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Abstract

Education is a key factor for economic development. There is no single country that has achieved sound economic development without a well established education system. But access to tertiary education in developing countries is very limited, which is not more than 4% in Ethiopia. The demand for education exceeds the ability to deliver in most African countries, including Ethiopia. This is due to the huge costs of establishing, equipping and sustaining new higher education facilities. In general, there are huge problems in the education sector of these countries in the areas of access, quality and equity. In this regard countries look for alternative systems to tackle the prevailing problems in education sector. E-learning has been considered as one major alternative and it is believed that it can help economically underdeveloped countries to meet development challenges. But, available literature indicate that the implementation of e-learning in these countries is mainly constrained by poor technological infrastructure and inadequate policy and regulatory frameworks. According to literature, few studies focus on the policy, regulatory framework and technological infrastructure readiness towards wider implementation of e-learning initiatives within the African context. Moreover, no study is pertinent to the Ethiopian context in particular. The aim of this study is, therefore, to critically assess the existing situation in Ethiopia in terms of the policy, regulatory and infrastructural frameworks in the areas of e-learning and demonstrates the extent of readiness of the country to implement e-learning in this regard. The research question of the study is that to what extent the existing technological infrastructure, policy and regulatory framework hinder the successful implementation of e-learning in Ethiopia?

Key words: e-learning, policy, regulatory framework, technological infrastructure, higher education institutions, Ethiopia

Introduction

Studies indicate that there is a positive relationship between economic growth and development in education. It is a well accepted truth that there is no single country that has achieved sound economic development without a well established education system. Knowledge has become the key to the future prosperity and social well-being of nations. In the words of Ekundayo and Ekundayo (2009), nation's route to become a successful knowledge economy is its ability to also become a learning society (Sharma et al., 2009). There is a growing concern that the education system in developing nations is not responding to the requirements of new global trends of economic growth. In developing countries, the demand for higher education enrollment exceeds what the education institutions can hold. A study conducted by Prakash (2003) as cited by Kahiigi et al. (2008) points out that access to education in developing countries was limited with less than 5% of students enrolled in tertiary education compared to the world average of 16%. The demand for education in Africa also exceeds the ability to deliver and is not offered to significant portions of the population (Gunga and Ricketts, 2006). Enrollment rates in higher education in Sub-Saharan Africa are by far the lowest in the world. Although the gross enrolment ratio has increased in the past 40 years – it was just 1 percent in 1965 – it still stands at only 5 per cent (Bloom, Canning, and Chan, 2006 cited in Ekundayo and Ekundayo, 2009). However, governments and development agencies in Africa seeking to address the challenges of increasing access and widening participation are hindered by the huge costs of establishing, equipping and sustaining new higher education facilities in the recent educational reform (Bajinath et al., 2008 quoted in Ekundayo and Ekundayo, 2009). In addition to rising enrollment, increasing numbers of adult learners as well as competing responsibilities in adult learners' lives (Farrell and Isaacs, 2007), are also straining the resources of higher education institutions.

Ethiopia is one of the most populous countries in sub-Saharan Africa, constituting more than 75 million inhabitants. The “Ethiopian Industrial Development Strategy” (August 2003) stresses the need for industrial development oriented towards agriculture-led growth, export-led industrialization, and strengthening labour-intensive industries. Capacity building has been identified as the key factor in achieving these goals. However, just like the situation faced by other developing countries in general and

Africa in particular, Ethiopian education system couldn't respond to these needs as expected. This is because the education system has a problem of creating access, quality, equity and effectiveness. In terms of access, Ethiopia's tertiary level Gross Enrolment Ratio in 2008/09 was around 4% (MoE, 2010) which places it among the lowest ranking in the world. On the other hand, the current tertiary level Gross Enrollment Ratio (GER) for Sub-Saharan Africa is 6% (UNESCO, 2010). The adult literacy rate in Ethiopia is only 55.9% (UNESCO, 2010). This means that around 44% of adults are illiterate. In terms of equity which comprises the gender, urban-rural and regional disparities, it is also very far from the level expected. Gender parity index (ratio of female to male enrolment rates) shows 0.41 (MoE, 2010).

The Ethiopian female's access to higher education has been severely limited. According to the 2008/2009 Education Statistics Annual Abstract of the Ministry of Education, female accounted for only 29% of degree enrolments in regular and evening programs of public institutions. Notably, just 22% of graduate students are female. Quality is also compromised because of the existing massification of education without sound increase in human and material resources. High student-instructor ratio and the dominance of less experienced instructors have also seriously impacted the efficiency of the education system. These problems have become more appealing due to the conditions in the labor market that requires competent skill coping up with the new and rapidly changing working environment. The current problem in most developing countries in general and in Ethiopia in particular is, on the one hand, shortage of qualified human resource for all levels of activities, and, on the other hand, a growing youth unemployment due to lack of the necessary skill, training and knowledge that the labor market requires.

In this regard, countries look for alternative systems to tackle the prevailing problems in the education systems. E-learning has been considered as one major alternative to provide solution to the limitation of the conventional face-to-face class-room based education system. It became more attractive since it growingly integrates ICT, such as digital content development, on-demand delivery, virtual interactive communication allowing collaborative learning, etc. In most developing countries including Ethiopia, e-learning is

only at its infancy; its role is not well-defined and have not been given the necessary attention. Despite the problems that developing countries face in implementing e-learning, it is believed that it can help economically under developed countries to meet development challenges (Ndume et al., 2008). But, the key issue here is how far e-learning is given a priority by policy makers or how far the government is committed to expand e-learning to solve the major problems that the education sector is facing.

In some eLearning studies conducted in developing countries, it was found that lack of vision and framework in implementing eLearning lead to a failure of these eLearning projects (Kizito and Bijan, 2006; Ndume et al., 2008). According to Zake (2008), in any developing community, the use of ICT in pedagogy is undermined by the problems of connectivity, access and policy. In the words of Bhattacharya and Sharma (2007), Inoue and Bell (2006) claimed that “. . . in order to keep pace with this change, policymakers have opportunities and obligations to move forward with a new direction for teaching and learning in the twenty-first century; all educational stakeholders must collaborate in creating a new vision for education” (Inoue and Bell, 2006). Limited infrastructure (i.e., lack of efficient and affordable connectivity - high cost of Internet connection/bandwidth and erratic power supplies) significantly affected the wider implementation of e-learning in Africa (Ndume et al., 2008; Hollow and ICWE, 2009; Gunga and Ricketts, 2006). In the keynote speech made by Ms. Josephine Ouédraogo, who is Acting Deputy Executive Secretary at UN Economic Commission for Africa on the First International Conference on ICT for Development, Education and Training, she mentioned that governments and their partners should ensure that legal and regulatory policies in Africa promote private sector investments in telecommunications infrastructure, as well as other support services to ensure an indigenous e-learning environment. Successful implementation of e-learning also depends on proper formulation of regulatory framework consisting intellectual property right, privacy protection and issues of accreditation and quality assurance.

As will be discussed in the literature review, limited studies focus on the policy, regulatory framework and technological infrastructure readiness towards wider implementation of e-learning initiatives within the African context. Moreover, no study was found to be pertinent to the Ethiopian context in particular. The aim of this study is

therefore, to critically assess the existing situation in Ethiopia in terms of the policy, regulatory and infrastructural frameworks in the areas of e-learning and demonstrates the extent of readiness of the country to implement e-learning in this regard. The study is timely and relevant because the world is moving fast towards integrating ICT to education system and for a poor country like Ethiopia identifying national priorities in line to e-learning has a potential to help meet the country's educational and manpower needs and provide global access to learning opportunities for students. It is also timely because the country is striving to meet the Millennium Development Goals (MDGs) in the education sector. It can also minimize the digital divide between Ethiopia and other countries as well as within Ethiopia (i.e., the rural-urban dichotomy?). The results of the study have a potential value for policy makers to formulate appropriate policy direction and to take appropriate action.

The paper is organized in five sections. The first section presents the literature review which provides theoretical support to the study. The second section introduces the topic of research which is derived from research gap identified in the literature review. The third section presents dimensions of policy, regulatory and technological infrastructure of e-learning which will be used as a point of reference in studying the area. The fourth section deals with the methodology applied which constitutes data collection and analysis methods. In the last section, we present the preliminary results of the study and concluding remarks.

Literature Review

It has been suggested that the current phase of economic development is one in which knowledge and learning are more important than in any other historical period. This is because, regardless of the current capabilities of African countries in the 'learning economy', individuals, firms and even countries will be able to create wealth and obtain access to wealth in proportion to their capacity to learn (Lundvall, 1996 cited in Nawaobi, 2008). For countries to compete in the global market, they must embrace the technological advancements such as e-learning and use them as a strategic tool so that

they are capable of transforming educational and business practices (Fry, 2001 cited in Bhattacharya and Sharma, 2007).

E-learning has a wide variety of definition, but ultimately it is used to describe the fields of online learning, web-based training, and technology-delivered instruction (Eke, 2010). E-learning is also defined as the process of extending learning or delivering instructional materials to remote sites via the Internet, intranet/extranet, audio, video, satellite broadcast, interactive TV, and CD-ROM, i-Pods, e-mails, wireless, and mobile technology (Lee-Post, 2009; Eke, 2010). It is learning enabled by electronic technology. E-learning covers a wide set of applications and processes than online learning which constitutes just one part of technology-based learning and describes learning via internet, intranet, and extranet.

E-learning can be classified into two broad categories: synchronous and asynchronous (Cantoni, 2004 cited in Eke, 2010). Synchronous learning uses a learning model that initiates a classroom course, lecture or meeting using the Internet technologies. In synchronous learning, the interaction is live; it requires all the participants to be available at the same time. It offers activities like lessons, assignments, chats, instant messaging, blogging, and forums. In this platform, students are able to throw questions to their instructors, and their questions are given answers to. Asynchronous learning is described as a web-based version of computer-based training (CBT), which is typically offered on a CD-ROM or across an organization's local area network. The learner can assess the course at any time at his or her own pace (Takalani, 2008 quoted in Eke, 2010).

E-learning provides faster learning to reduced cost, increased access to learning, and clear accountability for all participants in the learning process (Eke, 2010). Teaching in a traditional set-up has its own limitations and a traditional teacher can never provide 24x7 services to his/her students, which can be delivered through e-learning (Bhattacharya and Sharma, 2007). According to Hollow and ICWE (2009), e-learning increases educational opportunities and creates access to quality open educational resources and allow equitable access to information. The authors also mentioned that e-learning has a

potential to bridge urban-rural disparities and provide opportunities for widening access and study possibilities in higher education for under-privileged groups in societies as well as under-privileged societies as a whole. Gunga and Ricketts (2006) also stated that e-learning has the potential to enable Africa to achieve education for all. As Africa faces severe shortage of trained teachers, the authors said, e-learning is increasingly gaining universal acceptance as a viable means of enabling large number of students to access education. Nwaobi (2008) also emphasized that “as the store of human knowledge continues to grow in size and complexity and to be updated at an ever-faster pace, people need to engage in structured and systematic learning throughout their lives. Therefore, lifelong learning is, especially important in African countries, where most adults never received basic education during their youth.” Thus, e-learning meets the increasing demand among learners, employees and communities for lifelong learning opportunities.

Despite the potential benefits of e-learning, there are lots of challenges that developing countries face in implementing and expanding e-learning initiatives. One of the critical problem areas is ICT infrastructure. Major components of ICT infrastructure include: transmission systems, interconnections, fixed network, cellular and wireless network and Internet and data network as well as broadcasting (TV, Radio and CATV network). Looking at the situation in Africa, there is insufficient ICT-related infrastructure such as electricity, telecommunications, computers and trained personnel (Gunga and Ricketts, 2006). When Nwaobi (2008) stated about the infrastructural problems of Africa, he indicated that “the development of specialized electronic networks is constrained by the wire liability and inflexibility of the telecommunications infrastructure, poor regulatory framework and lack of standardization and coordination.” Internet connectivity in tertiary institutions in Africa is inadequate, expensive and poorly managed (Twinomugisha, Magochi and Aluoch, 2004 cited in Gunga and Ricketts, 2006). Bandwidth is the scarcest ICT resource in African universities and this is mainly due to vetoes on academic institutions’ accessing international circuits and high licensing fees for connecting to advanced circuits for obtaining authorization (Adam, 2003 cited in Ekundayo and Ekundayo, 2009). Steiner et al. (2005) as cited in Gunga and Ricketts, (2006) stated that “the average African university has bandwidth capacity equivalent to a broadband

residential connection available in Europe, pays 50 times more for their bandwidth than their educational counterparts in the rest of the world, and fails to monitor (let alone manage) the existing bandwidth... as a result, the little bandwidth that is available becomes even less useful for research and education purposes.” Limited bandwidth can cause downloading to be very slow and that can have a negative effect on the learning process of the learner (Takalani, 2008 quoted in Eke, 2010). When Ekundayo and Ekundayo (2009) state about the kind of cost involved in e-learning and the situation in Africa they indicated that “ICTs costs often include that of computers and peripherals, video equipment, specialized tools like digital microscopes, electrical wiring, Internet access, lighting, air-conditioning, space, network equipment, software, manuals, books, videos, audio-tapes, and other supplies. However, the presence of these supplies is depressingly low in African countries.” Another critical ICT-related problem in Africa, as mentioned by Farrell and Isaacs (2007), is “a general lack of human resource capacity to provide ICT training and equipment servicing. There is also a lag between the availability of ICT infrastructure and the ability of agrarian societies to integrate it to benefit national development”. Despite all these problems, as stated by Nwaobi (2008) “the use of ICTs in support of formal and informal education offers the potential to strengthen the capabilities of the populations in African countries with the expectation that this, in turn, will strengthen the science and technology base.” Therefore, for e-learning to succeed in developing world it needs to build infrastructure along with some degree of connectivity (Gunawardana, 2005 cited in Eke, 2010).

There are countries where the regulatory framework doesn't allow liberalization of telecommunications that could enable more competition and diversity of service providers in the industry and having the effect of lowering the cost of access to information and telecommunication infrastructure. Due to this problem, the costs of connectivity remain unaffordable for most education institutions (Farrell and Isaacs, 2007). As a solution to telecommunication problems in African countries, Nwaobi (2008) recommended that “telecommunications entity, whether government owned or private, should be authorized to do business, raise capital, and plan future operations with as little internal interference as possible and practicable from either the policymakers or the

regulatory bodies. In turn, the authority of the regulatory bodies to interfere with operations should be limited to the minimum necessary to ensure that broad goals of national telecommunications policy are carried out, that the service meets established standards, and that prices charged do not exceed reasonable levels.” He also extended his argument by saying that “the greater the degree of autonomy and commercial orientation of the telecommunication entity, and the greater the role of competitive operators and suppliers, the more need there will be for explicit independent regulatory mechanism to reconcile private interests with social and national needs” (Nwaobi, 2008).

Apart from ICT infrastructure problem, lack of comprehensive policy and regulatory framework is also another critical challenge that inhibit successful implementation of e-learning initiatives in economically underdeveloped nations in general and Ethiopia in particular. Some of the policy issues include: access, equity, affordability, benchmarking, content development and intellectual property rights (Gunga and Ricketts, 2006). In addition to these policy issues, awareness creation about the potentials of e-learning, sharing of e-resources, public-private partnership for resource mobilization and development of integrated e-learning curriculum are included in the National ICT Policy of Kenya. One of the purposes of the policy is to embed e-learning by making it integral to broader strategies for teaching and learning (Brown et al., 2007). ICT policy in education sector can be included in general education development plans, national poverty reduction strategies, telecommunication acts, national science and technology policy (Farrell and Isaacs, 2007).

One of the issues to be included in the regulatory framework is regulation concerning intellectual property (IP) in education. It concerns the rights issues arising from authorship and ownership of materials, and the access to and use of those materials by others (Windrum and Crook, 2006). The other major component is the quality assurance. The quality assurance constitutes aspects of content presentation and a set of learning expectations that are different from those arising within conventional face-to-face teaching (Windrum and Crook, 2006). In line with building and ensuring quality, the major initiatives include: provision of support, information and guidance for learners,

professional development and support for instructors, leadership development and development of high quality e-learning content (Brown et al., 2007).

Topic

From the literature review, we learned that ICT infrastructure, policy and regulatory framework are the key areas of challenges that hindered the effective implementation of e-learning initiatives in economically underdeveloped nations, including Ethiopia. Therefore, the topic of this research mainly focuses on the assessment of the existing situation in Ethiopia in terms of the policy, regulatory and infrastructural frameworks in the areas of e-learning with the intention of developing an appropriate framework that can facilitate the implementation and expansion of e-learning in Ethiopia. The research questions include:

. To what extent the existing technological infrastructure, policy and regulatory framework hinder the successful implementation of e-learning in Ethiopia?

Dimensions of Policy, Regulatory & Technological Infrastructure

As it is indicated in the previous sub-sections, the aim of the study is to assess the current status of policy, regulatory and technological infrastructure, identify problems and demonstrates the extent of readiness of the country to implement e-learning in this regard. The reviewed literature indicated critical dimensions that are affecting e-learning implementation in economically underdeveloped countries. These dimensions are used as a lens to investigate the case under study. The dimensions are presented as follows in the Figure 1.

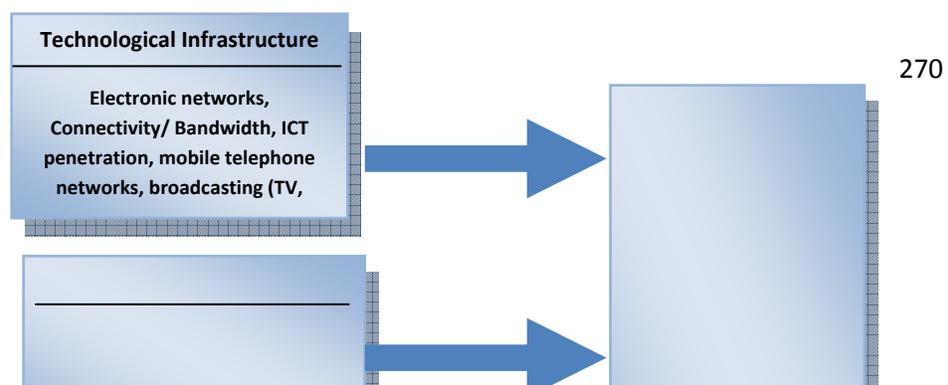


Fig. 1 -- Dimensions of e-learning implementation

Source: Developed by the author, August 2011.

Methodology

In this study, the main concern is to address why wider implementation of e-learning became impossible in Ethiopia from the policy, regulatory and technological infrastructure perspective given their current status and how the situation can change in favor of e-learning implementation so that it is possible to look at alternative ways.

In this study, multiple case study research approach was followed. The study involved different stakeholders consisting the Higher Education Relevance and Quality Agency (HERQA), Higher Education Strategy Center (HESC), Ministry of Communication and Information Technology, Ethio Telecom and Selected Higher Education Institutions. We adopted a mixed-method approach of data collection (i.e., using questionnaire which was designed for collecting data from Higher Education Institutions and an interview and

document analysis. The questions for both the questionnaire and interview protocol have been derived from the extensive literature review conducted. Since it is a ‘research-in-progress’, only a preliminary date has been included in this paper.

Questionnaire was distributed to seven higher education institutions selected based on purposive sampling technique in order to conduct a preliminary survey, two for private higher education institutions and five for the public universities. From the public universities Addis Ababa University, Hawasa University, Arba Minch University, Bahir Dar University and the Ethiopian Civil Service University were included. Among the private HEIs, St. Mary’s University College and Admas University College were selected as sample institutions at which the study was conducted. Questionnaires were returned from all the public universities as well as from one private university college.

An interview protocol was given to the respective officials of the Ministry of Communications and Information Technology, the Higher Education Relevance and Quality Agency (HERQA), the Higher Education Strategy Center (HESC) and the Ethio-Telecom. Out of these Organizations, the Ministry of Communications and Information Technology and the HESC responded to those questions in the protocol by providing the researcher with different documents that could address the questions mentioned.

In order to analyze the quantitative data collected, descriptive statistical techniques were used and to reply to those questions in the survey instrument. In addition, the qualitative data generated from interviews were analyzed using thematic analysis technique. The study also employed document analysis method. Finally, both quantitative and qualitative data were integrated with the survey results while writing-up the research report.

Findings

The presentation of the findings from the survey instruments, interview and document analysis is structured based on the key issues raised in the research question, i.e., technological infrastructure, policy and regulatory framework. But before presenting these issues we present the results of the assessment of the current status of e-learning implementation in the universities.

Status of e-learning Implementation

Universities were asked to indicate the stage of e-learning implementation. The result is summarized as in Table 1 below.

Table 1- Status of e-learning Implementation

Higher Educ. Ins.	Initiation	Implementation
Addis Ababa University	✓	
Bahir Dar Univ.	✓	
Hawasa University	✓	
Arba Minch University		✓
Civil Service University		✓
Ma Ramayah, T.; and Jantan, M. 2002. Technology acceptance: An individual perspective current and future research in Malaysia. <i>Pearson & Young</i> . St. Mary's University		✓

Source: Own survey results, August 2011.

Three of the universities are at the initiation stage and the other three are at the implementation stage. Response from Arba Minch University stated that they have already finalized the testing phase and the team of four individuals from different departments has got an intensive training on how to implement and manage more than ten courses already uploaded on-line.

The universities were also asked to state the factors that hinder the wider implementation of e-learning. Accreditation problem, lack of policy direction, lack of readiness and awareness were indicated as key factors.

They were also asked to indicate the kind of e-learning software used for the implementation. Moodle Learning Management System, Content Management System, Conferencing Software are mainly used for implementing e-learning. The universities also indicated that web and synchronous real-time streaming are the main delivery formats deployed. Except one university, all confirmed that there is adequate provision of technological infrastructure including network connections and computers. Finally, the respondents were asked to indicate the enabling and constraining technological and practical factors for e-learning use in the university. High cost of bandwidth, lack of computer skill, lack of awareness about the potentials of e-learning, limited number of computer lab, insufficient computers, and limited initiative from instructors to provide course script and to promote the use of e-class, lack of ownership and lack of skilled manpower are cited as major constraints. Investments in network infrastructure, expanding computer labs, and equipment as well as reduced price of broadband connection were cited as enabling factors.

Technological Infrastructure

In this study, the focus is more on connectivity when we consider technological infrastructure. All the universities included in the survey responded that e-learning is one of the main objectives of connecting to the Internet and they use fiber optic cable as a medium to connect to the Internet. Regarding the question on the up-link and down-link bandwidth the responses given are summarized as follows.

Table 2 - Universities' Bandwidth Size

Higher Educ. Institute	Fiber Putdowns Link (Mbps)	VSAT Putdown Link
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Addis Ababa University	100	-
Bahir Dar University	80	-
Hawasa University	4	-
Arba Minch University	100	-
Civil Service University	40	512 Kbps
St. Mary's University	4	-

Source: Own Survey results, August, 2011.

From the above table it is clear that the majority of the universities have high bandwidth capacity. In this regard, they were asked whether or not the existing connectivity is adequate to facilitate rapid deployment of e-learning. Three of the universities responded 'yes' and the other three responded 'no'. One critical problem raised from the universities that said 'no' is that most of the time they are getting connection speed which is much less than they subscribed. One university said that most of the time they had got 5% of the bandwidth that the university subscribed. Similarly, the three universities that said 'yes' agreed that the quality of the telecommunication service is adequate and internet connectivity for e-learning is reliable and the other three disagreed to this idea because of the above stated reason. In this regard, Ismail (2011) conducted a study on server performance measurement for e-learning system in campus environment and they found that the bandwidth usage for 20 concurrent users in a real-time voice over IP and video conferencing is about 224 Mbps. Given this rate as indicator, when the universities get into the real deployment of e-learning system within campus environment, the existing capacity is not adequate to deliver e-learning.

The above facts demonstrate the existing capacity at the institution level. We need also to consider the national capacity, whether the existing capacity is adequate to deploy and expand e-learning for the wider public. We can view this from access to connectivity and maximum connection speed perspective. The following table demonstrates these aspects.

Table 3 - Internet Service Subscription

Service	Maximum Bandwidth	Number of Subscribers
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Broadband (EVDEO, WCDMA, ADSL)	4Mbps	16,529
Narrowband (1x, dialup, ADSL<256k)	256kbps	112,235
Total Internet Subscribers		128,764

Source: Ethio Telecom, June 2011.

It is indicated in the table that 87% of the subscribers are under the narrowband subscription, dominantly dialup with a maximum connection speed of 56kb. The dominant number of subscribers is composed of corporate customers rather than residential customers. In this case, access of connectivity to the wider public is so limited. Access to the Internet is also highly skewed to urban rather than rural parts of the country. Therefore, the national capacity in terms of access to connectivity and bandwidth is very low to deliver e-learning to the wider public. The government planned to increase the total number of Internet service subscribers from the current level of 128,764 to 3.69 million. It is also planned to increase the current global link capacity of 3.255 GB/S to 20 GB/S in the next 5 years. However, whether this plan addresses the problem of urban/rural digital divide and the problem of access to the wider public from the aspect of expanding services like e-learning, e-commerce, e-government, etc. at affordable price is not clearly set.

Policy and Regulatory Framework

Issues related to policy and regulatory framework was assessed at both institutional and national level.

At institutional level

Data from survey, interview and document analysis are presented as follows.

Table 4 - Response on policy/regulatory issues

	Yes	No
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Policy/Regulatory Issues	No. of Institutions	%	No. of Institutions	%
Is ICT master plan or ICT policy Document available?	1	17	5	83
Is e-learning incorporated in the ICT policy document?	1	17	5	83
Are there policies enabling e-learning in the university?	3	50	3	50
Is e-learning initiative aligned with the institution's mission?	4	67	2	33
Are there stipulated regulations guiding e-learning in the university?	3	50	3	50
Does the university provide support to the teaching staff in obtaining appropriate copyright for e-learning materials?	1	83	5	17

Source: Own survey result, August 2011.

As it is indicated in the above table, ICT policy is not yet formulated in most universities and thus, e-learning initiatives are not supported by relevant policies in most of the institutions. Some of the universities are in the process of drafting the ICT policy and stated that e-learning will be one of the major components. In the institutions where there are e-learning or ICT related policies respondents indicated that some of the available policies on the ground that enable e-learning implementation include: those pertaining to Internet infrastructural acquisition, improving students'/staff access to the Internet, ensuring data/information security and ensuring acceptable use of ICT equipment. Institutions also stated that regulations pertaining to Internet access, virus invasion control and acceptable usage are already in place and are guiding the e-learning in the University.

At national level

The national ICT policy has already been formulated but is not yet approved. Among the key strategies stated in the policy document is that education sector has been stated from the perspective of strengthening institutional capacity in education and training, and implementation of computerized information systems and applications. Expanding access to education and training and improving quality of using ICT have been mentioned as a guiding principle for the implementation of the ICT policy. The policy also states the strategic role of ICT human resource development. Broadening access to education and training opportunities by promoting electronic distance education and virtual learning as well as promoting ICT-assisted education and training in the country in collaboration with private sector, bilateral and multilateral organizations has been clearly stated as objectives of the ICT policy in the education sector. Mobilizing resources to purchase ICT equipment and improving connectivity within educational institutions are also part of the strategies of ICT policies pertaining to education sector. Therefore, we can say that e-learning is somehow included in the national ICT policy of the country. But it is stated in a very general terms and the policy lacks detail objectives and strategies pertaining to e-learning. We can take the ICT policy of Kenya as an example and see the extent of emphasis given to the e-learning. E-learning has been treated independently while presenting challenges of ICT in national development where they specified the problem of lack of policy framework on e-learning and proposing solution in terms infrastructure, content development, awareness creation, sharing of e-learning resources, promoting centers of excellence to host, develop, maintain and provide leadership of better learning resources and implementation strategy as well as exploiting e-learning opportunities to offer Kenyan education programme for export and integrating e-learning resources with other existing resources. About 11 strategies are also set independently for e-learning. Therefore, from this perspective we can say that e-learning is not given the required level of focus in our national ICT policy.

In addition to the National ICT Policy, there is also Ethiopian ICT Policy for the Higher Education Sector (2010 – 2015) which was compiled by the Ministry of Education in cooperation with VU University Amsterdam and sponsored through the Netherlands Program for the Institutional Strengthening of Post-secondary Education and Training

Capacity. The policy covers ICT issues that the public HEIs want to address jointly. But the needs and implementation strategies of e-learning are not clearly articulated in the policy document. In general, both the national ICT policy and the Ethiopian ICT Policy for the Higher Education Sector do not provide the necessary policy support for the wider implementation of e-learning.

Conclusion and Recommendations

The results of the survey study, the interviews and document analysis showed that although there are some initiatives at the institutional level, e-learning implementation and expansion is hindered by problems in the areas of technological infrastructure, policy and regulatory framework at both the institutional and national level. Connectivity/bandwidth problem as well as unaffordable price and limited availability of computers and labs are identified as the most technological deterrent factors inhibiting the wider implementation of e-learning in the country. In addition, it is proved that there is no well articulated e-learning policy and regulatory framework both at national and institutional level which has hampered its deployment and expansion.

The government should give priority to the e-learning initiatives and make the necessary interventions in the areas of technological infrastructure, policy and regulatory framework in order to fill the gaps and promote e-learning in the country. Deregulation of Ethio-Telecom is one of the critical steps towards improving connectivity and providing quality service at affordable price. Other developing nations' experience show that public access sites (e.g., internet cafes/tele-centers and libraries) are key to broadband-rich areas and there is also a need to expand and strengthen such sites with adequate technological facilities and connectivity so that e-learning become accessible to the wider public. There is high penetration rate of mobile in Ethiopia. The number of mobile subscribers reached 6.5 million and it will rise up to 10 million in the next five year. Therefore, we need to think in terms of exploiting the potentials of mobile learning. Of course, conducting e-learning through mobile has its own technical requirements, including quick response

time as well as interface and website specifically designed for mobiles. Infrastructural requirements for mobile learning are also challenging.

REFERENCES

Bhattacharya, I.; and Sharma, K. 2007. India in the knowledge economy – an electronic paradigm. *International Journal of Educational Management*, 21(6), 543-568.

Brown, M.; Anderson, B.; and Murray, F. 2007. E-learning policy issues: Global trends, themes and tensions. *Proceedings ascilite Singapore 2007*.

Eke, H. N. 2010. The perspective of e-learning and libraries in Africa: Challenges and opportunities. *Library Review*, 59(4), 274-290.

Ekundayo, M. S. and Ekundayo, J. M. 2009. Capacity constraints in developing countries: A need for more e-learning space? The case of Nigeria. *Proceedings ascilite Auckland 2009*.

Farrell, G.; and Isaacs, S. 2007. Survey of ICT and education in Africa: A summary report, based on 53 country surveys. Washington, DC: infoDev/ World Bank. [Online]. Available: <http://www.infodiv.org/en/Publication.353.html>

Gunga, S. O.; and Ricketts, I.W. 2006. Facing the challenges of e-learning initiatives in African Universities. *British Journal of Education Technology*, 38(5).

Kahiigi, E. K.; Ekenberg, L.; Hanson, H.; Danielson, M.; and Tusubira, F. F. 2008. Explorative study of e-learning in developing countries: A case of the Uganda education system. *IADIS International Conference e-Learning*.

Kaur, K.; and Abas, Z. W. 2004. An assessment of e-learning readiness at the Open University Malaysia. *International Conference on Computers in Education*.

Leacock, T. 2005. Building a sustainable e-learning development culture. *The Learning Organization*, 12 (4), 355-367.

Lee-Post, A. 2009. E-learning success model: An information systems perspective. *Electronic Journal of e-Learning*, 7(1), 61-70. [Online]. Available: www.ejel.org

McPherson, M.; and Nunes, M. B. 2006. Organizational issues for e-learning: Critical success factors as identified by HE practitioners. *International Journal of Educational Management*, 20(7), 542-558.

- MoE. 2010. *Education Statistics Annual Abstract 2001 E.C. (2008 -2009 G.C.)*. Addis Ababa: EMIS, Planning and Resource Mobilization Management Process, Ministry of Education. [Online]. 213p. Available: <http://www.moe.gov.et>
- Mitchell, A.; and Honore, S. 2007. Criteria for successful blended learning. *Industrial and Commercial Training*, 39(3).
- Ndume, V.; Tilya, F.N.; and Twaakyondo, H. 2008 . Challenges of adaptive e-learning at higher learning institutions: A case study in Tanzania. *International Journal of Computing and ICT Research*, 2(1), 47-59. [Online]. Available: <http://www.ijcir.org/volume1-number2/article6.pdf>
- Nwaobi, G. 2008. Energy power, digital infrastructure and e-learning platforms: African experience. MPRA Paper No. 11136. [Online]. Available: <http://mpra.ub.uni-muenchen.de/11136/>
- Orlikowski, W.J.; and Baroudi, J.J. 1991. Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, 2(1).
- Rhema, A.; and Miliszewska, I. 2010. Towards e-learning in higher Education in Libya. *Issues in Informing Science and Information Technology*,7.
- Suddaby, G.; and Milne, J. 2008. Coordinated, collaborative and coherent: Developing and implementing e-learning guidelines within a national tertiary education system. *Campus-Wide Information Systems*, 25(2).
- UNESCO Institute for Statistics. 2010. UIS statistics in brief. [Online]. Available: http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=121&IF_Language=eng&BR_Country=2300 [September 5, 2010].
- Windrum, C.; and Crook, C. 2006. Addressing regulatory issues arising within cross national, collaborative e-learning development programmes. *Networked Learning, Symposium 03*.
- Zake, J.M. 2008. Challenges to e-learning in developing communities of Africa. Digital learning. [Online]. Available: <http://digitallearning.in/> [August 25, 2010].