University of Medical sciences, Ondo

Staff Orientation Workshop
February 5, 2016

“Benchmarking as a Tool for Ranking World-Class Universities”

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Secretary-General,
Committee of Vice Chancellors of Nigerian Universities, & Immediate Past Vice Chancellor, Obafemi Awolowo University
NIGERIA VISION 2020: Factors Inhibiting effectiveness of STI in driving technological advancement

- Spend on STI is only 0.11% of GDP (UNESCOs say should be 1%)

- No Nigerian university in the Top 500 Global University Rankings, not even Top 1000.

- Low level of inter-researcher collaboration, 41.4% of Nigerian researchers unattached to any research group

- Few patents and weak link between research output and patents

*Collaboration is critical*

"For each international author on an article, there is a corresponding increase in the impact of that paper." - See Slide 47

World class universities will contribute to the goal of Vision 2020
UNIVERSITY OF IBADAN ACADEMIC REPUTATION (1948 – DATE)

THE UCI ERA

THE NASCENT UNIVERSITY

THE TURBULENT YEARS

Highly unfavourable political & socio-economic climate.

Brain Circulation (?).

Regular Strikes.

Facilities Depleted & Obsolete.

Very Large Student Numbers.

Gross Underfunding.

STEADY FALL IN NATIONAL & INTERNATIONAL PRESTIGE

REVITALIZING THE UNIVERSITY

Solid foundation & culture of research.

Relatively high global reputation.

New lease of academic life

Vision & Mission for 20th Century

STRATEGIC PLAN
Characteristics of a World-Class University (WCU): Alignment of Key Factors

- **Concentration of Talent**
  - Students
  - Teaching staff
  - Researchers
  - Internationalization

- **Abundant Resources**
  - Public budget resources
  - Endowment revenues
  - Tuition fees
  - Research grants

- **Favorable Governance**
  - Supportive regulatory framework
  - Autonomy
  - Academic freedom
  - Leadership team
  - Strategic vision
  - Culture of excellence

- **WCU**
  - Graduates
  - Research output
  - Technology transfer
Technology transfer classification of WCU

Attribute 1: Knowledge Creation and Knowledge Dissemination

Attribute 2: Knowledge Infrastructure

Attribute 3: Centre of Inventive Activities

Attribute 4: Facilitation of Knowledge Convergent System
# Fields of Application of Convergent Technologies

<table>
<thead>
<tr>
<th>Healthcare</th>
<th>ICT Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Nanoscale machines for medical intervention</td>
<td>• Environmental monitoring through ambient devices (e.g. hazard alert, alert of pollutants, etc)</td>
</tr>
<tr>
<td>• New imaging techniques</td>
<td>• Mobile devices with integrated medical services</td>
</tr>
<tr>
<td>• Biochips</td>
<td>• Software for multiphenomena and multiscale simulations</td>
</tr>
<tr>
<td>• Biosensors</td>
<td></td>
</tr>
<tr>
<td>• Biomaterials</td>
<td></td>
</tr>
<tr>
<td>• Pharmaceutical genomics</td>
<td></td>
</tr>
<tr>
<td>• Regenerative medicine</td>
<td></td>
</tr>
<tr>
<td>• Targeted drug delivery and release</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment and Energy</th>
<th>Robotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Addressing problems at a systems level</td>
<td>• Neuro-prosthetics – e.g. bionic hand or an adaptive retina implant</td>
</tr>
<tr>
<td>• Development of new technologies for the generation, storage, transport and use of energy</td>
<td>• Emotional-intelligent agent technology</td>
</tr>
<tr>
<td></td>
<td>• Homecare robots</td>
</tr>
</tbody>
</table>
Excellence Accelerating Factors

- Use of Diaspora resources
- Concentration on Niche Areas
- Benchmarking
- Curriculum and Pedagogical Innovations
Ecosystems Factors Determining University Performance

1. Political and economic stability, law, basic freedoms
2. Digital and telecommunications infrastructure
3. Location
4. Articulation & integration mechanisms
5. Resources & incentives
6. Years of education, equity, quality of learning, research, technology transfer, values
7. Stewardship (vision, leadership & capacity for change)
8. Governance & regulatory framework
9. Quality assurance and enhancement

Results

Diagram showing the interrelated factors affecting university performance within an ecosystem context.
# Journal Consortium Ranking (new)

<table>
<thead>
<tr>
<th>Country</th>
<th>Top 10</th>
<th>Top 20</th>
<th>Top 50</th>
<th>Top 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>6</td>
<td>9</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Egypt</td>
<td>2</td>
<td>3</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Kenya</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1</td>
<td>4</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>Ghana</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Uganda</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

- No of universities ranked in a country
- Ranking based on No of research publications and citation over the last five years (2010-2015), and internet visibility/web presence
- Website: [http://ranking.journalsconsortium.com](http://ranking.journalsconsortium.com)
Steps to Attaining World-Class Status

- Benchmarking
- Gap Analysis
- Action Plan
- Resource Mobilisation
- Implementation
- Monitoring and Evaluation-
Gap Analysis

- **Facilities**: US-World Class: 13, UK-World Class: 69, Nigerian Univ: 75
- **Teaching**: US-World Class: 35, UK-World Class: 35, Nigerian Univ: 63
- **Research**: US-World Class: 24, UK-World Class: 76, Nigerian Univ: 76
- **Community Service**: US-World Class: 59, UK-World Class: 69, Nigerian Univ: 69
- **Management**: US-World Class: 25, UK-World Class: 82, Nigerian Univ: 77
- **Funding**: US-World Class: 23, UK-World Class: 75, Nigerian Univ: 77
CVC Analytics Reports

4 major strategic studies conducted & reported:

• Research output, growth and impact report
• Brain circulation report and list of Nigerian researchers abroad
• Research collaboration report
• Academic-corporate collaboration and knowledge transfer report
Output, Growth and Impact
No of Publications: Publications with at least one author affiliated to an institution in that country.
Growth

No of Publications: Publications with at least one author affiliated to an institution in that country.

- Egypt: 12.68%
- Ghana: 14.97%
- Malaysia: 26.94%
- Nigeria: 11.99%
- South Africa: 9.50%
- South Korea: 8.93%
- Tanzania: 10.40%
- Uganda: 11.72%
Field-weighted citation impact

- Egypt
- Ghana
- Malaysia
- Nigeria
- South Africa
- South Korea
- Tanzania
- Uganda

World average = 1
PRELIMINARY RESULTS FOR NIGERIA: Impact of Research Output, 2004-2013

In 2013, the FWCI of Nigeria is 0.45, much below Uganda’s 1.54 and the world average of 1.0. Room for improvement in citation impact while expanding on the volume/output.

<table>
<thead>
<tr>
<th>World Citation Share</th>
<th>Field Weighted Citation impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased from 0.06 % in 2004 to 0.08 % in 2013, but low in comparative terms</td>
<td>0.45 in 2013. Lower than the World Average of 1.0</td>
</tr>
</tbody>
</table>

Growth of Highly Cited Articles

| Share of world top 10% highly cited articles increased from 55 in 2004 to 271 in 2013 | In 2013, 5.57% of publications belonged to world top 10% highly cited articles |

FWCI – Field weighted citation impact is obtained by dividing the absolute citation of an article with the average citation received by articles in the same field, with same type and published in the same year, to remove any bias.
Knowledge Exchange:

Academic-Corporate Collaboration
Research Usage – Corporate Downloads
Research Usage – Patent Citation
Cross-Sector Mobility
National Research Collaboration

- **Egypt**: 37.2% International, 59.7% National, 31.2% Institutional, 19.7% Single author
- **Ghana**: 26.7% International, 13.1% National, 43.9% Institutional, 15.4% Single author
- **Malaysia**: 4.8% International, 15.1% National, 36.7% Institutional, 24.4% Single author
- **South Africa**: 4.9% International, 7.2% National, 36.0% Institutional, 8.7% Single author
- **South Korea**: 4.9% International, 7.2% National, 36.0% Institutional, 8.7% Single author
- **Tanzania**: 6.5% International, 8.0% National, 7.4% Institutional, 8.7% Single author
- **Uganda**: 6.5% International, 8.0% National, 7.4% Institutional, 8.7% Single author

*Note: The pie chart is not included in the description.*
• In most of the years in 2004-2013, Nigeria had the **lowest percentage** of academic-corporate collaborated publications, fluctuating around 0.5%.

• South Korea had the largest number and percentage of academic-corporate collaborated publications.
Research Usage: Corporate downloads (CD)

- South Africa’s publications were downloaded most often by the corporate sector in 2004-2013 with 3.88 corporate downloads per article.
- Nigeria’s publications were downloaded less often than the comparator countries with on average 2.96 downloads per article.
- Relative to its world publication share, Nigeria’s publications were downloaded less often by the corporate sector than the world average. At the peak in 2008, they were downloaded 15% less than the world average.
• Nigeria’s publications received 88 patent citations in 2004-2013.

• Nigeria’s world patent citation share is below 0.1% in all years 2004-2013. After normalizing it by the world publication share, the number is below 0.35 in all years 2004-2013, much below the world average – an indication that the connection between academia and industry need to be further intensified.
Research Usage: Patent citation

Nigeria’s publications in Biochemistry, Genetics & Molecular Biology received the largest number of patent citations (30), followed by Agricultural & Biological Sciences (25) and Medicine (24).
Summary of Knowledge Exchange Indices, 2004-2013

<table>
<thead>
<tr>
<th>Academic – Corporate Collaboration</th>
<th>Field Weighted Citation impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only a total of 188 articles, rep on average 0.5% of total publications. Compare South Korea with 26,172 or 4-6.2% of total publication. SA was 2.5%</td>
<td>4.69 for academic-corporate, very high compared with 0.45 for total publications in 2013. Much higher than the World Average</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corporate Downloads &amp; Patent Citation</th>
<th>Cross-Sector Mobility</th>
</tr>
</thead>
</table>

FWCI – Field weighted citation impact is obtained by dividing the absolute citation of an article with the average citation received by articles in the same field, with same type and published in the same year, to remove any bias
Results for 8 Nigerian Universities
RESULTS FOR 8 NIGERIAN UNIVERSITIES: Research Output, Growth, Focus & Impact 2004-2013

List of Nigerian University Evaluated

<table>
<thead>
<tr>
<th>University of Ibadan, Ibadan</th>
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</thead>
<tbody>
<tr>
<td>Ahmadu Bello University, Zaria</td>
</tr>
<tr>
<td>University of Port Harcourt, Port Harcourt</td>
</tr>
<tr>
<td>University of Ilorin, Ilorin</td>
</tr>
<tr>
<td>University of Benin, Benin</td>
</tr>
<tr>
<td>University of Nigeria, Nsukka</td>
</tr>
<tr>
<td>Obafemi Awolowo University, Ile-Ife</td>
</tr>
<tr>
<td>University of Lagos</td>
</tr>
</tbody>
</table>
Field-weighted citation impact of 8 Nigerian universities

World average = 1
# RESULTS FOR NIGERIAN UNIVERSITIES: Research Output, Growth, Focus & Impact 2004-2013

<table>
<thead>
<tr>
<th>Overall Output</th>
<th>Highest Citation per Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University of Ibadan</strong> was 1\textsuperscript{st} with 6270 articles in 2004-2013</td>
<td><strong>University of Ibadan</strong> has 6.16, highest. <strong>University of Port Harcourt</strong> has 4.23</td>
</tr>
<tr>
<td><strong>UI also has the largest academic-corporate joint publications (52)</strong></td>
<td><strong>UNIPORT</strong> has the highest % academic-corporate publication of 1.1% of total.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highest FWCI</th>
<th>Highest % of Highly Cited Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University of Port Harcourt</strong>’s FWCI increased from 0.51 in 2004 to 1.14 in 2013, highest of 8 Universities</td>
<td><strong>University of Ilorin</strong> has the highest % of 10% highly cited articles out of its publications in 2013 \textsuperscript{(10.70%)}</td>
</tr>
</tbody>
</table>
Research Usage

- University of Ilorin’s publications had the largest number of corporate downloads per article at 3.72.
- Ahmadu Bello University had the lowest value at 2.32.
THE EXPERIENCE OF EGYPT

Goals:
- Raising profile of the Egyptian national publications
- Gaining international readership

Results:
- Established local publishing process
- 14 Journals launched in 10 areas from Engineering to Geophysics since 2009
- Journals attracted authors from 26 countries
- First batch of journals indexed in Scopus and ready for ISI application since 2014.
- Established publishing process
- Major universities & research institutes participate
- Drastic Increase in Number of published articles

Major impact on the Ranking of Universities (see next slide)
## February 2014 Webometrics Ranking for Africa

<table>
<thead>
<tr>
<th>Ranking</th>
<th>World Rank</th>
<th>University</th>
<th>Country</th>
<th>Presence Rank*</th>
<th>Impact Rank*</th>
<th>Openness Rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>299</td>
<td>Cairo University</td>
<td>Egypt</td>
<td>886</td>
<td>76</td>
<td>1325</td>
</tr>
<tr>
<td>2</td>
<td>391</td>
<td>University of Cape Town</td>
<td>South Africa</td>
<td>760</td>
<td>556</td>
<td>655</td>
</tr>
<tr>
<td>3</td>
<td>504</td>
<td>Stellenbosch University</td>
<td>South Africa</td>
<td>327</td>
<td>981</td>
<td>419</td>
</tr>
<tr>
<td>4</td>
<td>549</td>
<td>University of Pretoria</td>
<td>South Africa</td>
<td>340</td>
<td>1154</td>
<td>196</td>
</tr>
<tr>
<td>5</td>
<td>632</td>
<td>University of Kwazulu Natal</td>
<td>South Africa</td>
<td>1181</td>
<td>886</td>
<td>677</td>
</tr>
<tr>
<td>6</td>
<td>690</td>
<td>University of Witwatersrand</td>
<td>South Africa</td>
<td>1600</td>
<td>1310</td>
<td>468</td>
</tr>
<tr>
<td>7</td>
<td>885</td>
<td>University of Western Cape</td>
<td>South Africa</td>
<td>1941</td>
<td>606</td>
<td>2287</td>
</tr>
<tr>
<td>8</td>
<td>1060</td>
<td>Rhodes University</td>
<td>South Africa</td>
<td>1039</td>
<td>1880</td>
<td>871</td>
</tr>
<tr>
<td>9</td>
<td>1167</td>
<td>University of Nairobi</td>
<td>Kenya</td>
<td>1828</td>
<td>1898</td>
<td>774</td>
</tr>
</tbody>
</table>
CVC/AVCNU STRATEGIC FOCUS: Quality

The Nigerian Research and Education Network (NgREN) is to enable Nigerian universities leverage on ICT for teaching, research and management of services, while the Nigerian Elsevier Partnership and those that would follow are designed to complement this initiative by granting access to global e-resources.

- **Establishment of the NgREN**
  Connectivity and internet bandwidth for optimal resource sharing and cheaper cost.

- **E-resource Partnerships - NEP, etc**
  Access to journals, and books, enhanced citation and visibility, etc using the consortium model
NIGERIAN JOURNALS SELECTED TO JOIN NEP PRODUCTION AND HOSTING INITIATIVE

<table>
<thead>
<tr>
<th>Title</th>
<th>ISSN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria Medical Journal</td>
<td>0300-1652</td>
</tr>
<tr>
<td>Journal of the Nigerian Mathematical Society</td>
<td>0189-8965</td>
</tr>
<tr>
<td>Nigerian Food Journal</td>
<td>0189-7241</td>
</tr>
<tr>
<td>Nigerian Journal of Genetics</td>
<td>0189-9686</td>
</tr>
<tr>
<td>Nigerian Journal of Pharmaceutical Sciences</td>
<td>0189-823x</td>
</tr>
<tr>
<td>Nigerian Journal of Physiological Sciences</td>
<td>07945-859x</td>
</tr>
</tbody>
</table>
NEP Progress: Editor and Publishing Support

Nigeria Journal Portfolio Finalized (6 selected)

Nigerian Medical Journal Hosted

Editor Workshop: 19 Attendees
UNIMED as a World-Class University?

- What Niche for UNIMED?

The Requirements to meet strategic Vision:

- Commitment – State Government, MDCN & NMA, University Leadership, Staff, Community, Alumni
- Funding
- Talents (Staff, Students)
- Excellent research, teaching & Service to Proximate Community, State & Humanity
- Good Governance – strategic visioning with dogged implementation