Enhancing UNT’s Presence in Sub-Saharan Africa: Building Partnerships with Ethiopian Higher Education Institutions

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AFRICA RESEARCH SYMPOSIUM
Thinking and Re-Thinking Africa!
Business Leadership Building,
UNT Campus, Denton, Texas
April 11, 2015
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 Africans’ 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.

• Although African countries have experienced 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).

• Despite the recent progress towards information technology infrastructure development, implementing digital technologies and facilitating access to information resources in a way that enables knowledge creation, access, and use remains a critical challenge in many African countries.
### WORLD INTERNET USAGE AND POPULATION STATISTICS
**JUNE 30, 2014 - Mid-Year Update**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</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>

Figure 1. Internet Penetration per Population (Source: [http://www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm))
ICT for Development

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

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

• In a world that links knowledge with economic growth, building an indigenous knowledge base and the ability to access, publish and disseminate local/national or regional research outputs critically important.
Technology and Trends

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

A goal towards a global:

- Research communication Infrastructure
- Network of Interoperable digital archives
- Content network framework
- A federated system of national, regional, and global network of digital archives
Figure 2. Global Research Communication Infrastructure
(Source: www.geant.net/Resources/Media_Library/Documents/GEANT_Global_Connectivity_September_2014.pdf)
Figure 3. 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>
Figure 4. Infrastructure for Changing Access and Research Capabilities in 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.

The Open Access movement is transforming scholarly communication.
Open Access and Scholarly Communication

• **Open Access**: Provision of unrestricted online access to results/outputs of research & development such as publications, reports, journal articles, and data, through self-archiving and open access publications.

• Open access collections are more inclusive and their coverage tends to be multidisciplinary and international

• Institutional Repository store, manage, provide access, facilitate use, re-use, and preservation of digital assets. Provide more visibility for authors from developing countries than they would have gotten (because a significant number of journals from developing countries are not indexed in traditional databases)
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><strong>Total</strong></td>
<td><strong>8470</strong></td>
<td><strong>100.00</strong></td>
<td><strong>181,186</strong></td>
<td><strong>100.0</strong></td>
</tr>
</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%
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.
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).
Partnership for Enhancing African Countries’ Capacity

• 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 (AGORA)
  – Health InterNetwork Access to Research Initiative (HINARI)
  – Online Access Research in the Environment (OARE)
UNT’s Partnership with Ethiopian HEI

- 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.

- Many progressive officials in African countries have already begun mobilizing global partners to improve education and ICT infrastructure in their respective countries.

- Addis Ababa University (AAU), one of the oldest institutions in Ethiopia/Africa sent its delegations in 2012 and 2013
  - MOU signed by both AAU and UNT presidents in April 2014
Green Light to Greatness

• The MOU enable us to explore further opportunities for possible collaboration and partnership in areas ranging from joint course offerings and online instruction to special projects in the areas of digital libraries and health informatics.

• We visited Ethiopia in February 2015 and presented:
  – at Addis Ababa University:
    “Open Access & the Evolving Landscape of Scholarly Communication”
  – at Jimma University:
    “Digital Repository: Promoting Scholarship via the Convergence of local/global and digital/analogue contents”
  – at the Consortium of Ethiopia Academic and Research Libraries (CEARL) Conference:
    “Emerging Trends in Academic and Research Libraries”
  – At the National Archives and Library Agency:
    “Web-Archiving: Preserving Important Web-based National Resources”
Success Breed Success

- We received 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 countries and institutions need to:
  – Invest 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)
ARL Scenarios

(Creative Commons BY NC ND)
Summary

• We live in integral global world and ICT will have far-reaching impact on education and scholarship. Addressing the evolving higher education and scholarly communications challenges require collaborative approaches.

• Creating international partnerships and multifaceted synergetic activities enhance African HE institutions’ ability to synchronize their own indigenous socioeconomic with the new demands of 21\textsuperscript{st} century academic institutions and global labor market.

• At UNT, we say our greatest passion is to give a \textit{green light} to greatness. Through such international collaborations, we will be able to create an enriched and sustainable future for our students and for our world.
UNT’s Digital Resources Accessed from 200+ Countries
http://digital.library.unt.edu/explore/collections/UNTETD/browse/
Traffic Source Overview: 6,000+ visits from Africa

- 437,719 visits came from 216 countries/territories
- This continent sent 6,007 visits via 5 subcontinent regions

### Site Usage

<table>
<thead>
<tr>
<th>Country/Tierity</th>
<th>Visits</th>
<th>Pages/Visit</th>
<th>Avg. Time on Site</th>
<th>% New Visits</th>
<th>Bounce Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>302,230</td>
<td>4.11</td>
<td>00:02:35</td>
<td>84.60%</td>
<td>34.79%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>14,589</td>
<td>3.26</td>
<td>00:01:56</td>
<td>97.48%</td>
<td>41.30%</td>
</tr>
<tr>
<td>Canada</td>
<td>11,313</td>
<td>4.30</td>
<td>00:02:17</td>
<td>87.05%</td>
<td>41.62%</td>
</tr>
<tr>
<td>Germany</td>
<td>6,644</td>
<td>5.53</td>
<td>00:02:40</td>
<td>81.91%</td>
<td>40.22%</td>
</tr>
<tr>
<td>India</td>
<td>6,509</td>
<td>2.91</td>
<td>00:02:12</td>
<td>92.64%</td>
<td>31.93%</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>1,609</td>
<td>3.70</td>
<td>00:02:52</td>
<td>84.03%</td>
<td>38.70%</td>
</tr>
<tr>
<td>Eastern Africa</td>
<td>1,574</td>
<td>2.84</td>
<td>00:02:35</td>
<td>86.83%</td>
<td>31.06%</td>
</tr>
<tr>
<td>Western Africa</td>
<td>1,406</td>
<td>2.24</td>
<td>00:03:34</td>
<td>86.90%</td>
<td>34.50%</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>1,356</td>
<td>2.53</td>
<td>00:02:19</td>
<td>93.51%</td>
<td>28.30%</td>
</tr>
<tr>
<td>Middle Africa</td>
<td>63</td>
<td>1.85</td>
<td>00:00:43</td>
<td>62.65%</td>
<td>29.57%</td>
</tr>
</tbody>
</table>
Thank you!
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