. Microsoft Excel was then used to organize thoughts by recording the articles and how they addressed different search questions. Articles cited in reference lists were also followed up as well as new searches of the literature were done to address emerging ideas in the paper. The amount of literature available on this subject is quite overwhelming with the following features; first, search results show that the area of *factors and conditions for e-learning integration in higher education* is quite widely studied and documented. However, this review should not be considered as exhaustive of every research study available on the topic rather, it is a representative of what does exist.

## **RESULTS**

### **The Concept of E-Learning**

E-learning is conceived in Zemsky and Massy (2004) to mean education delivered on the web. This conception shows that e-learning is used to mean that entire courses and all the interactions between instructors and students are on-line. A similar stance is reflected in other conceptions as suggested by Dublin (2003) who views e-learning as a computer-based education delivered over intranets and/or internet. Also, in Stockley (2005), e-learning is considered as a delivery of a

learning, training or education programme by electronic means which involves the use of a computer or electronic devices such as mobile phone to provide training, educational or learning material. Along the same line but much more in a broader view e-learning is suggested in Singh, O' Donoghue, and Worton (2003) who conceive e-learning to cover a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. In their conception, they include delivery of content via internet, intranet/extranet (LAN/WAN), audio and videotape, satellite broadcast, interactive TV, CD-ROM and more.

On the other hand another set of scholars use e-learning to involve more than just offering fully on-line courses. According to Oblinger and Hawkins (2005), e-learning has evolved from a fully-on-line course to the use of technology to deliver some or all of a course independent of fixed time and place. Students can be residential, commuting or at a distance. This is also the focus of Galagher's (2003) conception who describes e-learning as the use of digital technologies to support and deliver some or all educational programmes for a particular unit of study. European Commission (2001) describes e-learning as using new multimedia technologies and the internet to improve the quality of learning by facilitating access to facilities and services as well as remote exchanges and collaboration. In the higher education context this implies the use of flexible learning approaches as well as distance learning, and the use of e-learning technologies as a communication and delivery tool between and among students and instructors to support and improve the management of learning. The OECD (2005) claims that "e-learning refers to the use of Information and Communications Technology (ICT) to enhance and/or support learning in tertiary education. Moreover OECD takes e-learning to refer to both wholly on-line provision and campus-based or other distance-education provision supplemented with technologies in some way.

In the context of The Open University of Tanzania, e-learning is used to refer to the application of technologies such as Moodle, Learning Management System, CDs, Mobile phones, Students Academic Records Information System (SARIS), On Demand Examination System (ODEX) among others (Mbwette, 2012). In this review a definition of e-learning as suggested by Singh, O' Donoghue, and Worton (2003) and Mbwette (2012) are adapted. In this case e-learning is used to mean a wide set of applications and processes, such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It also includes the delivery of content via internet, intranet/extranet (LAN/WAN), audio and videotape, interactive TV, CDs, DVDs, learning management system and mobile learning.

## **FACTORS FOR EFFECTIVE E-LEARNING INTEGRATION**

In this paper, factors for effective e-learning integration are organized into three major groups, namely: institutional factors, instructors' and students' factors and support factors as elaborated in subsequent sections.

### **Institutional Factors**

There are many institutional conditions that influence decisions about what e-learning technologies a particular higher education institution should use. According

to Fisser (2001) the institutional conditions include organizational structure and leadership, broad participation, policy (and shared vision), concrete plans and improved access to e-learning.

The management in collaboration and participation of members in the institution need to identify and set priorities about e-learning integration. Having a community with a shared understanding of the potential of e-learning can make the move to go e-learning in the institution more easily and with less resistance and challenges. In the context of developing countries, Sife *et al.* (2007) found that many higher learning institutions in Tanzania have embraced e-learning technologies integration process without clear plans to guide the way. They suggest that the institutional ICT policy and strategic plan need to be defined to provide a framework for the development and implementation of specific e-learning projects. According to Deepwell and Syson (1999), vision is needed to change the culture of learning and teaching, to overcome anxieties and to obtain participation of others. Emphasizing the idea of shared vision and broad participation regarding e-learning integration and use in an institution, Farrell (1999) argues that effective incorporation of technologies requires a commitment by all parts in an institution including encouraging and supporting initiatives of faculty members, and ensuring that e-learning integration is linked with educational planning.

Another institutional factor that influences the decision to start integration of e-learning in education is the issue of funding and costs. The cost associated with e-learning integration is one of the factors that influence choice and implementation of technologies, so its financing must be carefully planned earlier (Bates, 2000; Berge, 2001; and Meyer-Peyton, 2000 cited in Aguti and Fraser, 2006). It is obvious that countries with higher financial resource basis stand a good chance than those with limited resources to reap benefits offered by technologies. Moonen (2000) argues that when considering implementation of e-learning in education, the effects as well as the costs are important to be considered thoroughly. Ideally, the issue of cost effective technological facilities and its conceived impact on learning need to be considered seriously when deciding to integrate e-learning in education. A few studies have mentioned some possible sources of funding which include tuition fees, governments; donor agents, communities and others (see for example Aguti and Fraser, 2006). In terms of what technology items to spend money on, Wright (2000) identifies obvious initial costs of hardware and software and the less obvious costs of running the hardware, upgrading of software, telecommunications, development and maintenance of electronic curricular, delivery systems, technical support and staff training and development. However, most of these costs are related to the expenses at start up (Moonen, 1999, 2000). To address the problem of limited financial resources in the context of developing countries Sife *et al.* (2007) advises higher learning institutions to do the following: (i) adopt freeware and open source software for teaching and learning activities; (ii) continuously press for more funds from governments; and (iii) diversify sources of funds to have a wide financial base.

Another institutional condition is the issue of availability of technologies and access to them by stakeholders. It is argued by Fisser (2001) that for successful e-learning implementation in institution of higher education, institutions must ensure that

appropriate technologies are available for all instructors and students and that there should be enough facilities and sufficient access to these facilities. Experience from The Open University of Tanzania (OUT) indicates that establishment of computer laboratories in regional centres is critical in improving availability and access to technologies (Nihuka, 2011; Mnyanyi, Bakari and Mbvette, 2010).

### **Instructors' and Students' Factors**

#### ***Instructors' Knowledge, Skills, Perceptions and Access to Technologies***

Numerous studies identify instructors' knowledge, skills and perceptions about technology use in education and access to internet as among critical factors for effective implementation of e-learning (Hoven, 2000; Smart and Cappel, 2006). It is noted from literature that both instructors and students in higher education have varied range of knowledge, skills and mixed perceptions about technology use for educational purposes (Nihuka, 2011; Mnyanyi, Bakari and Mbvette, 2010; Nyandara, 2012).

Waite (2004) and Hoven (2000) report about the connection between knowledge and skills on technology use in education and how instructors use technology. They argue that the use of technologies for e-learning in higher education is relatively low and is focused on a narrow range of applications, with word processing being the predominant use, and video/network conferencing, e-mailing and the internet being rarely used. It shows that teachers use computers more as a tool rather than a media for learning to achieve already determined learning goals. Hoven (*ibid.*) found that instructors use technology more for word processing, database/spreadsheet software, presentations and e-mail. A larger part of stakeholders in higher education especially in the developing world are not well informed about the potential of technologies in education. For example it was found in Hoven (*ibid.*) that 26% of the teaching staff finds that they are insufficiently informed, 42% experiences as fairly informed, and only 32% of the teachers are well informed. This situation makes Hoven (2000) conclude that it may lead to a difficult discussion in making choices about the directions in the field of information and communication within the institutions and in educational processes.

Furthermore, in a study by Hoven (2000) in the developing world, he found that instructors use computers in education for processing of learning results (30% often), development of learning materials (13% often), providing courseware and practise materials (29% often), examining (16% regularly), to deliver education to students in different locations (3% regularly) or for counselling and student support (3% regularly). Two conclusions can be drawn from these findings; firstly, computers are prominently used as tools and not as a medium of instruction and secondly, is that there are significant uses of the computers for works related to processing of learning results, providing of courseware and practices materials, and to some extent for examining. Seldom, computers are used for delivery of education to students through e-learning and for distance counselling and student support.

Instructors' perceptions in terms of the benefits and ease of use of particular technology are other determining factors for e-learning integration in higher education (Nihuka, 2011; Mnyanyi, Bakari and Mbvette, 2010). With respect to

perceived benefits, literature reveals that the perceived benefits of particular technologies influences its use in the university. The fact that technology such as computers has benefits (in terms of flexibility, efficiency and effectiveness) then instructors and students can use it readily. Specifically Siritongthaworm *et al.* (2006) found that for flexibility: all instructors and students agreed that e-learning application technologies helped to create convenience in terms of access time and place. It was demonstrated in that study that a majority of instructor respondents (11 out of 16 respondents) mentioned that students benefited from the learning pace option which allowed students to study any part of the content at any time. Some student respondents, especially those who owned wireless laptops, (5 out of 28) mentioned the convenience of having access to wireless technology that enabled them to log on from any local area network (LAN) within the university. For efficiency, the study showed that all respondents agreed on the e-learning benefits of resource utilization improvement and instruction enhancement. Lastly but not least, regarding effectiveness Siritongthaworm *et al.* showed that all respondents expressed that e-learning enhances student learning, which is the main objective of education.

Ease of use of particular e-learning facilities by instructors and students is another factor reported to influence how and whether or not they would adopt or use e-learning. The introduced technology has to fit into the users' knowledge and skills otherwise an appropriate training may be necessary for effective use of the technology. It was found in Siritongthaworm *et al.* (2006) that respondents with poor computer skills perceived e-learning technologies use as difficult compared to those with comparatively good computer skills and they indicated that intensive training programmes for using necessary technology facilities and methods of on-line instruction would help ease the use of ICTs.

Individual beliefs about teaching and learning held by instructors are also among the most important factors which influence e-learning adoption in higher education (Mnyanyi, Bakari and Mbwette, 2010; Phillips, 2005). According to Joint (2003), intensive training on computer use and on e-learning applications is a key factor in promoting positive beliefs among instructors regarding the role of technologies in education which leads to a successful implementation of e-learning in an institution. Accessibility to internet has also been reported as another factor that influences instructor's integration of e-learning in higher education in the developing world. It was found by Siritongthaworm *et al.* (2006) that access to all aspects of e-learning technologies and facilities including infrastructure, hardware, software, and the system's administration, to some extent, contributed to successful e-learning implementation. Moreover, availability of limited access points, slow network communication and lack of software applications were the problems mentioned most frequently in the study. Similar conclusions are drawn by Moyo (2006) in his report of international survey of distance education and virtual education for higher education in Sub-Sahara Africa.

### ***Students' Knowledge, Skills, Perceptions and Access to Technologies***

Several students' factors are reported in literature to influence successful e-learning implementation in higher education, which include perceived benefits of e-learning

approaches (Smart and Cappel, 2006), access to e-learning technologies and students knowledge in using technology (Kirkwood and Price, 2005). A perceived usefulness and ease of use of e-learning environment is an important factor for students to either favour or avoid using technology for e-learning. It has been reported in a study by Smart and Cappel (2006) that students feel that the flexibility and convenience of e-learning, such as the ability to access the lessons anywhere at any time, and to complete the units at one's own pace are very pleasant experiences with e-learning delivery. Additional benefits reported included systems' ease of use, the organization of the units and immediate feedback, and the opportunity to gain on-line learning experience. Similar findings are echoed in a study by Abdel-Wahab (2008) which examined factors that predict students' intention to adopt e-learning.

Access to particular e-learning technologies in order to benefit from its potentials is another major factor that must be taken into account when deciding which technology to be used. Although the potential of technologies is widely appreciated among not only students but also other stakeholders in higher education, the access to such facilities is still limited. Existing literature indicates that depending on the context, students have different levels of access to various e-learning technologies, for example it can be from home, workplace, university, or other places (Bates, 1994; Hoven, 2000; and Meyer-Peyton, 2000). The access to different technologies is different for different stakeholders (management, instructors and students) not only within countries or regions but also across countries (Aguti and Fraser, 2006; Kirkwood and Price, 2005; and Nnafie, 2002). In realization of this challenge, establishment of computer laboratories for students as the case at The Open University of Tanzania is necessary (Mnyanyi, Bakari and Mbwette, 2010).

Numerous studies illustrate the state of art in terms of access to technologies in the developing world (see Aguti and Fraser, 2006; Hoven, 2000; and Nnafie, 2002). In a study by Aguti and Fraser (2006) which was designed to find out access to different types of technologies by students and other stakeholders during a distance education programme, it was found that firstly, there was no significant difference with regard to access to the audiocassette and to television although a higher percentage of instructors and management readily had access to both technologies. With regards to access to the video, computers and internet, there seemed to be a highly significant difference in access between management, instructors and students. In these three technologies, only a small percentage of students had access. However, only a small percentage of students (23%) had access to Internet. It was also established that nearly 60% of the students did not have access to video, computer and Internet. Additionally, the few that indicated to have access, only 4% had access to computers at home and 1% to Internet at home. A similar conclusion was reached in a study by Hoven (2000). According to Nnafie (2002), among other sources, Internet cafes also provide access for internet services to people of different ages and from various backgrounds.

A different situation regarding access to e-learning technologies is reported to exist in the developed world. According to Kirkwood and Price (2005) Internet access among UK Open University students in 2002 was about 86% overall. Within the UK population as a whole, however, Internet access has been rising quite rapidly

(National Statistics, 2003). UK household access increased from 9% at the end of 1998 to 43% at the end of 2002, with an estimated 62% of all adults having accessed the Internet by that time. According to the authors, access is inversely related to age: while 95% of those in the 16-24 age group had used Internet, only 15% of those aged 65 or over had used it.

The annual survey undertaken for the Independent Television Commission (ITC) (Towler, 2003) presents similar findings: in 2002 the proportion of UK homes with a computer (46%) was only slightly greater than those with a computer *and* the Internet (43%). The ITC survey also reported that almost half of all homes with children had an Internet connection in 2002, and that there had been a rapid rise in home access (to 46%) among those aged 45-64 years. Although students' access to computers and to the Internet is no longer considered an obstacle in some subject areas, there are still concerns in others (e.g. health and social welfare).

Students' knowledge in using technology should also be considered when deciding e-learning technologies for higher education. According to Kirkwood and Price, (2005) students need to have at least the appropriate knowledge and skills regarding the most frequent use of general software for the preparation of assignments (word processing, spreadsheets and graphics). In addition, most students have some experience of using email and browsing the Web and have gained experience of computer use and other technologies which can be useful during higher education career. A similar claim is also true in the developing countries. According to Moonen (in press), young people in the developing countries interact using MySpace, You tube, emails, chat applications and others without having received any intensive learning on these applications. However, for educational purposes Abdel-Wahab (2008) argues that such young people may need to be introduced (through training) to specific skills they require for e-learning. This will make students more effective in using web based learning technology and strengthen students' beliefs in e-learning ease of use and that in turn strengthens students' attitudes to adopt e-learning.

## **Support Factors**

### ***Instructors Support***

Available literature illustrates that for successful implementation of e-learning in higher education, instructors require different kinds of support which include pedagogical support, technical support and the support from the management (Bates, 2000; Fisser, 2001; and Lewis, 2002 cited in De Boer, 2004).

### ***Pedagogical and Technical Support***

Consideration of necessary kinds of pedagogical and technical support for instructors is an important aspect for effective implementation of e-learning courses in higher education. This is important because most instructors have not learned how to integrate e-learning approaches and therefore for them this is a quite challenging endeavour indeed for which close support seems necessary. From a study of Telnova (2005), three areas that instructors that need pedagogical and technical skills are identified (i) designing of e-learning courses and development (ii) designing of students activities so that e-learning doesn't include just delivery of

content (designing of instruction) (iii) training on how to facilitate e-learning environment which have different characteristics and challenges than teaching in traditional campus/distance education environment.

Literature demonstrates that many instructors face difficulties with transforming their courses from traditional form of presentation into e-learning format. According to Eyitayo & Ginnini (2004), such instructors need support in terms of designing their e-learning course, development and delivery and appropriate technical skills. They argue that the support should be available for the instructor at any stage of the e-learning course design and development process. This can be realized by providing them with appropriate templates for creation of e-learning courses. In a study by Telnova (2005) which was designed to study how the use of templates can support instructors in course designing, found that a well structured template with in-built instructional guidance can reduce time and effort invested in content development.

Instructors need to be trained and supported on how to design appropriate e-learning instruction which includes students' activities so that e-learning doesn't include just delivery of content. To realize this end, there is sometimes need for a one-to-one support for instructors' engaging in e-learning activities, development and implementation. Additionally, a continuous personal coaching to ensure a fearless familiarization with e-learning skills needed for e-learning is also necessary.

Instructors in an e-learning environment need to learn how to facilitate an e-learning environment which has different characteristics and challenges than teaching in traditional campus/distance education environment. For example, often students in a distance education university are working more than learning and they do have to show tremendous commitment to their learning. It is up to the instructor ,therefore, to (i) pace and create resources that make learning for a distance learner as easy as possible (ii) emulate the traditional distance education teaching – learning environment so that students can enjoy studying through e-learning and working with others even without physically meeting them. For instructors to do this, appropriate structures 'need to be in place to support them.

Several suggestions can be derived from literature on how to arrange this strategic support. According to De Boer (2004) the best way to address this is through a support team that could work both proactively to coordinate and lead e-learning related activities such as technical, media production, and educational services. In his study De Boers (*ibid.*) provides a review of four ways of arranging pedagogical supports to instructors which include; (i) ongoing training in the use of technologies and the chance to network with other instructors, (ii) workshops in small groups, (iii) structured contacts among instructors, and (iv) opportunities to see what others have already found out concerning new roles and skills for instructors. Such strategic approaches are shared by many other scholars such as Eyitayo and Ginnini (2004), Fisser (2001) and Moonen (2001).

Existing literature shows a mixed perception of instructors regarding their preferences to types of pedagogical support. For example whereas, in a study by Morgan (2003) it is reported that instructors in several higher education institutions

very much appreciated support in the form of personal individual guidance, in a previous study by Stokes (2001) it was found that over 60% of the instructors did not appreciate the training services that were provided. It is concluded therefore that institutions need to thoroughly understand its instructors and determine 'which form of support works well and how' in a given institutional environment. A similar conclusion was reached in a study by Hoven (2000) in Tanzania.

This help instructors to not only improve their pedagogical skills, but also acts as a means of getting them involved in the process of implementing and integrating technologies in teaching and learning processes. It seems necessary for a higher learning institution which considers integrating e-learning technologies to set up sound structures that will facilitate and provide pedagogical support to instructors.

In terms of technical support, instructors need to be supported in issues like installation of technologies, operation, maintenance, network administration, security and others. According to Sife *et al.* (2007) this is an important part of the implementation and integration of e-learning in education. It is clearly noted from Sife *et al.* that in the context of Tanzania higher education, in most cases technical support is not available, which implies that sometimes instructors and students may require some basic troubleshooting skills to overcome technical problems when using technologies. This is because in most of the developing countries including Tanzania there are very few technical experts to implement and maintain ICTs (Bakari *et al.*, 2005). Appropriate strategies should be in place to ensure that integration of ICTs in teaching and learning process goes together with recruitment, training, retaining and retention of required technical staff.

### ***Management Support***

Management support is critical for successful integration of e-learning technologies in higher education. Since the management provides conditions that are needed, such as ICT policy, incentives and resources, their commitment and interest in modern technologies application at every level is the most critical factor for successful implementation of e-learning (Fisser, 2001; Sife *et al.*, 2007). The management needs to be receptive and supportive not only to the idea of application of e-learning but also supportive to instructors and students in different ways. According to Deepwell and Syson (1999) cited in Fisser (2001), it is on the basis of this favourable conditions that the institution can consider arranging central support services (such as ensuring availability of technologies, training, and the like.) to effect changes among stakeholders in the institution. In this way an institution-wide implementation of e-learning can be successful.

Another aspect of management support for effective e-learning implementation is provision of incentives to instructors. Hall, Thor and Farrell (1996) cited in De Boer (2004) argue that there is need to allocate money for change processes and to develop and implement incentives and rewarding systems is an important way to professionalize instructors and prepare them for their changing roles. However, the predominant conclusion in this respect is that institutions are often reluctant to implement this kind of incentive schemes, a conclusion which corroborates with a study by Leem and Lin (2007). Same problems were also reported in Nijhuis (2002).

According to Leem and Lim (2007), incentives can include providing monetary rewards, awarding extra credits for instructors or faculty by achievement in evaluation, and reducing workload of instructors (i.e. less teaching hours).

### ***Students Support***

Students support is another critical component for effective e-learning implementation in higher education. Thorpe (2002) provides a useful definition of student support as “all those elements capable of responding to a known learner or group”, in other words, it is the human face of course presentation. Three key elements can be derived in her definition: identity, in other words the ability to deal with the needs of identifiable individuals; interaction, the ability to be responsive to student needs; and time/duration, the ability to maintain contact throughout the course. Dzakiria (2004) identifies several areas that students require support services during e-learning supported course; these include; (i) learning support needs, (ii) academic advisors about e-learning strategies and (iii) faculty and technical assistance. Regarding learning support needs it is important that course instructors or the institution for that matter, identifies students’ needs and addresses them accordingly.

According to Dzakiria (2004), the concept of need is very important especially when considering learning support, as it is students’ conceptions of needs and how they should be met which translates the different requirements for support into action, to enable them to connect with other students or instructors. Dzakiria identifies these needs to include access to technologies and how to use the technology in e-learning supported courses. Support on e-learning strategies and technical support from faculty and course instructor were also found in Dzakiria (2004) to be crucial in predicting students’ motivation to use e-learning. It is easily extrapolated that students learning support in an e-learning supported course can be derived from peer interaction during the course, from course instructor, and from institution. Similar conclusions were drawn by Concannon, Flynn and Campbell (2005).

Findings from several studies reveal that students encounter different barriers during e-learning, which include feelings of disconnectedness from the instructors and institutions, experiences of loneliness, isolation and dissatisfaction with their learning. For example it has been confirmed in studies by Dzakiria (2004) and Stark and Warne (1999) that there is lack of learning support to some of the students in terms of academic advisors, faculty, and technical assistance that form barriers to e-learning students and in the long run can affect their motivation. This implies that students lack adequate support during e-learning, a situation which makes them most liable to delay their completion of a programme or drop out altogether (Khoo and Idrus, 2004).

## **DISCUSSION AND CONCLUSIONS**

The focus of the study reported in this paper was to understand factors that contribute to successful integration of e-learning in higher education in the context of Sub-Saharan Africa. This knowledge is essential because it illuminates on how effectively to approach e-learning integration for education delivery in Sub-Saharan

Africa. The main guiding question for the review was “what factors contribute to effective integration of e-learning in higher education in Sub-Saharan Africa?”

The study has identified the following as major factors that contribute to successful e-learning integration in higher education in Sub-Saharan Africa: institutional factors, instructors and students factors and support factors (Fisser, 2001; Mnyanyi, Bakari and Mbwette, 2010; Moyo, 2003; Siritongthaworm *et al.*, 2006).

Several institutional factors such as organizational structure and leadership, broad participation, shared vision, concrete plans and improved access to technologies are responsible for successful implementation of e-learning in higher education. Leadership such as that of The Open University of Tanzania (OUT) is a critical example in this respect (Mnyanyi, Bakari and Mbwette, 2010). The Leadership at OUT is well informed about the potentials of technologies and has created a favorable environment for successful implementation of e-learning in the University. This can be realized through formulation of strong institutional ICT policy, coupled with an implementable ICT master plan, development of awareness and a common understanding in order to have a shared vision about technology priorities and related things. It has been demonstrated in the literature that having an ICT policy is one thing and making it realized is another thing. So there must be concrete plans (action plans) on how the stated policy intentions can be reached within a given time and resources. Issues of allocating or mobilizing financial resources to support e-learning related costs are also reflected in the literature.

The next issue to be considered for effective integration of e-learning relates to knowledge, skills, perceptions and access to technology by instructors and students. Numerous studies have demonstrated that instructors’ knowledge, skills and perceptions about technology use in education and access to internet to be among the critical factors for effective implementation of e-learning (Hoven, 2000; Smart and Cappel 2006). It is noticed from literature that both instructors and students in higher education have varied range of knowledge, skills and perceptions about technology use for educational purposes. Also instructors’ perceptions in terms of the benefits and ease of use of particular technology are other determining factors for effective e-learning integration in higher education in Sub-Saharan Africa. With respect to perceived benefits, literature reveals that the perceived benefits of particular technologies influences its being used in the university. It was found by Siritongthaworm *et al.*, (2006) that where students and instructors find some advantages (benefits) for using technology then they used it readily. The need for easy access to internet facilities has also been considered in the literature as an important factor to be considered. It is obvious that where the availability of access points, slow network communication and a lack of software applications, then the effectiveness of e-learning becomes questionable. Similar conclusion is drawn by Moyo (2006) in his report of international survey of distance education and virtual education for higher education in Sub-Saharan Africa.

Another important factor is the question of support for both instructors and students. Providing e-learning technologies is not enough to get instructors and students start using technology in education. Literature shows that effective implementation of e-

learning requires keen consideration and provision of different kinds of support services to both students and instructors. Regarding support for instructors, there is needed to have pedagogical support, technical support and support from the management (Bates, 2000; Fisser, 2001; Lewis, 2002 cited in Boer, 2004,). For effective e-learning programme, instructors are expected to have adequate support so as to be able to design and develop e-learning courses, design students activities so that e-learning doesn't include just delivery of content (designing of instruction) and more importantly, instructors need to learn how to facilitate e-learning environment which have different characteristics and challenges than teaching in traditional campus/distance education environment (Eyitayo and Ginnini, 2004). Additionally, the management support during transition to e-learning applications in higher education institution is one of the most important conditions for effective implementation of e-learning. Literature shows that management needs to be supportive not only to the idea of e-learning application but also supportive to both instructors and students. It has to create favourable environment where policy and concrete (action) plans guide the institution towards e-learning integration in education. Instructors who attempt to integrate e-learning approaches need to be considered for different types of incentives so as to motivate them but also to make others also interested. Beside instructors, students also need different kinds of support on identification of their learning needs, e-learning strategies and technical assistance on how to use technology in their learning.

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