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Barriers to the Adoption of E-Learning in Kenyan Schools: A Review Study

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Abstract

E-learning is learning that is supported by use of electronic technology aided by computers. Emphasis on teacher centered teaching could be changed to student centered with the emergence of using E-learning technologies in schools thus creating an environment that is interactive and interesting for learning. A pedagogical shift has been facilitated by E-learning entailing an interaction between learners and Teachers in education. Recent studies portray a gloomy picture about the adoption of E-learning. This paper analyzes the trends and progress in the adoption of E-learning with the aim of offering areas of key interventions for stakeholders and policy makers in the education sector. The result is a set of recommendations in enhancing the adoption of E-learning in Kenyan institutions.

Keywords: E-Learning, Internet, Computing, Education, Learning Institutions.

Introduction

The Internet and its applications in education and industry have significantly influenced how we teach and learn. This has all occurred as a consequence of emerging technologies and the demands for online instruction by consumers. In the midst of this environment of rapid growth, a new form of pedagogy has emerged called e-learning. What then is e-learning and its acronym “e”. The term “e” is an

acronym refers to electronic. *Electronic is* any equipment or interconnected system or subsystem of equipment that is used in the creation, conversion, or duplication of data or information. That is, any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term electronic includes, but is not limited to, computer hardware and software, operating systems, web-based information and applications, telephones and other telecommunications products, video equipment and multimedia products, information kiosks, World Wide Web sites, multimedia, and etc.

E-learning is a general term that is used to describe the learning process in which information and communication technology could be utilized. Hence technology is broadly defined as the application of scientific knowledge which includes tools, techniques, products, processes, and methods to practical tasks.

The use of technology has become an integral component of work, education, communication, and entertainment (United States National Library of Medicine, 2004). According to Connolly and Stansfield (2007) e-learning has gone through three distinct generations. The first generation, took place from 1994-1999 and was marked by a passive use of the Internet where traditional materials were simply repurposed to an online format. The second generation took place from 2000-2003 and was marked by the transition to higher bandwidths, rich streaming media, increased resources, and the move to create virtual learning

E-learning Rankings of Regions

E- learning ranking are released annually by the Economic Intelligence Unit (EIU). The EIU is the world's foremost provider of country, industry and management analysis in terms of use of electronic technology. The results released in 2010 shows a digital divide between developed countries and developing countries (EIU, 2010). The rankings show the level of preparedness of countries to benefit from use of electronic technology.

The 2010 regional ranking indicates that North America and Western Europe are more ready than other regions of the world. They therefore benefit more from use of ICT than countries in the

developing world. The e-rankings allow a country to gauge the success of its ICT strategies against those of other countries.

The success of North America to its current level is attributed to good e-strategy, developed infrastructure and large investments in the ICT sector. These rankings however consider E- learning of the whole economy and not education specifically. There is need for E- learning survey in education globally considering the role that education plays in development.

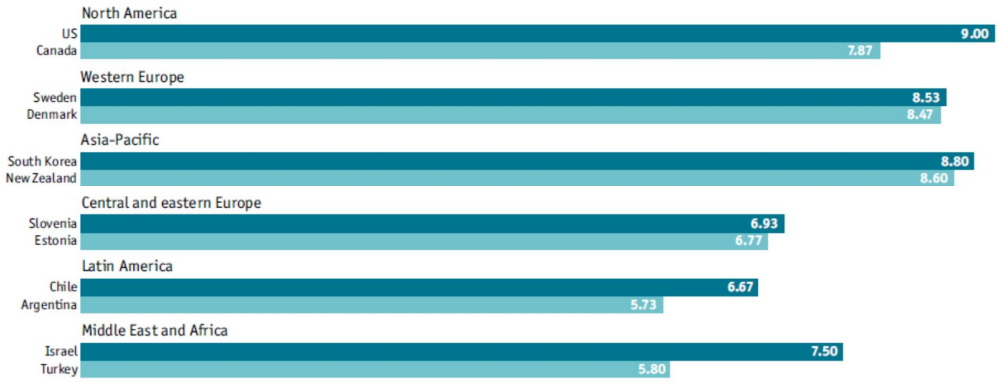

Figure 1: Regional digital economy rankings leaders: social and cultural environment (score)

Source: Economist Intelligence Unit 2010.

Extent of adoption of E- learning in Kenyan Secondary Schools

The adoption and use of e-learning in education institutions in developing countries remains very limited despite a decade of large investment in information and communication technologies (Trucano, 2005). Kenya like other developing countries struggles with high levels of poverty and this has an effect on the adoption and access to ICT (OECD, 2004). The initial aim to introduce ICTs in education was primarily at developing ICT skills, the focus has over time shifted to leverage ICTs to address issues of quality and to improve teaching and learning especially at secondary and post-secondary levels.

However, availability and use of e-learning resources at various levels is still patchy. About 1,300 High schools out of more than 6,000 schools have computers, while most schools with computers use

less than 40% of the available infrastructure and very few actually use e-learning as an alternative method for curriculum delivery.

Benefits of E-Learning

The benefits of e-learning are mainly the cost efficiency, accessibility and flexibility in terms of time and place. E-learning allows learning to take place when the lecturer and the learner are separated both in time and space (Uys, 2003). It offers convenience for both tutor and the learner (learning anytime or anywhere). Other benefits of e-learning as adapted and shortened from Unwin (2008) include:

i. Ease of access to information,
ii. The potential for interactivity amongst and between learners and teachers,
iii. Enables conduct of lessons from a remote location and extends geographical access to education,
iv. Content is more timely, consistent and dependable with potential for re-use,
v. Combination of both synchronous and asynchronous learning,
vi. Supports student centered e-learning paradigm and students can learn at their own pace,
vii. Increases access to learning and training opportunity,
viii. E-learning lowers costs and improves cost-effectiveness of educational resources,
ix. Offers the combination of education with work and family life,
x. Scalability: e-learning solutions are highly scalable,
xi. Facilitates the management of student records and tracking students' progress.

Key issues in the adoption of E-learning

Despite the growing number of studies on the adoption of E-learning in secondary schools, the literature still suggests the need for advanced understanding of the key factors experienced in different contexts around the world. In addition, this area of study is still under-researched in Kenyan setting and especially in secondary schools. From the literature reviewed, the key determinants noted by the researchers to date include connectivity to the internet, ICT infrastructure, level of ICT knowledge and the Government policy to implement E-learning in education.

The researcher intends to also study factors such as complexity of innovation, compatibility of E-learning frameworks with other factors in the secondary schools, cost, technological support infrastructure and pedagogical attributes. Whilst Education is an increasingly information-intensive sector where E-learning adoption can significantly contribute to improved quality of service, efficiency, and accessibility, there seems to be little uniformity in how these factors affect E-learning adoption particularly in African countries and more so in public secondary schools in Kenya. The opportunities for ICTs use for social and economic development in Kenya is seriously limited by a dire need of infrastructure Farrel, (2007). Although lack of expertise as a reason for non-adoption of E-learning seems to concur with Noori's lack of skilled manpower, it differs with government -policy reason supported by Mureithi (2003).

There seems to be no study that has examined the influence of individual factors, Kenya ICT survey (2007) observed that many schools teachers are ill equipped to effectively integrate ICT in classroom due to inadequate number of computing infrastructure including computers, communication infrastructure involving telecommunication structures and roads as well as internet connectivity.

This shows a very slow adoption pace and may lead to all benefits of e-learning un-equitably realized or not being realized in schools in the near future. Many teachers perceive that adoption of e-learning in school will leader them jobless due to it foreseen benefits of efficiency in the mode of delivery (Kenya ICT survey, 2007).

ICT integration in Kenya education system is more recent, of a smaller scale and experimental in nature as Internet and computer technologies came into use in 1990's (Farrel, 2006). After several years of effort Kenya promulgated a National ICT policy in January 2006 that aims to" improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services" (Macharia, 2013). The MOE has adopted ICT broadly in three ways: ICT as an administrative tool referred to as E-government, ICT for teaching and learning also known as E-learning, and ICT for Education management also known as Education Management Information System (EMIS).

The Government of Kenya in 1996 declared that all secondary schools should introduce computer studies in schools but it was not clear how schools were to acquire the computers, (Odera, 2002).

Kenya became the first in the region of sub- Sahara to initiate E- learning digital content in 2009 in schools. Digitization of the curriculum content being done by Kenya Institute of Curriculum Development (Redempta, 2012). Advancement in the education sector will be seen once adoption of E- learning takes place as both pupils and students can study through interactive programs by use of computers. In order to enable schools to be connected to the ICT grid to exploit and promote E-learning, Ksh 1.3 Billion were allocated in 2009-2010 budget for the purchase of digital laboratory buses for each sub- county which is expected to be achieved through the economic stimulus program, (ROK, 2009).

The pertinent question is whether the computers are being used to enhance learning and teaching in secondary schools. computer studies is a separate learning subject/activity in the current curriculum, teaching learners not how to enhance learning by use of computers but how to be computer literate , (Omwenga, 2004). Despite the Governments evident interest and commitment, the availability and use of ICTs at secondary school level is still patchy. as at 2006, the computer student ratio for secondary schools is 1: 150, (ROK,2009). out of more than 7,396 schools with an estimated enrolment of over 1,796,467 , about 1,300 secondary schools have computers and most of those schools with computers are privately funded; only about 3% of public schools had computers by 2008. Its estimated that 60% of computers in schools are not being used as an alternative method for curriculum delivery, (ROK, 2009).

2.6 Impact of Electronic Technology on Learning

E-learning embraces the use of computer based technology to support learning. It involves the use of Internet and other electronic devices such as CD- ROMS and mobile phones to provide instruction.

With use of electronic technology in learning, we have diversified forms of learning such as online learning, blended learning, and open learning. The use of electronic devices in education has positively revolutionized the education sector. E-learning reduces the overall cost of education such as traveling, accommodation and other hidden costs.

Students can get access to resources, meet with their tutors and sit for exams without being present at university or college. Nafukho (2005) highlights that ICTs use by African universities should focus on

indirect and direct education cost reduction as well as increased access to education. E-learning overcomes the barrier of access to education. Students who lack access to education through barriers such as geographical distance, work, time, family responsibilities and lack of money can get access through online learning. E-learning will ensure that learners learn at their own speed. Employees can update their skills and upgrade their qualifications at their own pace through e-learning.

2.7 Factors Affecting the Adoption of E- Learning In Kenya

The opportunities for ICTs use for both social and economic development in Kenya is seriously limited by a dire need of infrastructure (Farrel, 2007). The major hindrance to success of E-learning project in Kenyan schools is lack of adequate facilities as highlighted by Lumumba (2007), in his study on E - learning challenges at public secondary schools. He accredited such provocations to unpreparedness among implementers and institutions.

ICT use in implementation of curriculum at secondary schools in Kenya were based on NEPAD (New Partnership for Africa's Development) mostly structured centers of excellence in integration of E-learning in order that other schools could copy and this does not mirror the real E-learning situation in ordinary secondary schools in Kenya (Lumumba, 2007; Ayere et-al, 2010) .

Kessy, Khaemba and Gachoka (2006) highlight that the cost of acquiring ICT hardware and software, setting up telecommunication authority and the maintenance and repair of ICT as prohibitive factors to ICT use in education. They observe that African countries have poor infrastructure, unreliable transportation and limited supply of telecommunication facilities.

The other inhibition is cultural context of ICT adoption, language barriers and attitudes towards ICT which affects the rate at which it is adopted (Fourier and Alt, 2002). The perceived difficulty in the integration of ICT in education is based on believe that technology is challenging and its implementation requires extra time.

Limited skilled human resource and students limited computer knowledge which is precipitated by lack of reluctance or inability for schools to introduce ICT often results in limited use of resources.

This is more pronounced with the humanities teachers who are most resistant to use computers (Ford, 2007). In some cases, teachers believe that the use of computers denies students the quality time required to study for their national examinations.

2.8 Institutional Factors Affecting E-learning Adoption by Secondary Schools.

Institutional factors such as school management support, ICT infrastructure and Internet connectivity facilitate the adoption of e-learning by secondary schools. Karki and Bauer (2004) notes that the size of an institution is one of the key parameters hindering adoption of an innovation; large institutions have the resources and the infrastructure necessary to facilitate the adoption of innovations. Small enterprises, by contrast are less apt to adopt an innovation because they often lack resources. Karki and Bauer (2004) study was based on agricultural sector in Nepal. The model used for data analysis by Karki and Bauer fitted the study well and it was adopted for the current study. The functional relationship of the adopted model was:

$$P(Yi = 1) = \frac{e^{x\beta + u}}{1 + e^{x\beta + u}}$$

and $\ln\left[\frac{p}{1-p}\right] = \alpha + \beta 1x1 ... + \varepsilon 1$

Where, Yi = a dichotomous dependent variable (P = 1 if technology adoption takes place, 0 otherwise), Xi includes vector of variables included in the model, α= Constant of the equation, β_i= parameters to be estimated, Ɛ1 = error term of the model, e = base of natural logarithms.

2.9 Benefits of E-Learning

The benefits of e-learning are mainly the cost efficiency, accessibility and flexibility in terms of time and place. E-learning allows learning to take place when the lecturer and the learner are separated both in time and space (Uys, 2003). It offers convenience for both tutor and the learner (learning anytime or anywhere). Other benefits of e-learning as adapted and shortened from Unwin (2008) include:

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vii. Increases access to learning and training opportunity,
viii. E-learning lowers costs and improves cost-effectiveness of educational resources,

Conclusion

To move towards a globally competitive and prosperous Kenya as noted in the Kenya vision 2030 Medium Term Plan II education and training 2013-2018 ; the ICT sector is supposed to contribute significantly to the economic pillar whose target is to attain 10 percent GDP growth rate by 2012. Under the believe that such economic growth will bring about high quality life to all citizens and turn Kenya into a new industrializing nation.

This will be a huge step towards creating a knowledge economy that is internationally competitive. However, review of various studies on e-learning adoption among secondary schools shows lack of a model to guide e-learning adoption among secondary schools. It is on this basis that the current study was conceptualized to investigate the determinants of adoption of e-learning by secondary schools in Thika west sub-county Kenya. The current study shows that there was low adoption and usage of e-learning in secondary schools.

Although the current adoption and usage of ICT seem to be on upward trend this is not guaranteed if the determinants of e-learning adoption are not addressed. From the results, mechanisms need to be put in place to ensure that awareness creation is in place to popularize e-learning adoption and utilization in secondary schools since in Vision 2030, the education sector is one of the central pillars of the equity and socio-economic agenda. The challenge lies in how education institutions mobilize resources for such worth course for them to contribute significantly towards bringing the Vision 2030 to pass successfully.

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