

# E-Readiness Survey: Know Your Customer – Plan the Future

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## Abstract

The Tanzania Education and Research Network (TERNET) conducted the presented e-readiness survey in Tanzanian higher learning institutions to establish the preparedness of those institutions with regard to the use of Information and Communication Technologies (ICT). The survey focused on achieving the actual capability of each and every individual institutions readiness in the use ICT in education.

The survey was carried out to 74 institutions in Tanzania between October to December 2014, revised in February 2016. The survey was grouped into four categories related to network access, networked learning, networked society, and policy. The categories were further broken down into nine indicators: communication infrastructures, Internet availability, Internet affordability, network speed, enhancing education with ICT, developing the ICT workforce, people and organizations online, locally relevant contents, and ICT in everyday life. Through the collected data, we observe that Institutions outside the Dar Es Salaam city has major challenges in terms of Internet availability, affordability and speed. Most of smaller institutions or campuses outside Dar Es Salaam have budgetary challenges as well lack of qualified ICT technical staff. ICT policy and strategic plan is missing in most institutions.

## INTRODUCTION

Tanzania Education and Research Network (TERNET) is a network for Tanzanian higher learning and research institutions aiming at providing platform for enabling the sharing of education and research resources [1]. TERNET decided to conduct an e-readiness survey aiming at establishing ICT status for each member institution in the country. E-readiness (electronic readiness) has many definitions as reported by different scholars [2, 3, 4]. However, the general definition used in this paper is the one adapted from Center for International Development at Harvard University, defined as “*the degree to which a community is prepared to participate in the Networked World*” [2]. This is gauged by assessing a community’s relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICTs. When considered together in the context of a strategic planning dialogue, an assessment based on these elements provides a robust portrayal of a community’s Readiness. The value to a community of assessing its Readiness lies in evaluating its unique opportunities and challenges.

The survey was sponsored by International Network for the Availability of scientific Publications (INASP) [5], performed in three months between October and December 2014, later verified again in February 2016. The findings in the study are used to guide TERNET better serve her members; knowing the status on the ground is an opportunity to provide strategic solutions.

## Survey Objectives

The e-readiness survey had the following specific objectives:

1. Conduct a diagnostic assessment on e-readiness to Tanzania's Higher Education and Research Institutions (HERIs).
2. Identify critical issues that need to be addressed through TERNET services, especially allocating slots during trainings "capacity building" and prioritize the Direct Engineering Assistance (DEA).
3. Disseminate research findings to stakeholders and collaborators to assist in future plans.

## Assessment Framework

The e-readiness assessments are usually diverse in their goals, strategies and results [6,7]. E-readiness assessments are designed to evaluate organizational capabilities, access and opportunities offered through digital initiatives. For this work, the assessment framework was derived from an e-readiness assessment tool originally developed by the Center for International Development at Harvard University [2]. The framework contained 10 indicators grouped into four categories:

- (i) Internet access (3 indicators – Internet availability, Internet affordability, network speed and quality)
- (ii) Networked campus (2 indicators – network environment, services)
- (iii) Networked learning (4 indicators – enhancing education with ICTs, ICT research and innovation, ICTs in libraries, Capacity Building)
- (iv) Institutional ICT strategy (1 indicator – ICT Policy)

## Literature Review

Information and communication technology (ICT) is a diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information [8]. It allows institutions to collaborate and exchange information at a large scale. ICT is composed of ICT infrastructure, ICT hardware, software & information system, and people. These are cornerstones for the development and utilization of ICT in institutions.

Three readiness assessment tools related to ICT freely available, which was reviewed, are: Readiness for Networked World: A guide for developing countries [2]; E-Commerce Readiness Assessment [9]; and Readiness Guide for Living in the Networked World [10]. In those documents, there has been more than one effort to define what is meant by e-readiness [7]. The United Nations University stated "e-readiness measures how well a society is positioned to utilize the opportunities provided by ICT, where ICT infrastructure, human capital, regulations, policies and Internet penetration are all crucial components of e-readiness" (11). According to the readiness guide for developing countries, Harvard University defined e-readiness as the "degree to which a community is prepared to participate in the Networked World. It is gauged by assessing a community's relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICTs".

## METHODOLOGY

A questionnaire containing "hard facts" and perception questions was designed to contain three sections related to:

1. Awareness of TERNET and COTUL - the Consortium of Tanzania Universities and research institutions Libraries
2. Management facts for each visited institution

### 3. Technical part related to ICT and library systems.

All the data (hard facts and survey data) was entered into a web-based database and is available to each of the universities. The idea was to collect data from all institutions who are members (active, non-active, and prospective) of TERNET.

#### **Data collection and data entry processes**

The data collection tool was tested by senior TERNET staff who visited nearby institutions in Dar Es Salaam. Later, the questionnaires were sent to the campuses through email. Physical visits commenced on November 2014 and lasted for 2 months. A total of 74 institutions was visited. The data was verified again in February 2016 through phone calls and questionnaire when participants were attending a seminar organized by TERNET.

#### **Data analysis**

All the hard facts and valid perceptions data was entered into the online database in the “Adobe-Forms Central” where summary report in a form of charts were generated. The same was exported to excel for further analysis.

### **FINDINGS**

The study analyzed responses for each of the four categories of e-readiness indicators for each institution. 63% and 94% of respondents indicated they are awareness of COTUL and TERNET respectively.

#### **Internet access**

The Internet availability and number of users are incomparable. Each institution is receiving a capacity of 4.76 Mb/s (on average) regardless the total number of users. This implies that a large number of users do share a small capacity of Internet available at the institution. It was learned that mobile operators nowadays provide users with modems already linked for Internet access as an alternative solutions.

#### **Networked campus**

Some campuses are not networked, leading to a situation where resources at the institution are used by few individuals who have direct access. Even though about 81% have campus wired LAN and 75% have wireless networks in their campuses, 75% would like to restructure their networks.

#### **Networked Learning**

Most institutions have student management systems for handling students’ academic records. Also, 66% of respondents have attended workshops and trainings offered by TERNET in collaboration with partners like Network Startup Resource Center (NSRC), Ubuntu Alliance, Tanzania Network Operators Group (tzNOG), and Africa Network Operators Group (AfNOG). 81% of respondents have access to online publications.

Most institutions have no ICT policy; no defined procedures for handling ICT issues and lack of defined budget for infrastructure as a result of most facilities are outdated. Only 59% have indicated owning an ICT policy.

### **Other Observations**

During the survey we discovered some challenges in different areas such as in management, technical and users of the systems;

1. In management: Budget is an issue in some of the institutions. Hence, improvement of infrastructures and ICT in general become a challenge, some institutions failed to deploy some services such as e\_library, student's systems, network monitoring tools or wireless access points due to budget issues.
2. In technical: Regardless of budget for infrastructures and bandwidth, availability of skills is a another challenge, hence a need for capacity building.
3. Other systems are already deployed in some institutions but no awareness to university members' stuffs and other users to utilize those systems.

From some of challenges described above particularly some institutions have requested TERNET to conduct some activities in their institution which might entice the management to support and prioritize ICT.

## **CONCLUSION AND RECOMMENDATION**

This section presents the conclusion and recommendations from the survey.

### **Conclusions**

The e-readiness survey showed that lack of effective network support and poor campus network design and bandwidth management practices are among the reasons that campus networks are perceived to be unstable.

The survey indicated that only 63% indicated awareness of COTUL; the Internet availability and number of users are incomparable where on average each institution is receiving a capacity of 4.76 Mb/s regardless the total number of users. Even though about 81% have campus wired LAN and 75% have wireless networks in their campuses, 75% would like to restructure their networks.

Further, 66% of respondents have attended workshops and trainings offered by TERNET in collaboration with partners and 81% of respondents have access to online publications. But, there is no defined procedures for handling ICT issues since only 59% have indicated owning an ICT policy.

### **Recommendations**

Recommendations are provided below, some of them are inline with the initial objectives while others are general:

1. institutions should hire a critical mass of network engineers, systems administrators and helpdesk staff to support the students and departments. This will help them with the use ICT for teaching, learning, research and management to be easy and enjoyable.
2. using this survey as a benchmark, TERNET should conduct a series of e-readiness surveys (e.g. every 2 years) for measure progress. The results should assist decision making for follow-up activities such as Direct Engineering Assistant as well as kind of future trainings to member institutions.

3. With the low awareness, especially to COTUL, there is a need for more campaigns. One possible way is to invite the COTUL management into TERNET meetings.

At TERNET, they have already started to plan Direct Engineering Assistance (DEA) activities guided by the findings.

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## ACKNOWLEDGEMENTS

This survey was funded by International Network for the Availability of scientific Publications (INASP). The success of this research would not happen without support from the entire TERNET secretariat, supported by three research assistants from member institutions.