Benchmarking Research Performance of the Philippines

Workshop on Research Performance Evaluation and Support

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Need to measure our activities and performance

• Comply with government mandates
  – In most OECD countries there is an increased emphasis on effectiveness and efficiency of gov’t supported research

• Review programs and substantiate accreditation

• Make strategic decisions, e.g. whether to build on existing strengths or develop new areas

• Compete for research funding

• Compete globally for researchers and students
Need for Critical Mass

“Not only is it easier to recruit a high-quality faculty member to join a substantial group of similarly distinguished colleagues but the university can support 10 first-rate chemists much more effectively than it can support one. University quality, once established at a high level and substantial scale, becomes self-sustaining.”

Why not use university rankings?

- While many ranking systems exist, two are predominant, especially in Asia

1. THE-QS University Rankings
2. Shanghai Jiao Tong Univ Academic Ranking of World Universities (ARWU)
THE-QS University Rankings

- Overall ranking
- Subject area rankings
  - Arts & humanities
  - Life sciences & biomedicine
  - Natural sciences
  - Social Sciences
  - Technology
<table>
<thead>
<tr>
<th>Criteria</th>
<th>THE – QS World University Rankings</th>
<th>QS.com Asian University Rankings In association with Chosun Ilbo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indicator</td>
<td>Weight</td>
</tr>
<tr>
<td>Research Quality</td>
<td>Global Academic Peer Review</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>(academics with knowledge of research in Asian institutions)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Citations per Faculty</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching Quality</td>
<td>Student Faculty Ratio</td>
<td>20%</td>
</tr>
<tr>
<td>Graduate Employability</td>
<td>Global Employer Review</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Internationalisation</td>
<td>International Faculty</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>International Students</td>
<td>5%</td>
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Drawbacks of QS System

- **Opinion Surveys**
  - Difficult for the surveyed population to respond accurately to questions about research quality.
  - Reputation reflects current and past success and may favor universities with a longer history. Also dependent on name recognition factors.
    

- Combining research, teaching, and internationalization makes it difficult to see where a university’s strengths lie.

- Applying two different rating systems to the same set of universities creates confusion.
Original goal was to discern what kind of research gap existed between Chinese and ‘world-class’ universities.

Institutions are compared and ranked on a strictly quantitative basis, with no room made for subjective impressions.

Academic and research performances are measured using the following indicators and weighting.

www.arwu.org
## Shanghai Jiaotong

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicator</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Education</td>
<td>Alumni of an institution winning Nobel Prizes and Fields Medals*</td>
<td>10%</td>
</tr>
<tr>
<td>Quality of Faculty</td>
<td>Staff of an institution winning Nobel Prizes and Fields Medals*</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Highly cited researchers in 21 broad subject categories</td>
<td>20%</td>
</tr>
<tr>
<td>Research Output</td>
<td>Articles published in Nature and Science*</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Articles in Science Citation Index-expanded, Social Science Citation Index</td>
<td>20%</td>
</tr>
<tr>
<td>Size of Institution</td>
<td>Academic performance with respect to the size of an institution</td>
<td>10%</td>
</tr>
</tbody>
</table>
Drawbacks of SHJT Ranking System

- Many universities have extremely low values or zero for some indicators
  - Extremely small changes in indicator values can have large effects on ranking
- Number of alumni with Nobel Prizes and Fields Medals tends to favor older universities
Drawbacks of ranking systems

- Weights
  - Relative importance of the various dimensions is a function of one’s objectives and values
  - Standing can be overly sensitive to meaninglessly small changes in indicator values

- Do not provide sufficient information to guide actions for improvement.
Asian University Research Rating System

- Focused only on research
- Objective criteria
  - Permits self-monitoring
- Designed for Asian academic environment
- A collective effort of the academic community
- Intended to support universities to strengthen their research
  - Benchmarking to help with resource allocation decisions
  - Performance monitoring
  - Shows complementarities to facilitate collaboration
Research Benchmarking: **Key Questions**

- What is the relative standing of the Philippines in important subject areas?
- Has this changed over time?
- How does the rate of research growth compare?
- How does the picture look in important niche areas?
Analyses

• Identify research trends.
• Benchmark Philippines’s research performance against China, Japan, S. Korea, India, Malaysia, Thailand and Singapore.
• Compare research strengths of countries.
• Identify top universities in Philippines.
• Identify top researchers in Philippines.
Subject Areas

• Medicine.
• Biochemistry Genetics and Molecular Biology.
• Agricultural and Biological Sciences.
• Biotechnology in Agriculture.
Tools

- **Google Scholar**
  - Free
  - Indiscriminate
  - No report generation capability

- **Thompson ISI WoS**
  - Oldest commercial citation database
  - Only English language journals, selected by them
  - Research ID: researcher profiles for top researchers; others provided by individuals

- **SCOPUS**
  - Introduced in 2004
  - Broader coverage than ISI, including non-English language journals, selected by Content Advisory Board
  - Only goes back to 1995 for all journals, but adding one year per year and complete records for some journals back to vol 1 issue 1.
  - Author identifier: profiles for all authors in Scopus
Current Coverage of ISI WoS vs Scopus

From JISC Academic Database Assessment Tool (17 Jan 2010)
www.jisc-adat.com
39% Increase in Publications

Data source: Scopus
Medicine
China, Japan, South Korea, India, Singapore, Malaysia, Thailand and Philippines
Medicine

China, Japan, South Korea, India, Singapore, Malaysia, Thailand and Philippines

Versus 39% global publication growth
Biochemistry Genetics and Molecular Biology
Global Trend

33% Increase in Publications
Biochemistry Genetics and Molecular Biology
China, Japan, South Korea, India, Singapore, Malaysia, Thailand and Philippines

Total Publications 2000-2009

- China, 121,342, 31%
- Japan, 170,302, 44%
- India, 46,249, 12%
- Singapore, 3,708, 1%
- South Korea, 47,782, 12%
- Malaysia, 31,065, 7%
- Philippines, 705, 1%

Total Citations 2000-2009

- Japan, 1,341,797, 55%
- China, 423,660, 17%
- India, 239,191, 10%
- Singapore, 98,829, 4%
- South Korea, 500,000, 12%
- Philippines, 6,480, 1%
- Thailand, 31,689, 1%

Citations by Year

- Total Citations 2000-2005
  - China
  - Japan
  - India
  - Singapore
  - South Korea
  - Malaysia
  - Philippines
  - Thailand

- Total Citations 2006-2009
  - China
  - Japan
  - India
  - Singapore
  - South Korea
  - Malaysia
  - Philippines
  - Thailand
Biochemistry Genetics and Molecular Biology
Singapore, Malaysia, Thailand and Philippines

Total Publications 2000-2009
- Singapore: 3,708, 65%
- Malaysia: 1,035, 18%
- Thailand: 289, 5%
- Philippines: 705, 12%

Total Citations 2000-2009
- Singapore, 115,656, 66%
- Malaysia, 16,304, 9%
- Thailand, 36,933, 21%
- Philippines, 7,655, 4%
Biochemistry Genetics and Molecular Biology

Top Universities in Philippines

- International Rice Research Institute
- University of the Philippines Los Banos
- University of the Philippines Diliman
- University of the Philippines Manila

Total Publications 2000-2009

- International Rice Research Institute: 245, 47%
- University of the Philippines Los Banos: 71, 13%
- University of the Philippines Diliman: 95, 18%

Total Citations 2000-2009

- International Rice Research Institute: 3,800, 73%
- University of the Philippines Los Banos: 298, 6%
- University of the Philippines Manila: 562, 11%
- University of the Philippines Diliman: 481, 9%
Top Researchers In Philippines
Subject Area: Biochemistry Genetics and Molecular Biology

Biochemistry, Genetics & Molecular Biology
(2000-2009)

Authors

Conception, G.P.
Brar, D.S.
Padian, E.A.
Mackill, D.J.
Mangalindan, G.C.
Bruckewich, R.
McNally, K.L.
Jena, K.K.
Brar, D.

Publication

Citations

Citations

Publications
# Top Researchers In Philippines

**Subject Area:** Biochemistry Genetics and Molecular Biology

<table>
<thead>
<tr>
<th>Author</th>
<th>Current Affiliation</th>
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<tbody>
<tr>
<td>Mackill, D.J.</td>
<td>International Rice Research Institute, Genetics and Biotechnology Division</td>
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<td>Brar, D.S.</td>
<td>International Rice Research Institute, Genetics and Biotechnology Division</td>
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<tr>
<td>Bruskiewich, R.</td>
<td>International Rice Research Institute</td>
</tr>
<tr>
<td>McNally, K.L.</td>
<td>International Rice Research Institute, T.T. Chang Genetic Resources Center</td>
</tr>
<tr>
<td>Jena, K.K.</td>
<td>International Rice Research Institute, Genetics and Biotechnology Division</td>
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<tr>
<td>Brar, D.</td>
<td>International Rice Research Institute, Genetics and Biotechnology Division</td>
</tr>
<tr>
<td>Mangalindan, G.C.</td>
<td>University of the Philippines Diliman, Marine Science Institute</td>
</tr>
<tr>
<td>Concepcion, G.P.</td>
<td>University of the Philippines Diliman, College of Sciences</td>
</tr>
<tr>
<td>Padlan, E.A.</td>
<td>University of the Philippines Diliman, College of Sciences</td>
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37% Increase in Publications
Agricultural and Biological Sciences
China, Japan, South Korea, India, Singapore, Malaysia, Thailand and Philippines
Agricultural and Biological Sciences
China, Japan, South Korea, India, Singapore, Malaysia, Thailand and Philippines

Versus 37% global publication growth
Agricultural and Biological Sciences

Top Universities in Philippines

Total Publications 2000-2009

- International Rice Research Institute: 912 (49%)
- University of the Philippines Los Banos: 246 (13%)
- University of the Philippines Diliman: 521 (28%)
- Southeast Asian Fisheries Development Center Philippines: 95 (5%)
- SEADEC Aquaculture Department: 146 (5%)

Total Citations 2000-2009

- International Rice Research Institute: 8,051 (73%)
- University of the Philippines Los Banos: 1,184 (11%)
- University of the Philippines Diliman: 896 (8%)
- Southeast Asian Fisheries Development Center Philippines: 359 (3%)
- SEADEC Aquaculture Department: 1,184 (11%)

Top Researchers In Philippines
Subject Area: Agricultural and Biological Sciences

Agricultural and Biological Sciences (2000-2009)

Authors

Citations
Publications
# Top Researchers In Philippines

**Subject Area:** Agricultural and Biological Sciences

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<tr>
<td>Peng, Shaobing B.</td>
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<tr>
<td>Buresh, Roland J.</td>
<td>International Rice Research Institute, Crop and Environmental Sciences Division, Manila</td>
</tr>
<tr>
<td>Bouman, Bas A M</td>
<td>International Rice Research Institute, Crop and Environmental Sciences Division, Manila</td>
</tr>
<tr>
<td>Heong, Kong Luen</td>
<td>International Rice Research Institute, Makati</td>
</tr>
<tr>
<td>Dobermann, Achim R.</td>
<td>International Rice Research Institute, Makati</td>
</tr>
<tr>
<td>Tuong, To Phuc</td>
<td>International Rice Research Institute, Makati</td>
</tr>
<tr>
<td>Juliano, Bienvenido O.</td>
<td>Philippine Rice Research Institute</td>
</tr>
<tr>
<td>Yap, Helen T.</td>
<td>University of the Philippines Diliman, Marine Science Institute</td>
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</table>
Biotechnology in Agriculture
Global Trend

55% Increase in Publications
Biotechnology in Agriculture

China, Japan, South Korea, India, Singapore, Malaysia, Thailand and Philippines
Biotechnology in Agriculture
Singapore, Malaysia, Thailand and Philippines

Graphs showing the number of publications and total citations for Singapore, Malaysia, Thailand, and the Philippines from 2000 to 2009.
Biotechnology in Agriculture

Top Universities in Philippines

### Total Publications 2000-2009

- **International Rice Research Institute**: 2,061 publications (98%)
- **University of the Philippines Los Banos**: 44 publications (2%)

### Total Citations 2000-2009

- **International Rice Research Institute**: 2,061 citations
- **University of the Philippines Los Banos**: 44 citations
Top Researchers In Philippines
Subject Area: Biotechnology in Agriculture

Biotechnology in Agriculture
(2000-2009)

Publication

Citations

Authors

Oliva, Norman P.  Mackill, David J.  Lafitte, H. Renee  Bruskiewich, Richard M M  Datta, K.

Citations

Publications

0 2 4 6 8 10 12

0 50 100 150 200 250
### Top Researchers In Philippines

**Subject Area:** Biotechnology in Agriculture

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<td>Datta, K.</td>
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<td>Lafitte, H. Renee</td>
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Philippines's Research Standing among China, Japan, South Korea, India, Singapore, Malaysia and Thailand
Philippines's Research Standing among Singapore, Malaysia and Thailand
Thank you
References
