Partnership for Building Institutional/National Capacity: Addis Ababa University and University of North Texas Initiatives

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Outline

• **Background**
  – ICT in Africa/Ethiopian

• **Emerging Trends in Higher Education**
  – MOOCs
  – Open Access and Scholarly Communication

• **Global Knowledge Production and Consumption**
  – Linkage of GERD and National Initiatives
  – African Challenges - Gross Domestic Expenditure on R&D

• **Partnership for Enhancing African HEI Capacity**
  – UNT’s Partnership with Ethiopian HEI

• **Summary**
Background

- Africa is the second largest continent with about 54 countries and a population of over one billion people.

- Ethiopia is one of the world’s oldest civilizations with a population of about 96 million (2015 estimate - The World Fact book) ➢ The second-most populous country in Sub-Saharan Africa

- Despite a series of natural and man-made disasters in the past, there has been significant progress in key human development indicators and toward the Millennium Development Goals (MDGs).
Information Technology Infrastructure Development

• To enhance the development of a global information society,
  • increased attention has been given to the importance of addressing the digital divide

• There is a significant progress towards:
  • information technology infrastructure development,
  • implementing digital technologies
  • facilitating access to information resources in a way that enables knowledge creation

  ❖ However, access, and use of ICT remains a critical challenge in many African countries
### World Internet Usage and Population Statistics

**June 30, 2014 - Mid-Year Update**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,125,721,038</td>
<td>4,514,400</td>
<td>297,885,898</td>
<td>26.5 %</td>
<td>6,498.6 %</td>
<td>9.8 %</td>
</tr>
<tr>
<td>Asia</td>
<td>3,996,408,007</td>
<td>114,304,000</td>
<td>1,386,188,112</td>
<td>34.7 %</td>
<td>1,112.7 %</td>
<td>45.7 %</td>
</tr>
<tr>
<td>Europe</td>
<td>825,824,883</td>
<td>105,096,093</td>
<td>582,441,059</td>
<td>70.5 %</td>
<td>454.2 %</td>
<td>19.2 %</td>
</tr>
<tr>
<td>Middle East</td>
<td>231,588,580</td>
<td>3,284,800</td>
<td>111,809,510</td>
<td>48.3 %</td>
<td>3,303.8 %</td>
<td>3.7 %</td>
</tr>
<tr>
<td>North America</td>
<td>353,860,227</td>
<td>108,096,800</td>
<td>310,322,257</td>
<td>87.7 %</td>
<td>187.1 %</td>
<td>10.2 %</td>
</tr>
<tr>
<td>Latin America / Caribbean</td>
<td>612,279,181</td>
<td>18,068,919</td>
<td>320,312,562</td>
<td>52.3 %</td>
<td>1,672.7 %</td>
<td>10.5 %</td>
</tr>
<tr>
<td>Oceania / Australia</td>
<td>36,724,649</td>
<td>7,620,480</td>
<td>26,789,942</td>
<td>72.9 %</td>
<td>251.6 %</td>
<td>0.9 %</td>
</tr>
<tr>
<td><strong>WORLD TOTAL</strong></td>
<td><strong>7,182,406,565</strong></td>
<td><strong>360,985,492</strong></td>
<td><strong>3,035,749,340</strong></td>
<td><strong>42.3 %</strong></td>
<td><strong>741.0 %</strong></td>
<td><strong>100.0 %</strong></td>
</tr>
</tbody>
</table>

**Penetration Rate Distribution:**

- **North America**: 87.7%
- **Australia / Oceania**: 72.9%
- **Europe**: 70.5%
- **Latin America / Caribbean**: 52.3%
- **Middle East**: 48.3%
- **World, Avg.**: 42.3%
- **Asia**: 34.7%
- **Africa**: 26.5%

(Source: [http://www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm))
ICT for Development (ICT4D)

- ICT enables economic growth and have strategic spillover effects on other sectors.
  - Empower people and help create greater access to information for all.

- In any world with knowledge economy, building an indigenous knowledge base and the ability to access, publish and disseminate local/national or regional research outputs are critically important.
Technology and Trends

• Higher education institutions worldwide are undergoing transformation in the current digital and open environment.

• Digital technologies provide scholars with access to diverse and previously unavailable contents that span myriad technologies across institutions and nations.
ARL Scenarios

(Creative Commons BY NC ND)
Reinventing Education and Scholarly Communication

• The open access (OA) movement is part of the broader "open knowledge" or "open content" movement that transforms scholarly communication

• Open Access is provision of unrestricted online access to results/outputs of research and development

• A massive open online course (MOOC) is a large scale, open-access re-imagining of the more traditional forms of e-learning
Visitors to Popular MOOCs - Udemy (www.udemy.com) by Country


<table>
<thead>
<tr>
<th>Country</th>
<th>Percent of Visitors</th>
<th>Rank in Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>29.2%</td>
<td>553</td>
</tr>
<tr>
<td>India</td>
<td>20.5%</td>
<td>260</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>4.1%</td>
<td>474</td>
</tr>
<tr>
<td>Brazil</td>
<td>3.4%</td>
<td>597</td>
</tr>
<tr>
<td>Australia</td>
<td>2.9%</td>
<td>306</td>
</tr>
</tbody>
</table>
Global Research Communication Infrastructure
(Source: www.geant.net/Resources/Media_Library/Documents/GEANT_Global_Connectivity_September_2014.pdf)
Opportunities for African Countries

• Any technology has greater impact in developing countries

• Infrastructure development, coupled with the increased availability of interoperable Open Access content, helps to integrate, aggregate, and enhance access to diverse digital resources
Infrastructure for Changing Access and Research Capabilities in African Countries

(Source: www.geant.net/Resources/Media_Library/Documents/GEANT_Global_Connectivity_September_2014.pdf)
In the current global knowledge economy, power and wealth are increasingly measured by one’s ability to access and use information and knowledge.

The digital divide in content networks is even more severe than the physical network.

The contribution of African universities to the global scientific knowledge base is very small.
Table 1: ISI Web - Global Knowledge Production

<table>
<thead>
<tr>
<th>Continent</th>
<th>S&amp;T Journals</th>
<th>% of Titles</th>
<th>Patents Filed</th>
<th>% of Patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>54</td>
<td>0.64</td>
<td>438</td>
<td>0.24</td>
</tr>
<tr>
<td>Asia</td>
<td>968</td>
<td>11.28</td>
<td>70,500</td>
<td>38.76</td>
</tr>
<tr>
<td>Europe</td>
<td>4,134</td>
<td>48.55</td>
<td>56,134</td>
<td>30.86</td>
</tr>
<tr>
<td>Oceania</td>
<td>175</td>
<td>2.08</td>
<td>2,065</td>
<td>1.13</td>
</tr>
<tr>
<td>North America</td>
<td>2,966</td>
<td>35.2</td>
<td>51,519</td>
<td>28.32</td>
</tr>
<tr>
<td>South America</td>
<td>173</td>
<td>2.26</td>
<td>1,205</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>8470</td>
<td></td>
<td>181,861</td>
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</tbody>
</table>
Figure 5. Gross Domestic Expenditure on R&D (GERD)
Figure 6. R&D Funding Challenges for African Countries
(Source: http://www.battelle.org/docs/tpp/2014_global_rd_funding_forecast.pdf)

Total investments in R&D (as a percentage of GDP) will stay relatively steady throughout the world in 2014.

<table>
<thead>
<tr>
<th>Region</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>2.5%</td>
<td>2.4%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Asia</td>
<td>1.8%</td>
<td>1.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Europe</td>
<td>1.9%</td>
<td>1.9%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Rest of World</td>
<td>0.9%</td>
<td>0.9%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

But GDP growth in Asia will continue to drive higher absolute levels of gross expenditures on R&D.

Ethiopia’s Expenditure on R&D was 0.17%
Except South Africa, no African country’s investment in R&D made it to the top 40. (Ethiopia’s Expenditure on R&D was 0.17%, as a percentage of GDP).
Figure 7. Linkage Between R&D and National Priorities

Long-Term Outlook for R&D Expenditures

Even if the historic stability of the U.S. and European commitment to research intensity (i.e., spending as a percent of GDP) continues, growth in China’s economy is likely to propel it to the top position in absolute R&D spending by the early 2020s.

Source: Battelle and R&D Magazine

Different Priorities Among Research Leaders

China places more emphasis on development, less on basic research.
Partnership for Enhancing African Countries’ Capacity

• **Higher learning institutions**, especially those in developing countries such as Ethiopia, are core institutions or **critical engines** that shape competitiveness and link nations to the emerging global forces of the knowledge domain.

• There are several multi-scale (local to international) and multi-sector (Academic, government, commercial, not-for profit, etc.) initiatives underway:
  – New Partnership for Africa’s Development (NEPAD)
  – Access to Online Global Research in Agriculture (AGOROA)
  – Health InterNetwork Access to Research Initiative (HINARI)
  – Online Access Research in the Environment (OARE)
AAU-UNT Partnership

• Addis Ababa University (AAU) of Ethiopia and the University of North Texas (UNT) signed MOU in 2014

• The MOU enable the two institutions to explore further opportunities for possible collaboration and partnership in the following areas:
  – health informatics ➔ for Education and Research
  – Library and information science ➔ for Education and Research
  – digital libraries ➔ For Access to Digital Resources and Research
• The partnerships also include, but not limited to, the following:
  – exploring future possibilities for the exchange of students;
  – the mobility of research and teaching personnel;
  – the development of collaborative research projects;
  – the organization of joint academic and scientific activities, such as courses, conferences, seminars, symposia, and/or lectures; and
  – possible access to publications and other materials of common interest
Success Breeds Success

- UNT is now working with other (Jimma and Metu) Universities of Ethiopia and already received the US State Department’s 2015 Seed Money:
  - “…promote programs that prepare Americans for a global environment and attract future leaders from abroad to study, learn, and exchange experiences in the US: http://ethiopia.usembassy.gov/pr_045.html
Challenges and Opportunities for African Higher Education Institutions

For such academic collaborative activities to take off and flourish, African higher education institutions need to:

- Increase their investment in R&D and ICT infrastructure
- Create or formulate open access mandates and policies
- Encourage all stakeholders to ensure compliance and policies implementations
- Encourage a cultural change in academic & scientific communities (collaboration & sharing)
Summary

• While ICT present a number of challenges for higher education, it also offer a unique opportunity for global integration.

• Addressing the evolving higher education challenges require collaborative approaches:
  • Through such international partnerships (like AAU-UNT) and
  • other multifaceted synergetic activities.
  • African higher education institutions can enhance their capacity (to overcome socioeconomic hurdles) and prepare their graduates for a global environment.

• By doing so, we will be able to respond to the new demands of 21st century higher education and developing nations.
References


Thank you!