OPINION

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Global Ranking of Higher Education Institutions

Mongkon Rayanakorn

At the invitation of the Director of the Knowledge Network Institute of Thailand, I had an opportunity to attend a special lecture entitled "National and Global University Rankings" delivered by Professor Jan Sadlak, President of the International Ranking Expert Group (IREG) Observatory on Academic Ranking and Excellence, in Bangkok on 23 November 2010. I learned from this lecture that the IREG was founded in 2004 by the UNESCO European Centre for Higher Education (UNESCO-CEPES) in Bucharest and the Institute for Higher Education Policy in Washington, DC. It was upon this initiative that the IREG's second meeting in Berlin on 20 May 2006 came up with the Berlin Principles on Ranking of Higher Education Institutions [1]. Although these principles have set a framework for the elaboration and dissemination of rankings at all levels, several rankings of higher education institutions (HEIs) have nowadays adopted their own methodologies and criteria.

Despite the fact that various university rankings have resulted in much debate about their usefulness and accuracy, these rankings have been referred to by HEIs worldwide. Among the organizations providing global rankings of HEIs, the following are the most well-known:

The Academic Ranking of World Universities (ARWU) [2], compiled by the Shanghai Jiao Tong University since 2003 and now maintained by the Shanghai Rankings Consultancy;

The Performance Ranking of Scientific Papers for World Universities [3], produced by the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) since 2005;

SCImago Institutions Rankings (SIR) [4], which since 2009 has published its international ranking of worldwide research institutions, the SIR World Report;

Dr. Mongkon Rayanakorn *is an Adjunct Associate Professor of the Graduate School of Chiang Mai University (CMU). Prior to his retirement, he was an elected member of the Chiang Mai University Council (1999-2005), Head of the Chemistry Department (2002-2005) and Dean of the CMU Faculty of Science (2005-2009). His early work was published in Chromatographia, Journal of the Chemical Society Chemical Communications, Journal of Molecular Catalysis and Journal of the Science Society of Thailand (ScienceAsia); his more recent work has appeared in Analytical Sciences, Talanta, Environmental Monitoring and Assessment and the Chiang Mai Journal of Science.*

THE-QS World University Rankings [5], produced by Times Higher Education (THE) and Quacquarelli Symonds (QS) from 2004-2009;

Times Higher Education (THE) World University Rankings [6], produced by THE in association with Thomson Reuters from 2010;

QS World University Rankings [7], provided by QS using the Scopus databases from 2010;

Webometrics Ranking of World Universities [8], produced by the Cybermetrics Lab of the Spanish Research Council since 2004.

In order to find out which global ranking system we should give the thumbs up to, let us examine the methodology and main features of each of the above organizations, excluding THE-QS World University Rankings as THE and QS ceased their collaboration in late 2009.

ARWU, commonly known as the Shanghai ranking, compares over 1,200 higher education institutions worldwide according to a formula that takes into account alumni winning Nobel Prizes and Fields Medals (10%), staff winning Nobel Prizes and Fields Medals (20%), highly-cited researchers (20%), articles published in the journals Nature and Science (20%), the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI) (20%) and the per capita academic performance (10%).

The HEEACT Performance Ranking of Scientific Papers for World Universities employs bibliometric methods to analyze and rank the scientific paper performances of the top 500 universities of the world. The data used to assess the performances of the universities is drawn from the databases of the Institute of Scientific Information (ISI) which include SCI, SSCI and Journal Citation Reports (JCR). The 2010 performance measures are composed of eight indicators which represent three different criteria of scientific paper performance: research productivity (20%), research impact (30%), and research excellence (50%). The research productivity comprises two indicators: number of articles of the last 11 years (10%) and number of articles of the current year (10%) whilst the research impact comprises three indicators : number of citations of the last 11 years (10%), number of citations of the last 2 years (10%) and the average citations of the last 11 years (10%). The research excellence criterion alone comprises the following indicators: h-index of the last 2 years (20%), number of highly-cited papers (15%), and number of articles of the current year in high-impact journals (15%). Employing Hirsch's concept of the h-index [9], one has an index of h if one has at least h publications, each of which has at least h citations.

SIR World Report combines four global indicators: output, measured as the number of scientific papers according to Scopus; international collaborations, measured as the ratio of scientific documents an institution publishes in collaboration with foreign institutions; normalized impact, measured as the citation rate an institution receives compared to the world average; and publication rate into the 25% of "Best Journals" according to the Scimago Journal Rank (SJR) indicator developed by the SCImago Research Group.

THE World University Rankings employ twelve separate performance indicators which are brought together into five categories: teaching – the learning environment (30%), research – volume, income and reputation (30%), citations – research influence (32.5%), industrial

income – innovation (2.5%) and international mix – staff and students (5%).

QS World University Rankings utilize six indicators: academic peer review (40%), recruiter review (10%), faculty-to-student ratio (20%), citations per faculty (20%) and international orientation (10%).

Webometrics Ranking Web of World Universities, covering more than 20,000 HEIs worldwide, uses four indicators: size – number of pages recovered from four engines: Google, Yahoo, Live Search and Exalead (20%); visibility - the total number of unique external links received (50%); rich files - volume of files of relevance to academic and publication activities (15%); and scholarship – the number of papers and citations for each academic domain provided by Google Scholar (15%).

Having surveyed the above rankings methodologies and criteria, one can quickly eliminate the Webometrics Ranking Web of World Universities from a list of trustworthy ranking systems unless all HEIs can reflect their actual academic and research strengths on their websites. In reality, several world class German, French, Italian and Japanese universities are not common in the top ranks of Webometrics, possibly due to their large amounts of non-English web contents, which are less likely to be linked.

As for the Shanghai ranking which favours HEIs with high spending power and huge endowment funds that attract Nobel Prize winners and Field Medalists, its indicators are so rigid that top universities in several countries can never be listed in its top 500 HEIs. Although the Shanghai ranking has been cited by the Economist magazine and lauded for being "consistent and transparent", a 2007 paper from one well-known peer-reviewed journal suggested that the results could not be independently reproduced [10].

The HEEACT Performance Ranking of Scientific Papers for World Universities appears to be relatively more systematic and transparent but its ranking is based purely on the merit of research papers and this, in turn, leaves out other important aspects which can also bring HEIs to world class universities. The 11-year period for the number of articles and citations included in its indicators is also a disadvantage for young and fast-developing HEIs.

My list of reliable rankings at this point has only three choices: the SIR World Report, THE World University Rankings and QS World University Rankings. The SIR World Report embraces universities and other research-focused organizations. To my surprise, the SIR World Report 2010: Global Ranking lists the Chinese Academy of Sciences, Centre National de la Researcher Scientifique and Russian Academy of Sciences as its top 3 institutions. As such, this ranking system will have to be used with great care if one is to use it for ranking HEIs.

Between THE World University Rankings and QS World University Rankings, it is not easy to predict which one will be the more sustainable as they have evolved from the same origin, i.e. THE-QS World University Rankings. The former utilizes data of research papers indexed in the databases of the ISI while the latter employs the Scopus databases. The 2010 QS rankings were released online on 8 September 2010, a week earlier than the 2010-2011 THE rankings. It is obvious that the QS rankings place more emphasis on peer review with a bias towards existing reputation than does the THE rankings. The QS rankings have tended to receive more attention from HEIs since more than 600 HEIs are listed in the rankings and

detailed scores are available online. As for the THE rankings, only the top 200 institutions are readily listed online with the top 200-400 institutions accessible via iPhone application only. Both ranking systems are far from flawless and there should be an independent body or a reliable international organization to evaluate these two systems along with the others in order to provide HEIs worldwide with a genuine choice of rankings for benchmarking purposes.

Alternatively, the IREG should alert existing bodies that do global ranking of HEIs to take into account appropriate national rankings within the framework or criteria of their rankings. For example, in the UK there are university league tables conducted by newspapers such as The Guardian, The Independent and The Sunday Times. The Ranking Forum of Swiss Universities and the CHE University Ranking of Germany also provide respectable rankings in their countries. National rankings like these often rank HEIs by subject. For other national rankings, it might be a good idea for the IREG to introduce them to the Berlin Principles on Ranking of Higher Education Institutions and monitor their performance for at least a year before giving them an "IREG Approved" label. By adopting this procedure, the quality of ranking of HEIs at a regional or even a global level will be more meaningful and beneficial to all concerned. Last but not least, ranking HEIs should be carried out in such a way as to ensure that as many subjects as possible and not just subject areas are used to rank HEIs worldwide in order to reflect the actual strength of each HEI in each universal subject.

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