



ELSEVIER

Contents lists available at ScienceDirect

Journal of Informetrics

journal homepage: www.elsevier.com/locate/joi

Uncovering fine-grained research excellence: The global research benchmarking system



Peter Haddawy^{a,*}, Saeed-Ul Hassan^b, Craig W. Abbey^c, Lee Inn Beng^d

^a Faculty of ICT, Mahidol University, Nakhon Pathom 73170, Thailand

^b Information Technology University, Lahore, 54770, Pakistan

^c Office of Institutional Analysis, University at Buffalo, Buffalo, NY 14260 United States

^d Elsevier, Singapore

ARTICLE INFO

Article history:

Received 10 April 2015

Received in revised form 6 February 2017

Accepted 8 February 2017

Keywords:

Research benchmarking

University ranking

Bibliometrics

Fine-grained subject categories

ABSTRACT

Since few universities can afford to be excellent in all subject areas, university administrators face the difficult decision of selecting areas for strategic investment. While the past decade has seen a proliferation of university ranking systems, several aspects in the design of most ranking systems make them inappropriate to benchmark performance in a way that supports formulation of effective institutional research strategy. To support strategic decision making, universities require research benchmarking data that is sufficiently fine-grained to show variation among specific research areas and identify focused areas of excellence; is objective and verifiable; and provides meaningful comparisons across the diversity of national higher education environments. This paper describes the Global Research Benchmarking System (GRBS) which satisfies these requirements by providing fine-grained objective data to internationally benchmark university research performance in over 250 areas of Science and Technology. We provide analyses of research performance at country and university levels, using the diversity of indicators in GRBS to examine distributions of research quality in countries and universities as well as to contrast university research performance from volume and quality perspectives. A comparison of the GRBS results with those of the three predominant ranking systems shows how GRBS is able to identify pockets of excellence within universities that are overlooked by the more traditional aggregate level approaches.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

Universities are widely viewed as playing a central role in the economic competitiveness of modern knowledge economies. This is particularly the case in areas of science and technology where universities are seen as engines of innovation and sources of high quality talent for growth of high-tech industries. This perceived role has led to efforts in high and middle income countries to increase university research activity, with a resultant increase in competition for research funding and top research talent nationally and internationally. Since few universities have the resources to be excellent in all subject areas, research administrators at university and government levels face the difficult decision of selecting areas

* Corresponding author.

E-mail addresses: peter.had@mahidol.ac.th (P. Haddawy), saeed-ul-hassan@itu.edu.pk (S.-U. Hassan), cwabbey@buffalo.edu (C.W. Abbey), I.B.Lee@elsevier.com (I.B. Lee).

for strategic investment (Salmi, 2009). To effectively do so requires first being able to identify the distribution of strengths in relation to competitors globally.

The past decade has seen a proliferation of university ranking systems, many of which claim to provide information to help universities benchmark their performance. While a number of rankings exert great influence over universities with many universities even formulating aspects of their strategies specifically to improve their standing, several aspects in the design of most ranking systems make them inappropriate to support formulation of effective research investment strategy. First, all existing rankings operate at the institutional and broad subject levels. Thus by design they mask variation in quality within universities and overlook focused pockets of excellence, information that is crucial to make effective strategic research investment decisions. Second, they focus primarily on the largest and most comprehensive universities, thus missing the important contributions being made by a myriad of more narrowly focused institutions. Finally, many of the indicators used by some of the most prominent ranking systems are subjective or exceedingly retrospective and are thus not appropriate as sources of benchmarking data to support management decisions.

Universities and government research funding agencies require research benchmarking data to support strategic decision making that is sufficiently fine-grained to identify focused areas of excellence; is actionable; is objective and verifiable; allows tracking of performance over time; and provides meaningful comparisons across the diversity of national higher education environments and university structures. In this paper we describe the Global Research Benchmarking System.¹ (GRBS) which satisfies these requirements by providing objective data to internationally benchmark university research performance in areas of Science and Technology. All GRBS data are freely available on the GRBS website² GRBS supports identification of fine-grained subject areas in which universities can excel; to make rational strategic and resource allocation decisions; to identify university research partners with complementary strengths; and to publicize program strengths. By covering 251 fine-grained subject areas and selecting universities for inclusion based on their performance in these areas, GRBS is able to shed light on variation within a single institution as well as to highlight the performance of universities with particular focused strengths.

2. University ranking and benchmarking systems

International university ranking systems fall into two broad categories: those that seek to cover a broad range of university activity and those that focus exclusively on research. Here we discuss six prominent ranking systems, three in each category.

2.1. Rankings covering multiple dimensions of university activity

QS (2017) launched its world university rankings (QS-WUR) in 2004 in collaboration with Times Higher Education (THE). In 2010 the partnership ended with QS continuing its ranking and THE establishing a new ranking. QS currently publishes eight different types of rankings: faculty rankings, subject rankings, graduate employability rankings, regional rankings, higher education system strength rankings, a ranking for universities under 50 years old, a best student cities ranking, and their original world university ranking. In addition, QS publishes a university stars rating for which they charge an audit fee. The indicators used vary among the rankings. Their world university ranking indicators cover academic reputation (40%), reputation among graduate employers (10%), international faculty ratio (5%), international student ratio (5%), student/faculty ratio (20%), and citations per full-time faculty (20%). Citation data is taken from Elsevier's Scopus database. The 2016–2017 ranking covers over 900 universities. Their 2016–2017 subject ranking covers universities in each of 42 subject areas. Indicators include academic reputation, reputation among graduate employers, citations per paper, and h-index. The weights applied to the indicators vary across the different subject areas.

THE publishes seven different types of rankings: a world university ranking, a BRICS & emerging economies ranking, a US college ranking, two regional rankings, a world reputation ranking, and a ranking of universities under 50 years old. The 2016–2017 release of THE world university ranking (THE 2017) covers 980 universities using 13 indicators grouped into five areas: International Outlook (7.5%), Research (volume, income, reputation) (30%), Citations (30%), Industry income (2.5%), and Teaching (reputation, staff-to-student ratio, doctorate-to-bachelor's ratio, number of doctorates awarded to academic staff, institutional income) (30%). The indicators include reputation surveys for research (18%) and for teaching (15%) for a total of 33% of the weight. The THE subject ranking covers 100 universities in each of six broad subject areas using the same indicators as for the world university ranking but with weights varying among the subject areas. Times Higher Education does not publish the process by which universities are selected for inclusion in their rankings.

U-Multirank (2017), launched in 2014, provides university performance evaluation for institutions overall and in 13 fields: Biology, Business Studies, Chemistry, Computer Science Programmes, Electrical Engineering, History, Mathematics,

¹ GRBS was initiated by the United Nations University International Institute for Software Technology and the Center for Measuring University Performance. Contributing organizations include: Arizona State University, Institute for Scientific and Technical Information of China, Korean Academy of Science and Technology, Ministry of Higher Education of Malaysia, National Assessment and Accreditation Council of India, National Institute for Informatics (Japan), National Institution for Academic Degrees and University Evaluation of Japan, ProSPER.Net, University of Melbourne, and University of Pisa. The governance structure of the initiative included an International Advisory Board providing expertise in university performance evaluation, bibliometrics, and Sustainable Development, and representing diverse regional and stakeholder perspectives.

² www.researchbenchmarking.org The currently available data is from the 2012 release, which uses Scopus data from 2008 – 2011.

Download English Version:

<https://daneshyari.com/en/article/4968040>

Download Persian Version:

<https://daneshyari.com/article/4968040>

[Daneshyari.com](https://daneshyari.com)