Global Rankings
Narrow the Influence Gap between Universities in Academic Superpower Nations and Emerging Nations

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"...A number of blind men came to an elephant. They began to touch its body. One of them said: 'It is like a pillar.' This blind man had only touched its leg. Another man said, 'The elephant is like a husking basket.' This person had only touched its ears. Similarly, he who touched its trunk or its belly talked of it differently.."
Then...higher education for **fortunate** few

University then was a community of scholars and learners *(functioned as a boutique Institution)*

Plato academy, 427-347 BCE  
Nalanda, 427-1197 CE  
Taksasila, 5 BCE
Now...higher education for many

Universities now are managed complex organizations

(function as Corner Shops, Mega Stores and Boutiques)
Universities are complex organizations...akin to managing a medium size corporation

* Introduction of Science & Technology
* New universities across Europe
* Trained workforce for Industry
* Scholarship funded by self, wealthy and crowns
* Enabling role of print media

1600 – 1900

* Few Institutions of Higher Learning and functioned as community of scholars & learners
* Theology, Philosophy, Mathematics, Medicine, Law
* Scholarship funded by self, wealthy and crown
* Graduates employed by religious institutions & crowns

1900 – 2000 (Expansion)

* Education + Scientific Research
* Massive expansion of university sector in Europe and America
* After WWII Nation states investing in research using public funds
* Universities benefited from perceived reputation

2000 & Beyond (Internationalization)

* More than 15,000* universities worldwide
* Education + Research + Economic Impact
* Global mobility of academics, students and researchers
* Ubiquitous information and enabling role of ICT
* Nations investing in research for competitive advantage and growth
* Global ranking of universities based on facts and numbers


Universities Trends

15,000 universities with diverse education models:

( function as Corner Shops, Mega Stores & Boutiques)

- Facilitating social mobility (access and equity)
- Building nation & vibrant communities
- Training human capital for changing economies and societies
- Source of new knowledge, ideas, and expert views with deeper understanding of local settings
- Scientific research led innovation to support economic growth and social progress
University League Tables are Appealing to Consumers

2003 World university league tables by SJTU ARWU

1983 First nationwide university ranking was published in USA by US News and World Report

1870 Classifications and specialized university rankings with a narrower focus had already been compiled in USA

Salmi & Saroyan, 2007
Nan Cao Liu & his colleagues at Shanghai Jiao Tong University decided to compile a list of the world’s 500 leading universities back in 2003, their aim was simply “to find out the gap between Chinese universities and world-class universities, particularly in terms of academic or research performance.” To minimize controversy they decided to use only indicators that could be quantified: the number of Nobel Prizes or Fields Medals awarded to an institution’s faculty or alumni; the number of papers published in two leading scientific journals or cited in other published research. To avoid the taint of partiality, they would use only data collected by other organizations.
Since 2003......

Leiden Ranking

Global Universities Ranking – Reitor (Рейтор), Russia
World University League Tables Evoked Strong Criticisms

International rankings only cover a very small percentage of the world’s 17,000 universities, between 1% and 3% (200-500 universities) while ignoring the rest.
Imanol Ordorika, UNAM, Mexico said that none of the international rankings pay attention to the effect of higher education on social mobility, a crucial priority in much of the developing world. Nor, he said, did they consider the role of a university in building the nation. “Yet throughout Latin America, we have seen universities generate the policy ideas that gave birth to our nations”.

World University League Tables Evoked Strong Criticisms
World University League Tables Evoked Strong Criticisms

Dr. Hazelkorn said, “age and size matter.” The tables are dominated by a “small league of well-endowed universities, in English-speaking countries, usually with a medical school”.

Global forum on “Rankings and Accountability in Higher Education”
UNESCO headquarters, Paris, May 2011
World University League Tables Evoked Strong Criticisms

- By pursuing perceived narrow definition of world class, universities are becoming more alike instead of building on respective strengths and fulfilling respective missions.

- Inadequate attention to teaching compared to research, and more over the ranking criteria do not differentiate different leaning ecosystems of universities.

- All students do not seek and need similar learning experience. They need diverse learning experiences and value-add at universities which prepare them for wide range of careers and interesting futures.
World University League Tables Evoked Strong Criticisms

- market forces driving the rankings instead of academic forces
- undue influence on academia by ranking bodies’ arbitrary criteria and hidden agendas
- knee jerk reactions by university leaders which are influenced by the ranking information and which will have long term consequences on academia
World University League Tables Evoked Strong Criticisms

- lack of internationally comparable data
- lofty purposes of ranking bodies not backed by adequate openness, robust processes, systems and databases
- Over simplification of picture of universities mission, quality and performance, and links to external stakeholders and ecosystem
Defenders of World University Rankings

- rankings are rather crude; they can’t be completely objective
- governments should treat them with real caution
- as long as they are serious and transparent, rankings can be a useful tool

Phil Baty, deputy editor of Times Higher Education magazine
Defenders of World University Rankings

Martin Ince set up the Times Higher/QS World University Rankings in 2004 and was their editor until the 2008 edition.

- QS is committed to helping international students (3.4 million students studying outside their home countries) make more informed choices.

- QS also introduced Stars evaluation system which evaluates universities against eight criteria; Research Quality, Teaching Quality, Graduate Employability, Infrastructure, Internationalization, Innovation & Knowledge Transfer, Third Mission and Specialist Subject Criteria.

- QS says that Stars is a tool which gives prospective university students an additional tool to help them in their decision making process. Universities are given an opportunity to highlight strengths that may often be overlooked in other assessments.
Balanced Views on World University Rankings

“Rankings are a democratic instrument,” said Gero Federkeil, German Center for Higher Education, “They offer information to young people who come from a family background where they don’t have university-educated parents who can assist them”
Balanced Views on World University Rankings

Jamil Salmi, higher education specialist at the World Bank said it would be futile, and mistaken, to try to go back to the era before rankings. Instead he urged researchers and policy makers to establish benchmarks that can be used as more accurate gauges of performance.
It is clear that despite their shortcomings, evident biases and flaws, rankings are here to stay. They ‘enjoy a high level of acceptance among stakeholders and the wider public because of their simplicity and consumer type information’..European University Association.
Universities do use rankings to their advantage
Since 2009, the subjects of Engineering, Chemistry, Materials Science, and Physics in Donghua University were all listed as the top 1% subjects in the worldwide institutions field rankings, according to the Essential Science Indicators (Thomson Reuters).
In 2009 and 2010, Donghua University was placed at No. 26 in the Mainland China University Rankings; and No. 161 in the Asian University Rankings.
Is there a Silver Lining to the League Tables?
The arrival of global rankings has focused considerable attention on higher education. Rankings have helped to foster greater accountability and increased pressure to improve management practices. In some countries they have been used to argue for further investment in higher education.

Global Rankings Narrow the Influence Gap between Universities in Academic Superpower Nations and Emerging Nations
Case for Higher Investments in Higher Education, Scientific Research & Innovation

- Germany
- South Korea (Brain 21)
- Japan (Global 30 COE)
- Singapore
- China (985)
- India
- Brazil
- Saudi Arabia
- Taiwan (5 YR 50Bn)
- France
- Finland
- Czech Republic
- Qatar
- Sri Lanka

Ambitious programs have been launched

Focus is on high-impact disciplines of science, engineering, technology & medicine

Caveat: will there by sustained appropriate levels of investments?
Of the leading 25 Asian universities, 21 improve on their 2010 position, with just three moving in the opposite direction. There are 47 Asian universities in the top 300 (two more than last year), and 88 institutions make the top 500......

Danny Byrne, QS World University Rankings®
Top 100 Universities

Academic Superpowers: USA & UK

2011 QS World University Rankings
Top 100 Universities

Academic Superpowers: USA & UK

2011 QS World University Rankings
Case for Higher Investments in Higher Education, Scientific Research and Innovation

- National science agency, KACST engaged the services of American Association for Advance of Science, AAAS to help shape a research grant competition based on international standards and tough, independent peer review.

- AAAS assembled experts involving leading scientists, engineers, innovators, and policy makers to provide guidance in strategic planning, research infrastructure, and technology-led economic development.
King Saud University

“...progress of universities in Middle East countries is remarkable. King Saud University in Saudi Arabia first appears in Top 300...” ARWU press release, 15 August 2011

2011 ARWU rank is 261 (2010 ARWU rank is 291)

The most heavily-publicized university ambitions in the Middle East belong to Saudi Arabia, and their success is seen in the seven Saudi universities in our rankings...

Martin Ince, QS Intelligence Unit

2011 QS rank is 200 (2010 QS rank is 221)
A small nation (700 sq km) with less than 5 million population

Strategic location: on international shipping route with natural harbor

Only resource is human resource and hence nurtured world class education system
Public and Private Higher Education

Public Universities

- NUS
- Nanyang Technological University
- SMU
- SUTD

Private Universities

- Chicago Booth
- EDHEC-Risk Institute
- ESSEC
- INSEAD
- S. P. Jain Center of Management (Dubai, Singapore)
- DigiPen
- Tisch Asia
- New York University
- Univ Asia
- TUM Asia
- SIM University
SINGAPORE 1960s

http://www.country-data.com/cgi-bin/query/r-11828.html
Simplified, clear business guidelines

Power of soft power

Singapore Govt Spending on R&D

1991-1995: $2 billion
1996-2000: $4 billion
2001-2005: $6 billion
2006-2010: $13.55 billion
2011-2015: $16 billion

~3,000 researchers, scientists & engineers, RSEs in 1990

~12,000 RSEs in 2010
Global Averages:
R&D expend ~1.7% of total world GDP;
1544 researchers per million people

High Priority - Innovation

Singapore

Singapore –3.5% GDP by 2015

Key Features of R&D Management in Singapore

- Combination of top-down and bottom-up
- International bench-marking/ peer review
- Industry inputs in shaping R&D thrusts
- Attract the best and brightest to the teaching and research
  
  *(pay scales pegged to the global bench-marks; world-class infrastructure; culture of excellence)*

- Bring competition home

- Meaningful global partnerships & co-branding with best in the league
Singapore’s output of papers, representing all fields

Singapre: Number of papers and percent share of world, 1990-2009

SOURCE: InCites™ Global Comparisons, Thomson Reuters
Singapore: Relative Impact in Selected Main Fields

Citations impact relative to world average (1.00)

Years (of papers and citations)

Sources: InCites™ Global Comparison, Thomson Reuters
In 2010, Asia surpassed US in having the highest global share of spending in R&D.
Global Increase in Number of Scientific Researchers

Total number of researchers: ~ 5 m (year 2000); ~ 10 m (year 2010)


Note: R.O.W. – Rest of the World
Forecasted country shares of global output.

Source: Scopus Country Data, October 2010; China versus US world share of total article output (1996-2008) extrapolated with a linear best-fit trend.
Article output for Asian countries combined with citations per article for 2006-2010. Source: Scopus Country Data, August 2011.
1000BC-1700AD
Individual pursuits
Open ended, scholarly intellectual pursuits
Non-scientific, skills led innovation

1700 - 1950
Entrepreneurs & industries invested in research to develop new products and markets
West European nations & USA have became hot beds of research and innovation
Mission oriented public research institutes
Skills, experience led innovation

1950 – 2000 (Big Science)
Teams of researchers, organized research
Exponential growth of journals
Universities involved in substantial research, knowledge transfer, and entrepreneurship
Public funds invested in scientific research, primarily in USA, Western Europe and Japan

2000 & Beyond (Global Science)
Nation states are investing in research for competitive advantage and economic growth
Research with end goals
Millions of researchers involved in research enterprise; global mobility of talent and investments
Nodes of research excellence are globally dispersed; reemergence of Asia
Open source innovation strategies by companies- hire everywhere, source investments anywhere, design anywhere, build everywhere, and market everywhere
Metrics of research and innovation performance

More Products are Designed Everywhere, Made Everywhere and Sold Everywhere

Firms everywhere now have greater access than ever to best talent, funds & markets

Universities have to inspire more students into better and best category
This book provides a brief overview of the recent trends in innovations. Early inventions/innovations that began in Asia (i.e., compass, paper, gunpowder and printing) spread to the Atlantic (Europe and USA) by land and sea routes. However, with population growth, economic expansion, availability of skilled researchers and lower cost of research in Asia Pacific, there has been a shift in innovation activities in this region.
Robust Ranking Exercise

Students
University Leadership
Promoters of Universities
Ranking Organizations
Berlin Principles on University Ranking

- With regard to purposes and goals, rankings should.... Recognize the diversity of institutions and take the different missions and goals of institutions into account.....

- With regard to design and weighting of indicators, rankings should: be transparent regarding the methodology....

- With regard to collection and processing of data, rankings should: ...use audited and verifiable data whenever possible...

- With regard to presentation of ranking results, rankings should: provide consumers with a clear understanding of all of the factors used to develop a ranking.....
STUDENTS & RANKING EXCERCISE

- Students are the main consumers of university league tables and they need to be lot more discerning beyond just looking for a simplified ranking numbers.

- Students need to provide constructive feedback to the ranking bodies to improve the usefulness and relevance of league tables.

- They should be concerned about the value add by the university- university’s and faculty members’ attitude and priority towards teaching, quality of teaching, learning environment and campus life.
For Activists:
Swarthmore College
University of Chicago
Brown University
Claremont McKenna College
Pitzer College

For Artistic Students:
California Institute of the Arts
Emerson College
Berklee College of Music
New York University
Mannes College (The New School)

Athletic:
University of Tulsa
University of Norte Dame
Texas Christian University
Boston College
Colgate University

Horniest:
Wesleyan University
Yale University
Rice University
Bowdoin College
Stanford University

Most Beautiful:
University of Mississippi
University of Wisconsin-Madison
University of Alabama
Florida State University
University of Florida

Future CEOs:
Harvard University
Stanford University
Columbia University
University of Pennsylvania
Yale University
<table>
<thead>
<tr>
<th>Least Rigorous:</th>
<th>Best International Universities:</th>
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<tbody>
<tr>
<td>SUNY at Binghamton</td>
<td>University of Cambridge</td>
</tr>
<tr>
<td>University of Florida</td>
<td>University of Oxford</td>
</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>University of Toronto</td>
</tr>
<tr>
<td>University of Minnesota – Twin Cities</td>
<td>University of Tokyo</td>
</tr>
<tr>
<td>University of Maryland – College Park</td>
<td>University College London</td>
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<table>
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<tr>
<th>Most Rigorous:</th>
<th>Most Service-oriented:</th>
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<tbody>
<tr>
<td>St. John’s College (NM)</td>
<td>Rhodes College</td>
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<tr>
<td>Furman University</td>
<td>Carson-Newman College</td>
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<tr>
<td>Middlebury College</td>
<td>Warren Wilson College</td>
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<tr>
<td>Franklin and Marshall College</td>
<td>Macalester College</td>
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<tr>
<td>Columbia University</td>
<td>Lewis &amp; Clark College</td>
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<tr>
<th>Future Politicians:</th>
<th>Accessible Professors:</th>
</tr>
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<tr>
<td>Harvard University</td>
<td>Randolph College</td>
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<tr>
<td>Yale University</td>
<td>United States Military Academy</td>
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<tr>
<td>Georgetown University</td>
<td>Pomona College</td>
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<tr>
<td>Stanford University</td>
<td>Wellesley College</td>
</tr>
<tr>
<td>University of California – Los Angeles</td>
<td>Marlboro College</td>
</tr>
</tbody>
</table>
**Foreign Students:**
Mount Holyoke College
Yale University
Macalester College
Princeton University
Swarthmore College

**Healthiest:**
Harvard University
Louisiana State University
Mississippi State University
Princeton University
Middle Tennessee State University

**Brainiacs:**
Yale University
Princeton University
Harvard University
Stanford University
Brown University

**Return on Investment:**
Princeton University
Amherst College
Dartmouth College
Williams College
College of the Holy Cross

**Computer Geeks:**
Stanford University
Harvard University
University of Pennsylvania
Columbia University
Princeton University

**Greenest:**
Oberlin College
Stanford University
Yale University
Middlebury College
University of Washington
**Free-Spirited:**
Burlington College  
Sarah Lawrence College  
Bennington College  
Hampshire College  
Lewis & Clark College

**Happiest:**
Yale University  
Harvard University  
Rice University  
Stanford University  
Bowdoin College

**Best Food:**
St. Olaf College  
Pitzer College  
Bowdoin College  
Claremont McKenna College  
Roger Williams University

**Cheapest:**
Berea College  
University of Wyoming (in-state)  
University of Idaho  
New College of Florida  
University of New Mexico

**Best Party Universities:**
West Virginia University  
University of Alabama  
University of California – Los Angeles  
University of Illinois at UC  
Syracuse University

**Best Weather:**
University of California – Santa Barbara  
St. John’s College (NM)  
University of San Francisco  
Chapman University  
Soka University of America
University leadership is the most affected party by annual release of league tables.

Universities worldwide need to take active interest to know what it is stated is being measured and what is in fact being measured, and invest much effort to design suitable frameworks.

They also need to put in place more responsive systems to track and document a wide variety of information for longer periods needed for a robust ranking exercise.
Wise Expectations are Function of Nature and Degree of Evolution of a University

- Peaks of excellence - national & global visibility
- Membership of prestigious academies
- International awards & prizes
- Peer partnerships
- Plenary lectures

- Journal & conference papers
- Pockets of research
- Research income
- Conferences
- Consultancy
- Books

- High research averages across the university
- High impact factor journal papers
- Citations, citations per paper, highly cited papers, h-index, g-index, etc
- Editorial boards, patents, copy rights, licenses, start-ups, spin-offs, industry income
- Advisory boards, high level committees

- Thought leadership & influence
- Transformative ideas & impact
- Value to the respective ecosystem
- National and global reputation

There is no common definition of a world class university but most can point to its aspects. By and large universities operate within the realm of local and national dynamics. Individual academics can create impact without resorting to the above step-wise approach.
UNIVERSITY PROMOTERS & RANKING EXCERCISE

- Operating costs of a university are close to running medium sized or large scale corporations
- Investors need to engage respective universities and ranking bodies in active dialogue to further improve the robustness of ranking exercise and relevance of league tables

(~ 2/3 of higher education sector is private and 1/3 is public)
Growing Importance of Universities to the Nations in Scientific Research, Innovation & Economic Growth

Gross Domestic Expenditure on R&D (GERD) as percent of GDP
Higher Education Expenditure on R&D (HERD) as percent of GDP

More transparency in terms of raw data and computation methodologies

Efforts must be made to provide high-quality reports at competitive prices and ensure easy, accurate understandability of information
Dear Seeram,

Thank you very much for your very interesting contribution. I agree that regardless of the actual indicators, being ranked brings visibility – and that has become an increasingly important commodity in a globally competitive world.

I look forward to reading this in more depth.

Best wishes,
Ellen

Ellen Hazelkorn
Dublin Institute of Technology, Ireland
Nodes of academic excellence & scientific innovation are now globally dispersed than ever before.

Various contenders can position themselves to compete in niche areas and no longer be seen as laggards.

Future competitiveness of nations will be based on availability of highly talented human resource and access to new ideas and intellectual capital.
Current Level of Understanding of Intricacies of Universities by Ranking Bodies & Outsiders, at Best, is akin to Anagrams ?!

The eyes = They see
Achievements = Nice, save them
A Decimal Point = I'm a Dot in Place
Goodbye = Obey god
ipod lover = poor devil

http://www.cartoonstock.com/directory/p/please_knock.asp
Thank you....

It is all about differentiation

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http://blogs.ngm.com/blog_central/science/
Professor Seeram Ramakrishna, FREng, FNAE, FAAAS is the author of the Changing Face of Innovation. He is an acknowledged global leader for his pioneering work on science and engineering of nanofibers (http://researchanalytics.thomsonreuters.com/m/pdfs/grr-materialscience.pdf). He authored five books and over four hundred peer reviewed international journal papers, which attracted ~ 13,000 citations with an H-index of 55 and G-index of 82. Several global databases including ISI Web of Science place him among the top one percent of materials scientists worldwide (ESI rank 30). He is an elected international fellow of major professional societies in Singapore, ASEAN, India, UK and USA. He is a Professor of Materials Engineering at the National University of Singapore, and held several senior leadership positions which include Dean of Engineering, Vice-President Research Strategy, Vice-President of International Federation of Engineering Educators Societies and Founding Chair of Global Engineering Deans Council.

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