Feasibility study for the implementation of an education management information system (EMIS) and “e-library” system for all higher education and research institutions in Tanzania

Prof Louis C H Fourie
Department of Information Systems
University of the Western Cape

Stakeholders Meeting
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ICT in Education
Introduction

• Beginning in the mid 1990’s ICT has slowly began to be play a role in Higher Education (Garrett Reed, 2007)
• ICTs play a significant role in education today (Surty, 2010).
• Many initiatives in the developing world to provide infrastructure for educational purposes.
Introduction

- Benefits include the preparation of students for the information age; distance education and improvement of the administration, teaching and learning processes and quality and efficiency of service delivery of HERIs.

- Tanzanian initiatives are aligned with 4th attribute of Vision-2025: “a well educated and learning society by the year 2025”. ICT is considered as an enabling tool.

- The introduction of ICTs in education represents an important part of Government's strategy to improve the quality of teaching and learning.
Access to ICT and Student Achievement

Achievement of Problem Solving

Percentage of Students using Computers at Home

Source: PISA 2003 Data Analysis.
Research findings on Tanzania

• Remarkable increase in access at all levels, also at higher education institutions
• Rapid growth in ICT infrastructure, but facilities mainly available in urban areas with rural areas underserved
• Dramatic expansion of mobile telephony services, while minimal growth in fixed lines and low internet penetration
• Apart from a few pilots, education not yet tapping into wide mobile telephony coverage

Patti Swarts, 2009
Research findings on Tanzania

- Most universities have dedicated computer centres and through TERNET will create an electronic network that will connect all higher education institutions, research facilities and TTCs
- Only a few like UDSM and OUT make use of digital learning environments
- Progress in local content development (web portals, blogs, online forums, discussion groups)

Patti Swarts, 2009
The Aim of ICT in Education

ICTs are vital for data collection and analysis (Michael Trucano, 2008)

Fengchun Miao, 2012

Harnessing the potential of ICT towards achieving quality education for all
ICT in Education

ICT has a wide variety of applications in education

- Information Source
- Administration
- Communication
- Distance Learning
- Learning Tools
ICTs are being increasingly used in education, even in the most challenging environments in developing countries.

Sources:
Knowledge Maps (infoDev 2005)
Survey of ICT and Education in Africa (infoDev/COL, 2007)
Critical Review and Survey of ICT and Education in the Caribbean (infoDev 2007)
Education Management Information Systems (EMIS)
Introduction

• A major use of ICT in education is to gather reliable educational data to enhance policy-making, teaching and learning research, and monitoring and evaluations.

• Tanzania has invested significant resources in collecting, processing, utilising, disseminating and managing more and better educational data and information through the Education Management Information System (EMIS).
Introduction

• EMIS is emphasized in all main government ICT policy statements e.g. National Vision 2025, National Information and Communication Technology Policy (2003), National Strategy for Growth and Reduction of Poverty (NSGRP), the Education Sector Development Plan (ESDP) with its sub-sectoral plans such as PEDP, SEDP, Implementation of ICT in Teachers Colleges and Adult and Non Formal Education implementation Plan (ANEIP).

• EMIS and an e-Library system will build on the infrastructure backbone (NICTBB), the National ICT Optic Fiber Cable (OFC) and NREN.
Why an EMIS?

- Integral to the success of government strategy, is a **rigorous monitoring and evaluation system**.
- The problem is **inadequate** national data-collecting, managing, planning and decision making.
- Data collection system is **outdated: often hand-written**
- **Major information gaps** - insufficient ability to disaggregate information, which is needed for critical monitoring & evaluation, planning and interventions.
Purpose of an EMIS

- Monitoring and Evaluation of the Educational Process;
- Use of data for decision-making and management;
- Support Policy Planning and Development;
- Create a system transparency by sharing data and information…
EMIS is a way to provide the foundation for decision making at every level of the education system.

Role of an EMIS

- Stock taking/Benchmarking
- Policy formulation/goal setting
- Management (resources)
- Monitoring

Information Needs at All Levels of Education

Jonghwi Park, 2012
Functions of an EMIS

- The focal functions of EMIS are the collection, storing, processing, analysing, utilizing, dissemination of data and information for educational planning and management to avail it to educational stakeholders on a timely, routine, reliable and predictable basis via uncomplicated and user friendly means (Hua 2003).
- The EMIS includes a set of formalized and integrated operational processes, procedures, and cooperative agreements by which data and information about educational resources and infrastructure; other learning activities, and evaluative outputs are regularly shared, integrated, analyzed, and disseminated for educational decision making at each level of the educational hierarchy.
High level view of an EMIS

Edward Mosuwe, 2012
EMIS Example

Provides the standard for all institutional data and institutional administration systems at ground level (Gibson, 2009:18)

Edward Mosuwe, 2012
E-Library
The Web has fundamentally changed the way libraries conduct their business.
Library without walls
Worldwide libraries are changing from a brick and mortar library...
To an e-Library
E-Library definitions

- E-Library is a managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network.
- E-library = library automation
- Digital library = digital content/sources (e.g. Tanzania Online)
Today’s e-Library

– Online presence
– Collections and services delivered online
– Paralleled to the brick-and-mortar library
– Many components:
  • Website
  • Mobile site
  • Twitter
  • Facebook
  • Blog
  • LibGuides
  • e-Services
  • And more
What has moved online?

- **Collections**

- **Services**

  - **Self Help**
    - Interlibrary loan, renew materials, catalog

  - **Reference**
    - Chat, Text, Email, IM

  - **Instruction**
    - Podcast, Camtasia, iTuneU
    - Online guides (LibGuides)

  - **Outreach**
Online Collections and Services

Alice Keller, 2003
Online Collections and Services

- virtual
  - electronic document delivery
  - online journals
  - dissertations online
  - A&I in OPAC

- physical
  - traditional library services
  - print collections

- services
  - traditional
  - new

- spaces
  - virtual
  - physical

- MyLibrary
- EPICS
- E-Collection
- picture archive
- larger departmental libraries

Alice Keller, 2003
Status of e-libraries in Tanzania

• Digital libraries are not common among HERIs in Tanzania.

• Few libraries are automated in Tanzania: University of Dar-es-Salaam, Sokoine University, Mzumbe University and others.

• Most of these libraries also use different software.

• Few have full text online services.

• In line with SSA research
  – The INASP survey on digital university libraries in SSA found that the status of electronic and digital initiatives in HE is uneven. Some university libraries are fully automated, others remain mostly manual (Rosenberg, 2005).
“People expect to be able to work, learn, and study whenever and wherever they want to.”
Mobile Internet

By 2014, mobile internet should take over desktop internet usage

Global Mobile vs. Desktop Internet User Projection, 2007 - 2015E

- Internet Users (MM)
  - 2007: 400
  - 2009: 800
  - 2011E: 1,200
  - 2013E: 1,600
  - 2015E: 2,000

- Mobile Internet Users
- Desktop Internet Users
A global shift to mobility

- E-learning to M-learning
- E-commerce to M-commerce
- E-government to M-government
- E-collaboration to M-collaboration
- **E-library to M-library**
- E-health to M-health
- E-agriculture to M-agriculture
- E-finance to M-finance
Jolie O’Dell, Mashable, on the Morgan Stanley study:
http://mashable.com/2010/04/13/mobile-web-stats/
### Many devices!

<table>
<thead>
<tr>
<th>Level</th>
<th>Devices</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top Level</strong></td>
<td>iPhones, Android phones</td>
<td>Wide Touch screen, sophisticated web capability</td>
</tr>
<tr>
<td><strong>Middle Level</strong></td>
<td>Blackberry, Nokia smartphones, Windows mobile, etc.</td>
<td>Not always touch screen, capability of JavaScript.</td>
</tr>
<tr>
<td><strong>Low Level</strong></td>
<td>Web-enabled flip phones</td>
<td>Small screen, several functions, low web capability</td>
</tr>
</tbody>
</table>
M-Library JLA,
Yogyakarta, Indonesia
Research Instruments
Research instruments: EMIS

1. Preamble/Introduction – introduces the study, explains the purpose, provides the contact details of consultants and definitions of key terms.

2. General information and profile of the institution
   – Contact information
   – Details of person completing the questionnaire
   – Details of institution
Research instruments: EMIS

3. Infrastructure
   – Servers
   – Other equipment
   – Adequacy
   – Internet bandwidth, connectivity and use

4. Human capital/resources
   – The gender and qualifications of ICT division
   – Professional qualifications
   – Staff functions/categories
   – Knowledge and skills of staff
Research instruments: EMIS

5. Sustainability
   – ICT/EMIS budget

6. MIS Assessment
   – System functions
   – Available systems
   – Requirement of each system & Interlinkage/Integration between systems
   – Expertise in each category

7. Communication – media channels used
Research instruments: E-library

1. Preamble/Introduction – introduces the study, explains the purpose, provides the contact details of consultants and definitions of key terms.

2. General information and profile of the institution
   – Contact information
   – Details of person completing the questionnaire
   – Details of institution
Research instruments: E-library

3. Library automation
   – Software
   – Internet and network
   – Functions supported
   – Integration and links with other systems
   – Access of e-resources
   – Social media integration
   – Collection size
Research instruments: E-library

4. Digital library
   – Software used
   – Content collected
   – Copyright and other rights

5. Access and reproduction policies

6. Hardware and infrastructure

7. Sharing mechanism

8. Library staff – educational level and numbers
Outline of the final report
Outline of final report

1. Introduction and background
   – Education/Higher Education in Tanzania
   – ICT in Tanzania

2. Overview of the current status in Tanzania
   – ICT
   – EMIS
   – E-libraries and digitalisation

3. Research design and methodology
Outline of final report

4. Research results
   – Literature study
     • ICT in HE
     • EMIS
     • E-libraries
     • Alternative solutions
Outline of final report

4. Research results
   – Empirical study
     • EMIS
       – Demographics
       – Current infrastructure and its adequacy
       – Human resources, qualifications and skills
       – Sustainability
       – Current MIS and expertise
       – Communication channels
4. Research results
   – Empirical study
     • E-library
       – Demographics
       – Library automation, integration and linkage
       – Digitalisation and copyright
       – Access and reproduction policies
       – Infrastructure
       – Sharing
       – Human resources
Outline of final report

5. Analysis and interpretation of results
6. Conclusions and recommendations
   – Findings of the study
   – Feasibility
   – Recommended solutions
   – TOR for piloting
Thank you!!

Questions/Clarifications

Lfourie@uwc.ac.za