

Review of Research Evaluation, Volumes 13(3), 14(1), and 14(2)

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Research Evaluation is a peer-reviewed interdisciplinary journal about the “methods, experiences and lessons for ex ante and ex post evaluation of single proposals through national performances” (Research Evaluation, 2005). Given the considerable interest in evaluating research, as demonstrated by the 21 sessions sponsored by the American Evaluation Association (AEA) Research, Technology, and Development Evaluation Topical Interest Group (TIG) at the recent 2005 American Evaluation Association/Canadian Evaluation Society jointly-sponsored conference, the journal certainly deserves coverage in the pages of *JMDE*. This review covers the three most recent issues of *Research Evaluation* (Volume 13(3), 2004; Volume 14(1), 2005; and Volume 14(2), 2005).

Volume 13(3)

Volume 13, Number 3 (December 2004) consists of six articles, the first of which is Cuhls and Georghiou’s “Evaluating a Participative Foresight Process: ‘Futur – The German Research Dialogue’”. Futur aims to enrich the process of strategy

development for research priorities by involving a broad array of actors in a combination of different instruments to develop ‘lead visions’. The process of a strategic intelligence exercise that combined elements of ex ante evaluation, technology assessment and foresight is summarised, along with key findings from the evaluation. The modified peer review approach employed to evaluate Futur was structured along the lines of accountability to support a continuation decision and also had a learning orientation. This evaluation approach is contrasted with the ambitions of the process being evaluated, notably the emphasis upon stakeholder participation and transparency.

The second article, “Some International Benchmarks for Evaluating Australian Health and Medical Research” by Garrett-Jones, Wixted, and Turpin describes recent experiences in Australia which has seen the requirement by the federal Department of Finance and Administration to conduct output pricing reviews of government agencies including research organizations. Health and medical research, while generally regarded as an important ‘public good’, is now pressed by the same demands as other research fields to account for public investments in terms of value of outcomes and value for investment. This paper reports on current trends towards international benchmarking of health and medical research performance.

Next, Yapa, de Silva, and de Silva discuss “Trends and Shifts in Institutional Productivity: Natural Products Chemistry Research in Sri Lanka.” This article presents a bibliometric analysis of institutional research productivity in nine Sri Lankan research laboratories in the field of natural products chemistry that showed a conspicuous rise and fall during 1975 to 1998. Scientific impact resulting from

intra-departmental collaboration was as strong as that from international collaboration.

Ohniwa, Denawa, Kudo, Nakamura, and Takeyasu author the fourth paper titled “Perspective Factor: A Novel Indicator for the Assessment of Journal Quality.” Herein the authors describe how ‘impact factor (IF)’ has been practically the only indicator to assess the quality of journals. However, it has various problems associated with citation analysis, such as the effects of ‘different sizes of audience’ and ‘biased citation’. To overcome this, the authors propose a new objective index, ‘perspective factor’ (PF), which estimates the journal quality independently of citation analysis. The relationship between IF and PF of life science journals published in 1997, for example, shows a moderately strong positive correlation when excluding review journals and extremely high-IF journals, which could not gain comparatively high PF values.

The fifth paper in the issue, by Lewison, Rippon, de Francisco, and Lipworth titled “Outputs and Expenditures on Health Research in Eight Disease Areas Using a Bibliometric Approach, 1996-2001” discusses the identification and analysis of research outputs multiplied by the estimated cost per paper. The method, developed originally for malaria research, gave a more realistic estimate of global research expenditures than previous attempts based on summation of the research budgets of individual funders. Overall support for the different disease areas varied greatly; cardiovascular and mental health research attracts far more funding than malaria and dengue. In relation to the estimated disease burden in 2001, the highest ratio was for diabetes and lowest for tuberculosis, lower respiratory infections and malaria. These are much lower than the ratios for many common non-communicable diseases. Overall, the U. S. National Institutes of Health and its

individual component institutes were the highest spenders, but in some areas the big pharmaceutical companies spent more.

The final paper, “What is the Value of Replicating Other Studies?” by Park, discusses the value of replication in social science research. The author undertook a search of the literature for expert advice on the value of such an activity. Using the information gleaned and the personal experience of attempting to replicate the research of a colleague, the conclusion was drawn that replication has great value but little ‘real life’ application in the true sense. The activity itself, regardless of the degree of precision of the replication, can have great value in extending understanding about a method or a concept.

Volume 14(1)

Volume 14, Number 1 (April, 2005) consists of ten articles and is the first of two special issues devoted to the Eighth International Conference on Science and Technology Indicators¹ (which took place in Leiden, The Netherlands from September 23-25, 2004). The first paper is Lewison, Rippon, and Wooding’s “Tracking Knowledge Diffusion Through Citations.” This paper examines four successive generations of papers citing to a set of UK arthritis papers to evaluate its ‘down-stream’ influence. The citing papers are progressively more international, less within the arthritis sub-field and on average more basic (not more clinical) in character.

¹ The conference “Book of Abstracts” is available at http://conference.cwts.nl/Downloads/book_of_abstracts1.pdf

The second paper in this issue is Bornmann and Daniel's "Committee Peer Review at an International Research Foundation: Predictive Validity and Fairness of Selection Decisions on Post-Graduate Fellowship Applications." Their bibliometric analysis showed that the peer review procedure (as practiced by the Boehringer Ingelheim Fonds) was valid. With regard to fairness of the procedure, they analyzed the extent to which the foundation's Board of Trustees' practice of reviewing the applications in alphabetic order when making final selection decisions has an influence on the decisions that they make. A statistically significant influence of the postulated bias variable was observed, but the overall effect size was small.

The third paper in Volume 14, Number 1 is Moutinho and Godinho's "S&T Culture: A Blooming Dimension." In their paper the authors present an overview of available indicators and discuss new elements of analysis, qualitative and quantitative, drawn from the practices involved in the promotion of scientific and technology culture. In this exercise, indicators for scientific culture and literacy were matched with a broad set of data covering S&T, social and economical aspects.

The fourth paper in this issue is Grit's "Is External Research Funding a Valid Indicator for Research Performance?" As the author asserts, 'research income' is one of the most common indicators for assessing research quality, yet its validity has never been systematically investigated. The conditions under which Australian and German physicists obtain external funding were analyzed in a comparative qualitative study. The study demonstrates that success in obtaining external funding is only partly related to the quality of researchers and their proposals.

The next article “Impact of Socio-Economic Factors on Higher Education in Russia” by Markusova, Vladimir, Alexandr, Arapov, Jansz, Zitt, and Bassecoulard-Zitt describes the fundamental changes in the political and economic domains in Russia in the late 1990s and its affects on the Russian scientific community and higher education system.

Hannele’s “Challenges in Developing Gender-Sensitive Indicators for Finnish Researcher Training” is the sixth article in this issue. Herein Hannele describes recent efforts at improving the availability and quality of human resources for European R&D in order to attain the Lisbon goal to increase the investment in research by 2010. She also describes the position of women researchers and presents one method to identify the gender profile of Finnish researcher training.

In Cheng, He, Yang, and Yang’s “Quantitative Method and Model for Forecasting R&D Expenditures in China” the authors present a quantitative forecasting method for gross domestic expenditure devoted to research and development (GERD) and the ratio of GERD to GDP in the future for formulating long-term S&T development policies in China.

Cruz-Castroc and Sanz-Menéndez’s paper “The Employment of PhDs in Firms: Trajectories, Mobility and Innovation” presents a study of a sample of PhDs and their corresponding employing firms to analyze patterns of mobility, economic returns, and innovation outputs.

The next paper is Carayol and Thuc Uyen Nguyen’s “Why Do Academic Scientists Engage in Interdisciplinary Research?” This paper presents the authors’ study of more than 900 permanent researchers employed by a large French university they

propose that the context of work in the laboratory (size, colleagues' status, age and affiliations) strongly affects the propensity to undertake interdisciplinary research.

The final paper in this issue is Luwel's "Job Advertisements as an Indicator for Mobility of Researchers: Naturejobs as a Case Study." Luwel uses data extracted from Naturejobs and contrasts the total jobs posted (in countries) in comparison with its (countries) share of papers published in Nature, the Nature family journals and the Science Citation Index, and with its (countries) overall R&D expenditures.

Volume 14(2)

Volume 14, Number 2 (August, 2005) is the second issue devoted to the Eighth International Conference on Science and Technology Indicators and consists of ten papers. The first paper is Granadino, Plaza, and Vidal's "Analysis of Spanish Scientific Output Following the Joint Action Program (Acciones Integradas) of the Ministry of Science and Technology (MCYT)". This work evaluated the Joint Action Program, by means of the scientific output resulting from the joint research projects supported during the period 1996 to 1999. The main indicator was the co-authored articles published in international journals.

The second paper in this issue is Jin, Rousseau, and Sun's "Key Labs and Open Labs in the Chinese Scientific Research System: Qualitative and Quantitative Evaluation Indicators." In this paper the authors present a study of Chinese S&T labs using quantitative and qualitative techniques. The quantitative aspect includes input indicators such as expenditure and output indicators such as publication, patents, training and so on. Qualitative evaluation was performed by experts according to a set of quality indicators.

The next paper in this issue is Costas and Bordons' "Bibliometric Indicators at the Micro-Level: Some Results in the Area of Natural Resources at the Spanish CSIC." A total of 3,302 SCI (Science Citation Index) and 1,183 ICYT publications (Spanish database) were identified during 1994-2001 for 333 permanent scientists. The scientific performance of these scientists was studied through different indicators related to activity (SCI and ICYT productivity), expected impact (average impact of publications, percentage of documents in top journals), observed impact (number of citations per document, number of highly cited papers), and publication habits.

The fourth paper is Newman, Porter, Roessner, Kongthon, and Jin's "Differences Over a Decade: High Tech Capabilities and Competitive Performance of 28 Nations." Since 1986, researchers at Georgia Tech's Technology Policy and Assessment Center have been systematically monitoring national high technology-based industrial competitiveness. This paper reports on a longitudinal assessment of high technology capability and resulting competitive standing across 28 countries from 1993 through 2003.

Esterle's "Comparing and Evaluating Public Research Organisations: A Unique, Participatory Mechanism in Place in France" is the fifth paper in Volume 14, Number 2. In this paper Esterle used demographic analyses, bibliometric indicators of scientific output, measurement of copublications, and generation of patents and licenses to compare French research organizations.

The next paper is Gómez, Bordons, Morillo, and Fernández' "Regionalisation of Science and Technology Data in Spain." In this paper the scientific and technological performance of the 17 Spanish regions was studied through

bibliometric and socio-economic indicators, to identify scientifically or technologically oriented regions, their specialities and characteristics. A descriptive typology of the Spanish regions based on R&D input and output indicators, as well as on social and economic indicators, is presented.

Antonangeli, Rizzuto, and Rochow's paper titled "The Social Accountability Reporting Project at Elettra" is the next paper in this issue. This article introduces social accountability reporting as a framework for the stakeholder interaction in corporate social responsibility models and extends it to R&D institutions, as a potential managerial tool and a capable instrument for impact analysis going beyond the economic benefits.

The eighth paper in this issue is Grohmann and Stegmann's "German Medical Faculties in the 1990s: On-Line Bibliometric Analysis." Data of publication output from 1993 to 2001 and of observed citation impact relating to citing years 1995 to 1999 were retrieved on-line from the German host DIMDI. Expected citation data (for 1995 to 2002) were calculated using the journal impact factors supplied by ISI's Journal Citation Reports (JCR). For journals not included in the JCR, impact factors were constructed according to the number of citations received from journals indexed in ISI databases.

The ninth paper titled "Cross-disciplinary research: co-evaluation and co-publication practices of the CNRS laboratories" by Sigogneau, Malagutti, Crance, and Bauin characterizes cross-disciplinary relationships between scientific communities as an essential step for identifying cross-disciplinary research areas which are promising for scientific and technological innovation. The authors

attempt to observe such links through co-evaluation and co-publication practices of CNRS laboratories and their evolution during the 1990s.

The final paper in the most recent issue of Research Evaluation is Modrego-Rico, Barge-Gil, and Núñez-Sánchez' "Developing Indicators to Measure Technology Institutes' Performance." Herein, the authors report on a study of influence of operative, financial, organisational, relational and general variables on three measures of results: self-finance, impact and added value.