The Efficacy of Online Learning and Resources in Tanzania: The Distance Learners’ Perspectives

Abstract

The utility of online learning and resources have gained prominence and legitimacy in many learning and training institutions across the globe as ancillary to other learning and teaching resources. Their success in reaching the learners and trainees anytime, anyplace and anywhere hinge on the degree of the “digital divide” that prevails in a country. This study interrogated the distance learners’ perception of the efficacy of online learning and resources in enhancing their studies. The subjects were enrolled for various degree programmes including teacher education at the Open University of Tanzania during 2010/2011 academic year. The authors’-designed questionnaires eliciting the learners’ demographic data, their perception of various sources of learning, instructional delivery modes and e-learning support services were administered to conveniently selected samples. The overall findings show that learners had limited access to computers and hence to the internet. Under this situation, learners preferred printed learning resources they had accessed to. Implications and suggestions for improving the efficacy of online learning and resources for distance learners with special reference to Tanzania are discussed.
Introduction

Since 1965 Sub-Saharan Africa (SSA) has increased Gross Enrolment Ratio (GER) in higher education from 1% to 5% (Bloom, Canning & Chan, 2006; World Bank, 2008). This poor growth in GER has been exacerbated by many country specific factors including *inter alia*: low investment in higher education. Up to mid 1980s studies conducted by the World Bank and others that showed better public returns of investment in primary education and that higher education was an expensive and inefficient public service shaped investment policies in higher education in SSA (Psacharopoulos & Woodhall, 1985; Bloom, Canning & Chan, 2006). However, by late 1990s and early 2000 policy shift driven by development agencies in favour of investment in higher education emerged. This policy shift is exemplified by the World Bank (2000a:14 & 16) observation that:

“Higher education is no longer a luxury: it is essential to national social and economic development...The focus on primary education is important, but an approach that pursues primary education alone will leave societies dangerously unprepared for survival in tomorrow’s world”.

The four milestones of this policy shift are the recommendations by the World Bank (Bloom, *et al.*, 2006:9) that developing countries:

- ‘Train teachers using distance learning;
- *Create open universities that use satellites and the Internet to delivery courses;*
- *Higher education should receive no more than 20% of a country’s total education budget*;[and]
- [Developing] countries... should not focus only on the rate of return analyses, but also take account of the “major external benefits” of higher education’. 

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As one of the poorest continents at the turn of the 21st century (World Bank, 2000), Africa looks upon the higher education to produce the human capital required to propel and spur the continents’ wealth creation and its global competitiveness. This aspiration faces numerous challenges including inter alia:

- Creation of more education and training opportunities for the ever increasing number of high school leavers and lifelong learners (World Bank, 2003);
- High cost of education and training through the traditional educational approach;
- Increasing poverty level across the continent (Ayittey, 2002); and
- Poor governance and internal conflicts (World Bank, 2000a; 2000b; Costa, 2008).

All these challenges are putting pressure on scarce resources and thus rendering many countries fall short of the 20% resource allocation benchmark for higher education. The limitations of resources for human capital development through the conventional educational approach call for alternative modes. From late 1960s through the 1970s, a number of teaching and training alternatives including the use of radio and television were experimented in a number of developing countries (Perraton, 2007). In Kenya, for example, the use of radio to enhance the teaching of English at the primary school level and the training of nurses registered success but despite this success, the project was abandoned at the expiry of the experimental period (Jenkins, 1990a; 1990b). Similarly in Tanzania, radio was extensively used for political education, health education, and cooperative movement (Perraton, 2007). By 1980s literacy rate in Tanzania had reached 85% but with the collapse of radio-based adult education the literacy rate has since decline to about 73% (World Bank, 2011). With the advances in ICT, e-learning is envisaged as a powerful alternative mode of teaching and reaching both the conventional and the non-conventional
learners and developing human capital in developing countries (Abdon, Ninomiya, & Raab, 2007). The ability of e-learning to scale up the number of learners and enhance ‘a’-learning (anytime, anyplace, anywhere learning) has been suggested as an alternative approach for increasing access to education and training at all levels.

**Conceptual and Operational Definition**

The technological revolution that has taken place in the ICT industry and is still taking place has created varied conceptions of e-learning. The first thing the reader of e-learning literature encounters is the mystification of what e-learning is. This has led to as many definitions as they are studies or discussions on the subject. The various conceptions of e-learning seem to fall into two broad categories given in Diagrams 1 and 2. For the purpose of this study, we are referring to the two conceptions as: clustered and delineated conceptions.

- Online learning
- Technology-based training
- Web-based training
- Computer-based training
- Mobile learning
- Distance education
- Distance learning

Diagram 1: Clustered conception
In Diagram 1 e-learning is equated with the applications and the processes enclosed in the diagram. That is, the applications given in the diagram are the sub-sets of e-learning. This category of e-learning definition is represented by the following three examples where e-learning is defined as:

- “The delivery of content via all electronic media, including the internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, CD-ROM” (Urdan & Weggen, 2000:8).
- “Learning conducted via electronic media” (Open University of Tanzania, Institute of Educational and Management Technologies, 2011).
- “Learning that takes place with the assistance of digital technology” (Republic of Kenya, 2012).
- An all-inclusive and unifying term that describes all the stated fields enclosed in the diagram above (Romiszowski, 2003:1).

The second type of conception is represented by Diagram 2.

Diagram 2: Delineated conception (Anderson, 2005:5)

Diagram 2 presents Anderson’s (2005) construction of the relation between e-learning, online learning, and distance learning. He points out that distance learning includes both text-based materials and electronic media, and thus making e-learning a sub-set of distance learning. Invariably, the convergence of the two diagrams is on the conception that “e-learning is broader than online learning” (Anderson, 2005:5).
Taking the view that online learning is a sub-set of e-learning, this study derives its e-learning understanding from the aforementioned definitions by defining e-learning and by implication online learning simply as “computer and internet facilitated and enhanced learning”. Similar definition has been echoed by Ajadi, Salawu and Adeoye (2008:61) who observed that e-learning “is all learning with the use of computers” and Holmes and Gardner 2006:14 who defined e-learning as: “Online access to learning resources, anywhere and anytime”.

Opportunities of Online Learning

‘a’ learning

Open learning and distance education represents an approach that seeks to open up flexible access to education and training opportunities by “freeing learners and trainees from the constraints of time and place” (UNESCO, 2002:7). In this context, online learning provides seamless learning opportunity that has been referred to by Khan (2001) as ‘a’ learning (anytime, anyplace and anywhere learning). It is the ‘a’ learning that has been seen as the greatest benefit and opportunity that online learning provides to distance learners.

Scalability of Numbers

Kenya Government Sessional Paper No.14 of 2012 (Republic of Kenya, 2012), recognizes e-learning has one way of providing greater access to learning opportunities both inside and outside the classroom. The exponential growth of online learning in terms of the scalability of learners in the recent years has been catalysed inter alia, by:

- Efficiency in delivery of in-country and cross-border education (Knight, 2004; Schnack, 2005);
Need for increased access to education and training at all levels and to cut cost (Alexander, 2001; World Bank, 2003);

Advances in communication and information technologies;

Institutional competition for students (Alexander, 2001; Knight, 2004); and

Growing importance of the ‘earner-learner’ market, lifelong learning and continual skills upgrading and retraining (Cunningham, Ryan, Stedman, Tapsall, Bagdon, Flew & Coaldrake, 2000; World Bank, 2003).

**Online Resource Access**

Distance learners and trainees can access online learning resources through two routes, namely: Open Educational Resources (OERs) and Restricted Educational Resources (RERs). The OERS are free learning resources. Specifically tailored OERs materials for African higher education institutions have been developed through African-based consortia approach by the African Virtual University (Diallo, Traore, & Fernande, 2010) and Teacher Education for Sub-Saharan Africa (TESSA). These materials are available online and are used for training teachers by many African institutions including the Open University of Tanzania. Other OERs materials are the World Bank and UNESCO publications.

Unlike OERs, RERs are not free. These resources include course materials accessible only to registered students and e-journals and e-books subscribed by individuals or course/programme providers. This is where ODL providers have to invest substantial resources annually. Bates (2005) reported that by 2003, the Open University of United Kingdom had only 17 courses fully online out of 500 courses that were on offer.

**Challenges of Online Learning**

The challenges of online learning particularly in developing countries are varied and complex. Though we put together many countries under the
umbrella of ‘developing’ they are not homogenous in their level of ICT infrastructural development. For the purpose of this study, the challenges of online learning have been broadly clustered into:

- Rhetoric and realities of online learning, and
- Internal inefficiency of online learning.

**Rhetoric and Realities of Online Learning**

Does post colonial Africa have a comfort zone in the global arena? This sounds a rhetorical and a divisive question. For some post colonial scholars the answer is obviously no and for others the only comfort zone for the continent is the production of primary raw materials for the global market. Irrespective of the side of the camp the scholars belong, the African continent faces several dilemmas and challenges. The globalisation and all its facets, shapes, and sizes -from trade to technology- present hard choices for Africa. The competition that accompanies globalisation is extremely expensive in both short and long-term for poorly resourced countries and yet these countries can neither avoid nor afford not to participate in the global arena. Nyerere (1999:3-4) had this to say to the developing nations and their need for competition for knowledge:

- “Knowledge is power and those whose have it, within nations and between nations, will always tend to use it against those who do not have it…
- The instrument of domination of the future is going to be education. Fortunately, in the acquisition of that instrument we can all compete and all will win with honour.”

The major hard choice for Africa is the cost and sustainability of technologies that are critical in driving socio-economic development. For developing countries, the application of e-learning in teaching and learning has had its proponents and opponents. At the macro level, the proponents of
e-learning look at the benefits the e-learning brings to education that include *inter alia*:

- Scalability of numbers and hence increased educational access and equity (Diallo, *et al.*, 2010);
- Cost reduction, where the economies of scale are achievable (Bates, 2005);
- Provision of access to new knowledge and research and thus enhancing technological catch-up of the developing countries (Bloom, *et al.*, 2006); and
- Transformation of teaching from information transmission to knowledge construction (Bates, 2005).

The opponents of e-learning on the hand question:

- The prioritisation and investment of money, time, and efforts in e-learning developments at the expense of other pressing social needs (Gulati, 2008; Wright, Dhanarajan & Reju, 2009); and
- The cost and sustainability of e-learning (World Bank, 2003; Gulati, 2008).

*Priority and Investment in Online Learning*

The pressing social needs for Africa that have been identified by Gulati (2008) and Wright, *et al.*, (2009) as requiring more priority and investment attention than online learning raise the question of how do technologies enhance learning help to bring a positive impact in the society where:

- The basic living needs of school children and adults are yet to be met;
- Poorly developed educational infrastructures at all levels exist;
- Poor governance, internal conflicts and political instability prevail;
- Widening of educational gap between the privileged and the deprived groups is being created by the digital divide; and
- Difficulty of accessing the technologies where they exist is a major challenge.
Gulati (2008:8) questions whether ICTs can “benefit those who are resource poor and have limited or no access to paper-based modes of distance delivery”. In his argument for the utilisation of pro-poor technologies in education or the technologies that are less costly, Gulati has shown that Latin America and Asia have conducted successful distance education through print, radio, and television technologies and not internet. He further points that in many developing countries ICT and electricity infrastructure benefits urban areas rather than rural areas and thus widening urban-rural divide. In supporting Gulati’s contention, Wright, et al., (2009) point that governments and institutions often introduce e-learning without full consideration of the learners’ learning environment. They observed that: “If students are still reading by candles and kerosene lamps, expecting them to learn online may not be realistic. Online learning is attractive to institutions that want to be perceived as being progressive; however, establishing online programs may not be the wisest use of scarce resources” (Wright, et al., 2009:2).

For e-learning to work effectively and efficiently, Gunga and Ricketts (2007) point out that it has to be supported by three pillars, namely: connectivity, capacity, and content. All these e-learning prerequisites require costly investment by both the state and the institutions. In Japan, it is estimated that creation of a single e-learning course costs approximately 2-3 million yen (Schnack, 2005). According to Schnack (2005:2) this is a major factor “holding back … development of e-learning at the university level in Japan”. Similarly, high investment cost in e-learning course development has been experienced by Australian universities (Alexander, 2001). Besides investment in course development, e-learning course providers need to invest on the training of technical support staff and in the transformation of teaching staff from technophobes to technophiles (Gunga & Ricketts, 2007). While e-learning promises provision of mass education, Spooner, Jordan, Algozzine, and Spooner (1999:140) point out that the proponents of e-
learning are yet to demonstrate: “what works for whom, under what circumstances, at what cost, and why”.

Cost and Sustainability of Online Learning

The course development, personnel training, and associated infrastructure are not the only costs that impact on e-learning development and use. The cost associated with the acquisition of the hardware is the cost of internet bandwidth. Many educational institutions in the African continent find the cost of internet bandwidth quite high (World Bank, 2008; Wright, et al., 2009). For ODL institutions that operate through study centres spread across the country, learners are therefore poorly served with internet services where the institutions are poorly resourced.

The two slides, given as Figure1 and 2, of the PowerPoint presentation by Bates (2005), delivered at the European Distance and E-learning Network (EDEN) Conference Helsinki 2005 show the impact of the economies of scale on the cost of print, radio, TV and online delivery media in ODL.
Figure 1

Costs of print vs online

For 3,000
Online: $2.18
DM print: $1.37
OU print: $0.65
Difference over 5 years: $750,000
Figure 1 shows that for all the four media, print becomes the cheapest media at US$0.65 per student study hour when the learners per course per year reach 3,000 and above. Television is the most expensive of all media at about US$5 per student study hour. Figure 2 demonstrates that with the inclusion of instructor-student ratio of 1:30 parameter, the cost-effectiveness of the technology-based teaching media is in the following order: print, fully online, mixed mode, face to face, and web supplemented. Bates (2005) findings support Gulati (2008) argument of non-sustainability of e-learning in developing countries.

**Internal Inefficiency of Online Learning**

The internal efficiency of a learning system is measured in part by its throughput rates. As stated by Psacharopoulos and Woodhall (1985:205) “internal efficiency is concerned with the relationship between inputs and outputs within the education system or within individual institutions”.

Generally, course-completion and programme-retention rates in ODL are lower than in conventional campus-based learning by up to 20% (Carr, 2000; Perraton, 2007). Though this is a general trend, the comparison of the statistics generated by the two learning modes may have low validity when the following two conditions are neither considered nor controlled. First, unlike in conventional system computation of throughput rates in ODL cannot be based wholly on a straight line cohort analysis; and second, flexibility in built in the ODL programmes allow learners to take less course loads and hence the majority of ODL learners may end up staying longer in the programme.

Despite these differences, there are a variety of reasons why distance learners do not complete online courses. Where courses are offered 100% online, two extreme scenarios have been observed. On one end, attrition rates can be as high as 80% and on the other end completion rates can also be as high as 80% (Carr, 2000; MIT, 2001; Flood, 2002). The literature indicates *inter alia*: the following cluster of variables as contributors to low efficiency of online learning:

- Learners’ variables
- Institutional variables
- Technological variables

Tyler-Smith (2006) gives two reasons why the issue of attrition rates in e-learning courses is important. First, enables policy makers assess the relative effectiveness of the cost of online learning when compared with conventional learning. Second, enables course providers determine approaches that might enhance the effectiveness of online learning.

*Learners’ Variables*

Besides the unavoidable influence of the learners’ situation such as the changes in the family that may include *inter alia*: divorce, spouse lose of a
job or difficulty of securing a house help (Carr, 2000), there is emerging evidence that suggests that success on online learning is greatly influenced by:

- Age of the learner. The influence of age on the retention of learners in ODL undergraduate courses/programmes is not conclusive. Some studies show that the older the learners, the busier they are. The implication is that adult learners have more multiple roles and obligations that interfere with their continuity in a programme. On the contrary, others studies have shown that older learners are better in dealing with the independent nature of distance learning (Carr, 2000) and that the success of employed adult learners is attributable to their ability to “generate internal motivation for their learning... [and]... complete e-learning in their personal time due to workload pressures in the workplace and/or Internet access issues at work” (Tyler-Smith, 2006:4-5).

- Quality of the learners. Top performers and those in top positions such as company executives register higher completion rate (MIT, 2001);

- Ability of the learners to work independently. One distance learner observed that: 
  
  “The biggest challenge in taking these courses [online courses] is the fact that you don’t have direct contact on a regular basis with your instructor. You have to be the type of person who is comfortable and confident in your work, because the feedback is not immediate” (Carr, 2000:4); and

- Computer literacy level or the e-readiness of the learner. Online learning demands that a learner be a computer literate in order to benefit from the learning resources that are available anytime, anyplace and anywhere.
Institutional Variables

These are factors related to tutors’ course planning, their level of preparedness in course delivery and the learner support, and the institutional policy on the learners’ length of stay in the programme. First, tutors contribute significantly to the learners’ success on online learning. This success is attributed to tutors’ experience with the teaching of online courses; and their experience with the organisation of discussion fora and personal contacts with the learners (Carr, 2000; MIT, 2001; Carroll, Ng & Birch, 2009). Second, the duration of the programme has cost implications. The longer one stays in the programme, the more expensive the running cost of the programme becomes to both the learner and the institution (Perraton, 2007). Third, where institutional or the learner’s sponsoring agency policy provides limited time to complete the courses high dropout rates have been reported (Gulati, 2008). Fourth, the proliferation of local and offshore ODL institutions and providers in the last few years have not been supported in many SSA countries by both national and institutional policies (Knight, 2004; Maritim, 2009). The General Agreement on Trade in Services (GATS) which has commodified education has found some developing countries unprepared to regulate cross border education. Under this situation ODL learners are exploited by institutions that see those seeking for higher education opportunities as a window of opportunity to make profit without the provision of commensurate service delivery.

Technological Variables

As a learner support service, ICT where it is accessible, acceptable and affordable enhances online learning. High course completion rates in online learning have been reported where course instructors:

- Conduct discussions asynchronously online (MIT, 2001);
- Provide online office hours at strategic times (MIT, 2001);
• Use a more interactive internet programme that allows them to hold regular chats and organise email messages more effectively (Carr, 2000:5); and
• Track the learners’ progress by phone, email and by use of a computer programme that enables the instructors to see when their "students log on and off the course software and how much time they spend on each assignment" (Carr, 2000:5). Gunga and Ricketts (2007) have made similar observation.

The national economic realities in developing countries point to the following three situations with respect to the adaptation of e-learning and other technologies in teaching and learning:

• Online learning cannot be used as a stand-alone education delivery mode in the presence of many competing social needs and scarce resources;
• Print media cannot be thrown away as an archaic or an analogue, approach or practice as it is resilient to the prevailing harsh economic realities of developing nations; and
• Online learning development requires enormous planning and resources that take into account institutional, ICT related infrastructure, reliability and robustness of the technology and the learners’ variables.

**The Study Objective**

The studies reviewed highlight the potential benefits of e-learning. However, at the institutional and learners’ level, there are also challenges and difficulties often associated with e-learning. These include *inter alia* the institutional and the learners’ e-readiness. The research is particularly scanty on learners as the key stakeholders in e-learning. The bulk of the reports about the learners’ successes and challenges with e-learning are from the third parties: donors, governments, and institutions. Wright *et al.*
(2009) questions the objectivity of these agencies in introducing e-learning in developing nations. The objective of the present study was to identify the distance learners’ perception of the effectiveness of the use of computer and internet in learning. In order to achieve the stated objective of the study, the following three questions were addressed:

- What do the learners perceive as the factors that limit their use of online learning and resources?
- Do learners perceive online learning and learning resources as more beneficial and of better quality than their print-based study materials?
- How do the learners’ perceive the importance and satisfaction of online learning support services?

These questions were based on the assumption that the majority of learners were able to access computers for their online learning.

**The Context and Scope**

Tanzania, like many other developing nations, has its share of the socio-economic development challenges including *inter alia*: high poverty level at 33.6% (World Bank, 2011); low higher education GER at 1% (World Bank, 2008); low per capita income estimated at US$ 530 (World Bank, 2011); insufficient and inefficient ICT related infrastructure such as telecommunication and electricity (Maritim & Mushi, 2011); and low level of e-readiness rating (Economist Intelligence Unit, 2006). These development indicators and others influence the level, the quantity and the quality of education provision and delivery in the country. Indeed, Tanzania is one of the 17 out of 19 commonwealth countries in Sub-Saharan Africa which are unlikely to meet the Millennium Development Goal on “Education for All” by 2015 (Kanwar, 2011).

This study is limited in scope to the students registered with the Open University of Tanzania. The Open University of Tanzania was established as
a single mode ODL public institution in 1992. While the Open University of Tanzania is the major ODL single mode institution in the country, there are also dual mode institutions. In the academic year 2009/2010, the Open University of Tanzania had a student population of over 31,000 (Open University of Tanzania, 2010). The authors are not aware of any published statistics on the number of distance learners that study through the dual mode institutions.

While the primary mode of instructional delivery in the Open University of Tanzania is print-based materials, e-learning was introduced in 2006/2007 academic year. The objective of e-learning is intended to supplement and not to replace printed materials. This is on the realisation that the ICT related infrastructures across the country are vastly different. The national Internet and electricity penetration is about 3% and 14%, respectively (Maritim & Mushi, 2011). The e-learning at the Open University of Tanzania is conducted through Moodle platform Learning Management System (LMS). This is a learning management system that enables learners to:

- Access course materials anytime, anyplace, and anywhere;
- Interact and collaborate among themselves; and
- Interact with the course facilitators.

This LMS platform also enables the course facilitators to track and monitor the learners’ engagement with the courseware. In short, LMS provides a virtual classroom where the learner-learner and tutor-learner interact. During the academic year 2013/2014 approximately, 260 courses are at various stages of being migrated into LMS. The completion status of the migration of these courses into Moodle LMS is shown in Table 1. To date 153 courses are at various stages of being uploaded on Moodle platform. However, where courses have not been fully developed and migrated on the LMS format, students can access their uploaded course outlines and lecture notes online.
Table 1: Online Course Migration Status by Faculties and Institutes.

<table>
<thead>
<tr>
<th>Faculties/Institutes</th>
<th>Developed above 80%</th>
<th>Developed below 80%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty of Arts and Social Sciences</td>
<td>33</td>
<td>29</td>
<td>62</td>
</tr>
<tr>
<td>Faculty of Business Management</td>
<td>7</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Faculty of Education</td>
<td>13</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Faculty of Law</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Faculty of Science, Technology and Environmental Studies</td>
<td>17</td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>Institute of Continuing Education</td>
<td>8</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>68</td>
<td>153</td>
</tr>
</tbody>
</table>

Source: Institute of Educational and Management Technologies, Open University of Tanzania, July, 2013

For accessibility of online materials in outreach study centres, the University has provided internet link from the Headquarters to slightly over 40% of the Regional Centres.

**Method**

**Sample**

A sample of 43 undergraduate distance learners (12 females and 29 males) participated in the study. This sample was conveniently drawn from Ilala, Kinondoni and Temeke Regional Centres located in Dar es Salaam. These
are three out of the 30 in-country Regional Centres distributed across the country.

The Open University of Tanzania Regional Centres and Student Numbers

Data Collection

The authors’-designed questionnaire that adapted in some parts Rekkedal and Eriksen’s (2004) measures of learners’ support services in e-learning
elicited both quantitative and qualitative data. The instrument was designed to capture the learners’ demographic information and their perception of various sources of learning and instructional delivery modes and associated challenges with a primary focus on online learning. Under the convenient sampling approach utilized, any student who showed up at the Temeke Regional Centre for his/her own reasons was requested to fill the questionnaire. This data collection exercise took place in September 2011. The questions that were constructed reflected the measures and descriptions of the categories of the key variables given in Table 2.

Table 2: Measures and Descriptions of Key Variables

<table>
<thead>
<tr>
<th>Key Variables</th>
<th>Measures and Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>General demographic variable.</td>
<td>Age; gender; marital status; family size; employment status; birth order.</td>
</tr>
<tr>
<td>Socioeconomic variable.</td>
<td>Ownership by self or family member of a laptop or desktop computer.</td>
</tr>
<tr>
<td>E-learning variable.</td>
<td>Ownership of email address; computer and internet access.</td>
</tr>
<tr>
<td>Preferred learning mode variable.</td>
<td>Instructional delivery choice; blended combinations; ODL recommendation for high school leavers and study option for postgraduate studies.</td>
</tr>
<tr>
<td>Online support services variable.</td>
<td>Level of importance and satisfaction of the following online support services, tutorials and discussions, learning materials, course registration, writing examinations, peer collaboration, examination marking, examination results and examination time-table.</td>
</tr>
</tbody>
</table>
Data Analysis

The preliminary analyses reported here used simple descriptive quantitative approach. All the responses were coded. For the sections of the instrument that required provision of responses in real numbers; yes or no; and on a 5-point Likert-type scale, coding was undertaken and frequencies and percentages were computed using SPSS software. Responses on open-ended questions were quantified.

Results and Discussion

General Demographic Profile

The demographic variables collected were: age; gender; marital status; family size; employment status; and birth order. The participants’ profile on these variables are summarised as follows:

- **Age:**
  - Range =21-58 yrs

- **Gender:**
  - Female =29%
  - Male =71%

- **Marital Status:**
  - Single =68%
  - Married =30%
  - Widow = 2%

- **Family Size:**
  - Range =2-11
  - Mean =5.7 (SD=2.3)

- **Employment Sector:**
  - Education Sector=42%
  - Other Sectors =58%

- **Birth Order:**
  - Firstborn =26%
  - Middleborn =57%
  - Lastborn =17%
The demographic profile of the sample with respect to age and marital status supports a phenomenal trend that has been observed in other ODL studies. The family and the community obligations that go with these factors may act as either inhibitors or facilitators in undertaking ODL studies (Tyler-Smith, 2006; Carroll et al., 2009). The other noticeable characteristics of this sample are e-background, e-readiness and birth order. Though 65% of the respondents were not equipped with computer skills in high school, only 13% were not ready to use a computer to search for study materials. The e-school background and the level of e-readiness are the challenges the ODL learners face that are attributable to e-education policy. Tanzania is yet to put in place e-education policy for primary and secondary schools.

While birth order is a high profile variable in academic achievement studies and admission to competitive conventional universities and programmes, ODL studies have not investigated its impact. Studies that have been conducted in conventional institutions in USA, Australia, South Africa, and Kenya have shown that in competitive admissions firstborns are overrepresented (Blake, 1986; Marjoribanks, 1987; Cherian, 1990; Maritim, 2009). The trend shown by this study is masked by the category of non-delineated middleborn that lumps together a number of birth positions.

Preference for ODL

This variable was measured by: the choice of ODL as the mode of study for both undergraduate and postgraduate studies; and recommendation of ODL mode of study to high school leavers. As reported in the ODL literature, the majority of participants of the present study identified such factors as convenience, flexibility, marriage, family responsibilities and affordability as the primary reasons for choosing to enroll in ODL. This preference for ODL mode of learning is further exemplified by 79% of participants’ reporting that if given a second chance they could still study through ODL and 59% stating
that they could recommend it to high school leavers. Interestingly, the reasons for not recommending ODL mode of study to school leavers include:

- Poor technological support: 42.9%
- Computer illiteracy: 29.0%
- Lack of study materials, lectures and accommodation: 14.3%
- Time problems and others: 13.8%

Furthermore, 74% of those who intend to pursue postgraduate studies prefer to do so through ODL mode. This choice may also be attributable to the experience and the benefits the learners have enjoyed in distance learning conditions, a situation described by Spooner et al., (1999:133) as “an acquired taste” of distance learning. However, not all respondents favoured ODL mode of study. The 9% who felt they were drafted into ODL mode of study by the Tanzania Commission for Universities were mainly the recent high school graduates.

**Socioeconomic Status**

The socioeconomic background of the learners is a strong determinant of their participation in ODL and access to computers and internet. For adult learners, the external sources for financing education are limited by a number of factors including age limit imposed by either the potential sponsor or the employer (Maritim, 2009). In this study sample 81% financed their education through their family resources and personal savings. While most of distance learners were employed, they were not in high salaried jobs by Tanzanian standards- though there is lack of national statistics on the classification of jobs and associated income levels. The majority were school teachers. The impact of this background on the level of online learning is exemplified in the data collected by:

- Low level of ownership of computers by the learners and their members of the family.
• Low level of expenditure on internet access at cyber cafes. The participants’ reported internet expenditure in Tanzanian shillings per month as follows:
  ➢ 1,000-10,000  58.4%
  ➢ 10,001-20,000  12.9%
  ➢ 20,001-30,000  9.7%
  ➢ >30,001  19.3%

(Note: US$1=Tzshs. 1,600)

This situation forces the learners to spend less time in accessing learning resources available online.

**Computer Access**

Besides providing access to internet where connectivity is in place, computer access is of great benefit to learners. In view of high cost of print materials, OUT is addressing this situation in through four policy strategies; namely:

- Uploading study modules on LMS platform.
- Putting the study materials in CDs. In this respect, learners are able to use their computers or family computers to read materials stored in CDs, where internet is a challenge.
- Student Union has negotiated with a computer supplier to sell laptops to registered students at a cost of US$ 340 (Tzshs. 550,000).
- Providing computer laboratories and internet connectivity in all Regional Centres.

These policies are intended to enhance access to online resources. While the OUT provides limited access to computers through the Regional Centres, students’ satisfaction level with the provision is low. The survey shows that 51% were not satisfied with the level of computer availability at the Regional Centres. What other e-learning opportunities are then available to these distance learners in order to satisfy their learning needs?
Access to information and communication technologies and e-learning facilities was measured by ownership of one or more of the following devices and applications: laptop, desktop computer, mobile phone and email address. The survey showed the level of ownership of these devices as follows:

- Mobile phone 56%
- Laptop 33%
- Desktop computer 7%
- E-mail address 2%
- Landline 2%

In addition to not having their own computers 55% of the subjects came from homes where neither the siblings nor the parents own laptops or desktop computers. These two factors are indicative of the learning environments that provide limited options for online resources.

**Internet Access**

Table 3 shows that computer access is relatively low. Besides the use of their own computers anyplace, anytime, and anywhere to access internet, the primary source of internet access for the majority of the learners is through Regional Centres. Table 3 shows that 33% of the respondents used Regional Centres. Workplaces registered low usage of internet. This is possibly because most of them are teachers who work in technologically deficient environments. In a situation where approximately 67% of the learners have neither laptop, desktop nor free access to internet in their work places their learning through ODL mode is hampered.
Table 3: Computer and Internet Access

<table>
<thead>
<tr>
<th>Access Source</th>
<th>Percent Access</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Computer</td>
<td>Internet</td>
</tr>
<tr>
<td>Personal laptop/desktop</td>
<td>26%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Regional Centre</td>
<td>33%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Workplace</td>
<td>9%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Cyber Café</td>
<td>21%</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>11%</td>
<td>13%</td>
<td></td>
</tr>
</tbody>
</table>

Though some learners access internet through cyber cafés as shown in Table 3, Table 4 shows that that access to internet is very limited. The reported internet access expenditure per month at cyber cafes enables a learner at the prevailing cyber café service fee of Tzshs.1,000 per hour to spend approximately the number of hours per month and per day on internet in the table given below.

Table 4: Duration of Internet Access

<table>
<thead>
<tr>
<th>Internet Expenditure per Month in Tz Shillings</th>
<th>Internet Access Hours per Month</th>
<th>Internet Access Minutes per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000-10,000</td>
<td>1-10</td>
<td>2-20</td>
</tr>
<tr>
<td>10,001-20,000</td>
<td>10-20</td>
<td>20-40</td>
</tr>
<tr>
<td>20,001-30,000</td>
<td>20-30</td>
<td>40-60</td>
</tr>
<tr>
<td>&gt;30,001</td>
<td>&gt;30</td>
<td>&gt;60</td>
</tr>
</tbody>
</table>

This scenario indicates that for the majority of ODL learners (58.4%) the level of internet access is too low for any meaningful study. The 1 to 10 hours per month translates to 2 to 20 minutes of per day. This situation suggests: First, access to online resources is limited to the minority of the learners. Second, in view of the low level of internet access, online learning
marginalises the majority of learners. Third, if online materials are not accessible to the learners, they are of no value to them even if they are of high quality.

*Preferred Blended Mode of Learning*

As indicated in Tables 5 and 6 the two broad categories of variables that were taken as measures of a preference for a learning mode were: course delivery preference and blending combinations of preferred of delivery mode. The preferences for various modes of ODL delivery are given in Table 5. As a preferred mode of delivery, better source of study materials and as main source of study materials, print-based material delivery mode was identified as the participants’ most preferred choice. Online comes in the second place.

<table>
<thead>
<tr>
<th>Delivery Mode</th>
<th>Percent Preference</th>
<th>Identified as preferred mode of delivery</th>
<th>Identified as better source of study materials</th>
<th>Identified as main source of study materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Lecture Notes</td>
<td>63.4</td>
<td>50.0</td>
<td>44.0</td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>31.7</td>
<td>28.6</td>
<td>32.0</td>
<td></td>
</tr>
<tr>
<td>Library Books Provision</td>
<td>0.0</td>
<td>19.0</td>
<td>22.0</td>
<td></td>
</tr>
<tr>
<td>CDs</td>
<td>4.9</td>
<td>2.4</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Mobile Phone</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

This pattern of preference for delivery modes may have several interpretations including *inter alia*:

- Participants responding to a situation that is familiar to them, that is, the current predominance of print-based delivery mode;
• The majority of the participants were primary and secondary school teachers who use print materials in their workplace;
• The cost of e-learning facilities and online learning; and
• Lack of information and knowledge on what is available online. This low rating of online learning resources is a demonstration of the extent to which learners rely on their tutors’ lecture notes. This high reliance on lecture notes may be suggestive of less diversification of sources of learning materials, lack of guidance on further sources of learning materials, learners’ unfamiliarity with the potentiality of online resources.

Despite the heavy reliance and trust put on print source of learning materials, 74.3% of the subject believed that the absence of online learning resources influence their performance on university examinations.

On the adaptation of blending, a list of nine course delivery modes was presented to the participants and they were required to choose three combinations that they thought make an effective course delivery in ODL. Table 6 presents the rank order of their suggested blend where a combination of print-based materials, face-to-face sessions and online is a favoured combination. The other delivery technologies are poorly rated.

Table 6: Suggested Course Delivery Blend

<table>
<thead>
<tr>
<th>Rank Order</th>
<th>Delivery Mode</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Print Course module lecture notes</td>
<td>65.0</td>
</tr>
<tr>
<td>2</td>
<td>Face-to-face discussions</td>
<td>19.0</td>
</tr>
<tr>
<td>3</td>
<td>Online (Internet)</td>
<td>8.0</td>
</tr>
<tr>
<td>4</td>
<td>Video conferencing, mobile phone, CDs @</td>
<td>8.0</td>
</tr>
</tbody>
</table>
Online Support Services

Learning support services are key enablers to the success of distance learners. For e-learning to be effective, technological and non-technological support mechanisms must be put in place by the course and programme provider (Alexander, 2001; World Bank, 2003). When asked to rate on a 5-point Likert-type scale their perception of the level of importance of several e-learning support services that the University provides, the responses are as shown in Table 7.

Table 7: Rating of Importance of Online Learning Support Services

<table>
<thead>
<tr>
<th>Learning Support Services</th>
<th>Rating of Importance</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online provision of examination time-table</td>
<td>81.8%</td>
<td>1</td>
</tr>
<tr>
<td>Online course registration</td>
<td>77.1%</td>
<td>2</td>
</tr>
<tr>
<td>Contact of course lecturer via e-mail</td>
<td>69.5%</td>
<td>3</td>
</tr>
<tr>
<td>Contact of fellow course students via e-mail</td>
<td>61.8%</td>
<td>4</td>
</tr>
<tr>
<td>Online learning materials</td>
<td>57.1%</td>
<td>5</td>
</tr>
<tr>
<td>Online provision of tutorials and discussions</td>
<td>51.4%</td>
<td>6</td>
</tr>
<tr>
<td>Contact of Lecturer via landline phone</td>
<td>33.4%</td>
<td>7</td>
</tr>
</tbody>
</table>

Perceived Quality

A question about the perceived quality of online instructions and learning resources in comparison with print-based study materials provided in the form of lecture notes was asked. The perception was measured on a 5-point Likert-type scale with anchors of 1: Definitely not same and 5: Completely same. The quality of the study materials available online is perceived as good as module lecture notes.
Computer and Internet Access Challenges

For those who did not own computers, 49% cited high cost of computers as the primary reason for their inability to own them. Other cited challenges included: unreliable power supply and network; limited computers at the Regional Centres; high cost of internet access at cyber cafes; and slow speed of computers at cyber cafes and the Regional Centres. The challenges of using cyber cafés included:

- High cost 60.0%
- Unreliable network 19.0%
- Slow speed 13.0%
- Congestion 5.0%
- Electricity connectivity 3.0%

The challenges related to the use of computers at the Regional Centre were identified were:

- Limited computers 67.0%
- Electricity and network 23.0%
- Frequent change of password 3.0%
- Others 7.0%

Interestingly, none of these participants reported such challenges as the need for technical support and virus attacks. One interpretation of such an omission could be their low interaction and experience with computers.

Conclusion

With increasing demand for high education and training resulting from the growing school leavers’ population at all levels of education and the lifelong learners, developing countries face the challenge of the scalability of enrollment in conventional education institutions. In this context, technology-enhancing distance learning has been suggested as an alternative avenue for accommodating and enhancing the scalability of
numbers (Abdon, *et al.*, 2007; Diallo, *et al.*, 2010). As discussed in this paper, distance learning encompasses both print-based and e-learning resources (Anderson, 2005). It is in this context that e-learning has been seen in the literature as a sub-set of distance learning or even at times defined and described as distance learning. This study examined the distance learners’ perception of the effectiveness of the use of computer and internet in learning. For purposes of this study online learning though interchangeably used with e-learning was therefore operationalised as “*computer and internet facilitated and enhanced learning*”. The primary question was to: To what extent do distance learners perceive online learning as an effective mode of learning?

While the study participants had positive perception towards studying through ODL at both the undergraduate and postgraduate levels, their high preference is for print-based delivery mode. There could be many factors influencing this choice. These may include lack of other accessible, acceptable, and affordable options that the course and programme provider offers. The primary mode of ODL delivery at the Open University of Tanzania is print. As observed by Harris and Gibson (2006) and Spooner, *et al.*, (1999) familiarity with what is available and an acquired taste of conditions of learning under distance learning promote liking and hence the preference of ODL.

On technology-enhanced learning, online learning comes second to print-based learning. This mode relies heavily on the effectiveness and efficiency of ICT related infrastructure (Gunga & Ricketts, 2007). Tanzania experiences huge deficiency in ICT and electricity penetration. Besides the macro factor of ICT related infrastructure, micro factors appear to influence the maximisation of e-learning. These micro factors include *inter alia*: through LMS platform the Open University of Tanzania has put limited courses and programmes online; computer and internet access is limited to minority of
learners; and most learners come from low socioeconomic and peasantry background.

While technology-enhanced learning is unavoidable approach for mass education in developing nations, questions have been raised about its implementation strategy that needs to take into account the needs analysis of the learners, the learning environment and the cost implications (Spooner, et al., 1999; Bates, 2005; Wright, et al., 2009). In this study, it is clear that online learning or other subsets of e-learning cannot be used as a stand-alone instructional delivery mode and hence the recommendation for the blended approach that incorporates print-based materials, face to face encounters, and online learning.

References


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