E-readiness survey of Kenyan higher education institutions

Motivation and findings
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Presentation during the Breakfast Meeting of Stakeholders on September 4, 2007

Nairobi Safari Club, Nairobi
What are our objectives in this presentation?

- To convince you that ICT is not for “techies”, it is for faculty and students
  - You will need ICT to achieve educational learning objectives in the 21st century
  - VCs and CEOs must provide ICT leadership NOT the “techies”
- To convince you that you need to incorporate some ICT indicators in your corporate strategy
  - We provide some strategic indicators that you could monitor
- To demonstrate that Internet bandwidth is affordable within your current budgets and revenue!
  - Align ICT budgets to academic programs
- To create DISATISFACTION with your current ICT strategies and usage for learning, teaching, and research
  - Trigger action based on the ICT data we collected from you in 2006!
  - Hope is NOT a strategy
Rankings vs. E-readiness

- This is NOT another Webometric type ranking of institutions
- E-readiness is about corporate and ICT strategy formulation
  - SWOT analysis
  - Diagnostic study!
- Study was about developing strategic indicators for transforming higher education using ICT
  - Rankings in the future!
Organizational Change

$\Delta = D \times V \times P$

Dissatisfaction with status quo
Vision for future
Practical next steps

(See Kotter’s article on the Heart of Change)
KENET research team

- Professor Meoli Kashorda, Principal researcher & former dean, USIU school of business
- Professor Tim Waema, former director of ICT center, University of Nairobi
- Professor Mary Omosa (IDS, UoN), Baseline study expert
- Eng. Victor Kyalo (KENET), Executive Director, KENET and Deputy CEO, Kenya ICT Board
Who funded the project?

- The Partnership for Higher Education in Africa
  - Rockefeller and Ford Foundations
  - Research Grant of $140,000
  - $58,400 for E-readiness and rest for capacity building of KENET

- KENET Stakeholders ($60,000)
  - CCK pays the salaries of the secretariat
  - University of Nairobi has given KENET a CEO and offices, USIU processes payroll
  - Researcher team were full-time employees of local universities (SU, UoN, JKUAT, USIU)
Motivation and methodology

- What is e-readiness?
  - Networked readiness index
- Why is e-readiness important for higher education institutions?
- How did we measure e-readiness?
  - Our methodology
E- readiness and Networked Readiness Index

- E- readiness is the degree to which a HE institution is prepared to participate in the networked world
  - for learning, teaching, research, and management
- Networked Readiness Index (NRI) is defined as a nation’s or community’s degree of preparation to participate in and benefit from ICT developments
  - *World Economic Forum / INSEAD*
What does NRI measure?

- Environment
  - Market environment
  - Pol. & Regulatory env
  - Infrastructure env.

- Readiness
  - Individual readiness
  - Business readiness
  - Govt. readiness

- Usage
  - Individual usage
  - Business usage
  - Govt. usage

Source: GIT report 2003-2004
## Networked Readiness Index (2004-2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>USA</th>
<th>South Africa</th>
<th>Mauritius</th>
<th>Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 (out of 102 countries)</td>
<td>4</td>
<td>34</td>
<td>47</td>
<td>75</td>
</tr>
<tr>
<td>2005 (out of 115 countries)</td>
<td>1</td>
<td>37</td>
<td>45</td>
<td>91</td>
</tr>
<tr>
<td>2006-2007 (out of 120 countries)</td>
<td>7</td>
<td>47</td>
<td>51</td>
<td>95</td>
</tr>
</tbody>
</table>

*Source: World Economic Forum Global IT Reports*
Why does e-readiness in higher education matter?

- To achieve improved learning outcomes
  - How do we know? What indicators?
- To train the ICT work force
  - Are the employers happy with our graduates?
  - Ready for the knowledge economy/society?
- To develop ICT professionals
  - Any concerns? What ICT innovations and inventions?
- Internal efficiency and effectiveness
  - Flat organizations? Have we automated core functions? Are we transparent?
The “4 Pillars” of a Knowledge Economy (KE)

• A supportive economic and institutional regime to provide incentives for the efficient use of existing and new knowledge, and the flourishing of entrepreneurship.

• An educated and skilled population to create, share, and use knowledge well.

• A dynamic information infrastructure to facilitate the effective communication, dissemination, and processing of information.

• An efficient innovation system of research centers, SME’s, universities, consultants, bigger businesses and organizations.

Source: World Bank Institute
Some reasons for using ICT in higher education

- To increase effectiveness of teaching and learning
  - Superior learning outcomes
- To increase efficiency – in learning, teaching & administration
  - E.g., Flat organization structure?
- To serve the learning needs of working and off-campus students
  - Increase access to higher education?
- Revenue generation (profit)?
  - A myth?
Measuring the quality of higher education

- Quality = QF x QS x QLE x QC
  - QF = Quality of faculty,
  - QS = Quality students,
  - QLE = Quality of learning environment,
  - QC = Quality of Curriculum

- Quality of students “high” because of competition?
  - JAB is admitting only A students!
  - B average for private students?
  - Students using ICT for learning?

- Quality of faculty high
  - But anecdotal evidence suggests it is ageing and inadequate for student enrollment
  - Faculty using ICT for teaching?

- The challenge is creating a world class learning environment
E-readiness assessment methodology

- Derived from the CID (Harvard) E-society tool, AAU self-assessment tools and experience of researchers
- 17 indicators groups as follows:
  - **Network access indicators** (4 – Information infrastructure, Internet availability, Internet affordability, Network speed & quality)
  - **Networked learning indicators** (4 – Enhancing education with ICTs, Developing the ICT Workforce, ICT in Libraries, ICT research and innovations)
  - **Networked society indicators** (4 indicators – Locally relevant content, People and Organizations Online, ICTs in Everyday life, ICTs in Workplace)
  - **Networked campus indicators** (2 indicators - Electrical power & Security, E-campus)
  - **Institutional policy and strategy** (ICT strategy, ICT financing, ICT Human Capacity )
- Stage each indicator on a scale of 1-4 for each indicator (unprepared to ready)
Summary findings

- Basic facts
  - Demographic data
- Overall staging of 17 indicators
- Results for each of five categories
  - Institutional policy and strategy
  - Networked learning
  - Networked society
  - Networked campus
  - Networked access
Demographic data and usage results

- The 25 KENET member institution had a total enrolment of 170,000 students
- University student enrollment was 130,648 students (2006)
  - 20,000 in private universities!
  - 110,000 in public universities
  - Enrollment in Economic Survey 2007 is 112,000!
- 17,000 university faculty and staff members
- 30% students use Internet daily
  - 15% of medical students stated they NEVER use the Internet!
- 93% of students have foreign Web-based e-mail as primary address (Yahoo, Hotmail, Gmail)
- 75% of students do not think campus e-mail is reliable
- 80% of students are frustrated by Internet speeds on campus
  - 75% think cyber cafés have better speeds
Who is the e-mail address provider?

Figure 26b: Bar chart of who provide e-mail addresses or accounts

- Web based e.g. Yahoo: 82.87%
- Institutional: 15.03%
- Local IS: 2.89%
- Faculty: 1.54%
- Admin staff: 2.1%
- Students: 19.94%

Source: KENET 2006
Overall stages of 17 indicators

All KENET institutions

Information Infrastructure
ICT Human Capacity
Internet Availability
Internet affordability
Network speed and quality
Developing ICT workforce
ICT in libraries
Enhancing education with ICT
ICT Research and Innovation
People and organizations online
Locally relevant content
ICT in everyday life
ICTs in Workplace
Network Environment
E-campus
ICT Strategy
ICT Financing
ICTs in Workplace
ICT in everyday life
Locally relevant content
Network access category indicator stages

All HE institutions surveyed

Information infrastructure

Network speed and quality

Internet Availability

Internet Affordability

HEE- readiness survey
Networked Campus Environment

- All KENET institutions: 2.9
- Universities: 3.0
- Tertiary institutions (Polytechnics/Colleges): 2.6

E-campus

- All KENET institutions: 2.4
- Universities: 2.7
- Tertiary institutions (Polytechnics/Colleges): 1.9
Average networked campus stages - Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotts Theological</td>
<td>2.0</td>
</tr>
<tr>
<td>Africa Nazarene</td>
<td>2.9</td>
</tr>
<tr>
<td>Baraton</td>
<td>2.5</td>
</tr>
<tr>
<td>Catholic</td>
<td>3.0</td>
</tr>
<tr>
<td>Daystar</td>
<td>2.7</td>
</tr>
<tr>
<td>Egerton</td>
<td>3.2</td>
</tr>
<tr>
<td>JUAT</td>
<td>2.5</td>
</tr>
<tr>
<td>Kabarak</td>
<td>3.1</td>
</tr>
<tr>
<td>KEMU</td>
<td>3.3</td>
</tr>
<tr>
<td>Kenyatta</td>
<td>2.8</td>
</tr>
<tr>
<td>Maseno</td>
<td>2.5</td>
</tr>
<tr>
<td>Moi</td>
<td>2.3</td>
</tr>
<tr>
<td>NEST</td>
<td>3.2</td>
</tr>
<tr>
<td>Strathmore</td>
<td>2.8</td>
</tr>
<tr>
<td>USIU</td>
<td>3.8</td>
</tr>
<tr>
<td>University of Nairobi</td>
<td>3.7</td>
</tr>
<tr>
<td>Masinde Muliro</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Networked learning category

All KENET institutions

Developing ICT workforce

ICT Research and Innovation

Enhancing education with ICT

ICT in libraries
Average networked learning stages - Tertiary institution

<table>
<thead>
<tr>
<th>Tertiary institution</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative College of Kenya</td>
<td>1.3</td>
</tr>
<tr>
<td>Holy Rosary College</td>
<td>1.5</td>
</tr>
<tr>
<td>Kenya Institute of Management</td>
<td>1.4</td>
</tr>
<tr>
<td>Kimathi Institute of Technology</td>
<td>1.2</td>
</tr>
<tr>
<td>Kisumu Polytechnic</td>
<td>1.4</td>
</tr>
<tr>
<td>Loreto College</td>
<td>1.6</td>
</tr>
<tr>
<td>Mombasa Polytechnic</td>
<td>1.4</td>
</tr>
<tr>
<td>Kenya Polytechnic</td>
<td>1.3</td>
</tr>
</tbody>
</table>
Networked society category indicator stages

- People and organizations online: 2.5
- Locally relevant content: 3.0
- ICT in everyday life: 2.6
- ICTs in Workplace: 3.1
Average networked society stages - universities

University

Africa Nazarene

Catholic

Daystar

Egerton (Njoro)

JKUAT (Thika)

Kabarak

KEMU

Kenyatta

Maseno

Moi

NEGST

Strathmore

Scott

USIU

University of Nairobi

Masinde Muliro

Values:

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5

2.9 2.9 3.0 3.3 3.1 2.6 2.7 2.8 2.7 3.0 3.1 3.0 3.0 2.8 2.7
Networked society - tertiary institutions

- Cooperative College of Kenya: 2.7
- Holy Rosary College: 2.7
- Kenya Institute of Management: 3.2
- Kimathi Institute of Technology: 2.4
- Kisumu Polytechnic: 2.5
- Loreto College: 3.0
- Mombasa Polytechnic: 2.6
- Kenya Polytechnic: 2.9
- Tertiary Average: 2.7
Institutional policy and strategy indicator stages

All KENET institutions
Average institutional policy stages - tertiary institutions

- Cooperative College: 2.2
- Holy Rosary: 1.4
- Kenya Institute of Management: 1.3
- Kimathi Institute of Technology: 1.9
- Kisumu Polytechnic: 1.5
- Loreto Convent: 3.1
- Mombasa Polytechnic: 1.8
- Kenya Polytechnic: 1.7
Does location outside Nairobi matter?

- Universities in Nairobi or its environs
  - (UoN, USIU, KU)

- Universities outside Nairobi (Meru, Eldoret, Kisumu)
Overall Staging for 15 Strategic Indicators

1. Internet bandwidth per 1000 students
2. Networked PCs per 100 students
3. % of faculty staying online up to 1 hour
4. % of student respondents with campus access to computers
5. % of students visiting 1-2 local web sites
6. % of students using internet daily
7. International competitions & Exhibitions
8. Extent of ICT implementation
9. Integration of ICT in curricula
10. Availability of OPAC on/off-campus
11. % of ICT staff worked for > 3 years
12. % with professional certification
13. % of students who think network speed better than cyber café
14. % of students who think on-campus network always works
15. % of students using internet daily
16. % of students visiting 1-2 local web sites
17. % of students with campus access to computers
18. % with professional certification
19. % of ICT staff worked for > 3 years
20. Integration of ICT in curricula
What does the data tell us?

- The students are ready and eager
  - Networked society indicators are good
  - But do not have campus access!

- The faculty are ready and making progress in creating on-line content
  - But frustrated by low speeds and low quality of service!

- Institutional leadership does not yet consider ICT strategically important for teaching, learning, and research
  - Less than 0.5% of total expenditure allocated to Internet access
  - Only 3 PC per 100 students on average!
What are the strategic implications of the findings?

- How can an institution transition from current stages to stage 4?
- ICT strategy brief presentation next

Thank you