A Comprehensive and Multi-Purpose Global Research Performance Information System

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A COMPREHENSIVE AND MULTI-PURPOSE GLOBAL RESEARCH PERFORMANCE INFORMATION SYSTEM

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ABSTRACT

We develop a research performance information system that compares the volume and impact of peer reviewed business publications by 2720 institutions across 111 countries. We step away from traditional ranking-based ordinal scales, developing a system that facilitates assessment of research performance using methods that are reliably, validly, and transparently.

INTRODUCTION

Several years ago, an *Academy of Management Learning & Education* editorial asked, "Why aren't business schools more global and what can management educators do about it?" (Doh, 2010: 165). Our paper offers some answers to that question. First, we argue that becoming a globalized industry requires us to tear our gaze away from the global research champions and acknowledge the presence of a full array of institutions producing high-quality research in business and management. We challenge the established rhetoric, which implicitly assumes that only high performers in a global distribution of research performance deserve attention. The exclusive focus on somewhere between 100 and 400 business education institutions worldwide produces results that cannot be used to assist with decision-making in the vast majority of business education institutions: while much is known about these elite institutions, the majority of others which employ the majority of faculty and educate the majority of business students globally remains underexplored. Hommel and Thomas (2014: 20) estimated that lower-tier schools represent "more than 95% of the total sector" and argued that the focus on leading business schools creates "an unsustainable bias" in understanding the industry. Moreover, this approach does not respect the contribution that thousands of researchers make to research-led education, the sole reason for this oversight being that they are employed outside the elite schools. However exciting the "academic arms race" (Enders, 2014: 155) in the highest echelons of the industry may be for its spectators, its outcomes do not hold much value for institutions that do not serve the same audiences as the global brands such as Harvard University or London Business School, and especially where these non-elite institutions possess a fraction of elite schools' resources.

Second, in order to make decisions in a globalized industry, administrators need the data that enable both local and cross-country comparisons of business schools. Existing rankings do

not fulfil this need adequately because the ordinal scales that they use obscure conclusions. Some rankings use the arbitrary weighting of different score components in an attempt to construct a multidimensional measure of research performance, which introduces subjective judgement into the measurement of research. For example, the University Ranking by Academic Performance weights the Article Impact component of their scores at 18%, without any theoretical justification for this particular figure. Furthermore, the use of normalized scores instead of raw numbers may give the false impression that the distance between the ranks is the same at any level of research performance. We seek to change the narrative in measuring research performance by stepping away from traditional ordinal scales. In line with the Leiden Manifesto for research metrics (Hicks, Wouters, Waltman, de Rijcke, & Rafols, 2015: 430), we offer our readers a research performance database that allows them to make decisions informed by data that have not been transformed by a "black-box evaluation machine."

The research performance database, introduced in this paper, offers its users fewer cognitive shortcuts in favor of deeper engagement with the research measurement data. It provides the means to compare research performance within a reference group selected by each institution, where this reference group may be selected on the basis of resources or strategic objectives. The data in our system also motivate researchers and aspiring researchers (doctoral students), administrators, policy makers, government officials, alumni, current and prospective students, and donors, and other stakeholders to extend their thinking to a global level by helping them to create international reference groups which include similar institutions worldwide.

This paper presents the most inclusive research information system to date, covering 2,720 higher education institutions in 111 countries. It sheds light on the rich diversity of our research community, but its purpose goes far beyond mapping the industry. By offering an inclusive and global approach to the measurement of research performance, we make a contribution that is relevant for business school stakeholders including researchers and aspiring researchers, alumni, current and prospective students, administrators, policymakers, government agencies, and donors. The availability of this research performance database also has implications for theory and future research on sociology of science, internationalization of business education, networking, careers, and mobility.

METHOD

Journal Selection Criteria

The Thomson Reuters Journal Citation Report (JCR) is one of the main established lists of visible journals in the field of business and management. We used this as our main source of journals. We adopted the categories "Business", "Business, Finance", "Management", and "Public Administration" as these have been used by prior studies. This sample frame enables comparison of our work with previous, narrower defined, research performance databases (e.g., Mangematin & Baden-Fuller, 2008). Given the challenges of managing a large number of bibliometric data, we selected all journals in these categories with an average journal impact factor (IF) of 1.1 or greater for the period 2007-2012. We also sought to subsume sources used by existing rankings of business schools and, after comparing journal lists, added those journals that were not already present in our research performance database but were included in the journal lists of the *Finanial Times*, Podsakoff et al. (2008), Bloomberg BusinessWeek, and the University of Texas—Dallas (UTD) Top 100 Business School Research Rankings. The resulting

list of 160 journals, which is available from authors upon request, contributes to more than 80% of all citations accumulated by JCR-listed journals in those categories in the period 2007-2012.

Data Collection and Analysis

For each of the journals on the final list, we collected publication data from the ISI Web of Science (using the *Analyze Results* function). Only research papers and reviews were included in the publication output. We grouped the data by organization and collected them for two consecutive three-year periods: 2007-2009 and 2010-2012. We weighted the number of papers published by each organization by the average IF of a relevant journal. Multiplying the number of papers by the IF of a respective journal makes it possible to account for the visibility of publications to the scientific community. It also means that the strategy of publishing fewer papers in highly visible journals, often pursued by elite schools, can be balanced with that of publishing more papers in lower-ranking outlets, as often pursued by non-elite schools (Seibert, Kacmar, Kraimer, Downes, & Noble, 2014).

We then aggregated the data into two datasets. The first included the count of papers published in 2007-2009 and the same count weighted by the average IF of each journal, grouped by organization. The second dataset included the count and the weighted count data for 2010-2012. We provide the average volume and average weighted output for 2007-2012 to give an estimate of the absolute number of publications and the number of publications adjusted for the impact of journals for each organization. We also include the average journal IF for each organization (calculated by dividing weighted research output by the number of papers) so that the readers could gain a general idea of the average standard of faculty publications.

RESULTS

Over a six-year period, 53,063 authors published 46,410 articles in the 160 journals**.** This was equal to 81,477 institutional units of output (36,676 in 2007-09 and 44,801 in 2010-12), because one paper co-authored by two scholars from different institutions generates two units of output, one for each institution mentioned on this paper. With 53.1% of these 81,477 being within North America and 58.8% within the AACSB, there is a fascinating mix of centuries-old schools and emerging institutions located outside this core, many in non-English speaking regions. Overall, research production is growing. The average number of papers published in 2007-2010 was 15 (median 2; standard deviation 45.3), rising by 21% to 18 papers (median 3; standard deviation 50.2) per institution in 2010-2012. The highest institution published 760 papers in 2007-2009, rising to 781 papers in 2010-12 (+3%), whilst the 100th institution published 77 papers in 2007-2009 rising to 83 papers in 2010-2012 (+8%). Whilst a small number of organizations produce a high volume of impactful research (number of papers weighted by the IF of a respective journal), around 85% of schools publish fewer than 50 units of weighted research output in the top 160 journals over a three-year period (mean = 33.2, median = 3.6). This also means that 85% of schools publish less than 25 papers over a three year period.

How to Use Our Research Performance Database

Our research performance database is constructed as an Excel spreadsheet. It can be searched by the name of an organization and sorted or filtered by any of the columns. Columns

which are irrelevant for the user can be hidden. To facilitate the construction of national and regional comparisons, we also include the country and geographical region of each organization in the database. Table 1 shows a sample of the main variables in database for a sample of institutions (excluded are columns on region, accreditation and university system type).

Table 1 about here

Due to ambiguity in the university affiliation in the case of multi-campus university systems, we provide raw data for each of the organizations within the system and the cumulative output for the entire university system. Users will be able to assess the relative standing of these schools, remembering to account for the unspecified output assigned to the entire system. We also produced an alternative calibration that does not include systems and lists all institutions as they were recorded in the papers. In order to make this research performance database more useful for stakeholders who consider accreditation to be an important factor in their decision making, we provide information on school accreditations by the AACSB and EQUIS as of May 2015. The database can be filtered to show only the schools accredited by these organizations.

DISCUSSION

We believe that, as a community of business academics, we have a duty to make more visible the kaleidoscope of institutions that produce research in our leading peer-reviewed, English-language journals. Our research performance database seeks to take steps to achieve this outcome and, in the process, reveals a diversity of institutions that generate very different volumes of publication and scholarly impact (suggesting choices about volume versus impact). These institutions vary by country, region, international accreditation system (AACSB and EQUIS), and governance mechanism (university systems, such as the University of California system, versus individually organized independent universities, such as the University of Warwick).

Acknowledgement of this diversity is, in our opinion, key to the appropriate measurement of research performance and better decision-making on the basis of performance data. Instead of creating another global ranking that ignores differences in resources, objectives, and strategies between research-active institutions, our research performance database includes a continuous scale and allows users to choose their own reference group. This will enable the academic community to go beyond an excessive degree of simplicity in the current rankings and to embrace the complexity of the business school industry while also facilitating decision-making based on objective performance data.

Following Hicks et al.'s (2015) recommendation regarding the responsible use of metrics in research measurement, we suggest that the users of our system espouse two fundamental principles. First, administrators in business schools, representatives of funding bodies, and government agencies should define the business education institutions that they view as a reference group based on their knowledge of the local context, resources, and objectives of business education institutions, before using research performance indicators to compare organizations. Second, the indicators of research performance presented in our system should be used as part of a balanced scorecard or "basket" of quantitative and qualitative metrics.

Implications for Theory and Research

Academic organizations produced multiple responses to the globalization of the economy, but several common conceptual themes go through all these distinct strategies. First, at the industry level, scholars explore how strategic isomorphism (or the lack of it) in business schools influences performance outcomes, and how dominant logics entrenched in various national settings may moderate this relationship (Antunes & Thomas, 2007; Wilson & McKiernan, 2011). Our paper helps in extending this discussion to include the global population of schools producing research in top peer-reviewed journals. The diversity of resource endowments in this population might result in a variety of strategic responses (Oliver, 1991) to the pressures of globalization, which scholars and practitioners need to understand before making global comparisons of organizations.

Second, at the organizational level, research shows that the formation of international academic networks has been driven by status and visibility of potential partners (Baden-Fuller & Ang, 2001). Our paper makes visible the vast global landscape of educational institutions, thus enabling network researchers to extend their investigation beyond the elite stratum of business schools. This new investigation may include, for example, the role of accreditation agencies or boundary-spanning individuals in bringing together non-elite schools for scientific collaboration.

Third, at the individual level, administrators in business schools need to manage attraction, motivation, and retention of increasingly diverse and mobile faculty (Coff & Kryscinski, 2012). Hiring of faculty whose research networks are located abroad brings additional challenges into the process of producing research outcomes. Recent research shows that even within-country academic mobility leads to the loss of social capital (Baeker, 2015). Communication technologies such as video conferencing and email, have facilitated long-distance collaboration, but have not managed to replace face-to-face communication completely (Freeman, Ganguli, & Murciano-Goroff, 2014; Vasileiadou & Vliegenthart, 2009). Email, like any form of written communication, fails to transfer non-verbal communication, which plays a significant role in conveying the tacit meaning behind a given text (Epley & Kruger, 2005; Kruger, Epley, Parker, & Ng, 2005). Video calls require equipment and a high-quality internet connection, which may not be always available outside the most technologically developed countries. Moreover, faculty mobility between schools of different statuses may result in a form of social exclusion whereby co-authors from high-status schools may become less willing to publish with researchers affiliated with lower-status schools (Baden-Fuller & Ang, 2001). A change in institution may also result in a change in access to research funding for existing co-authorship networks (e.g., funding may be permitted only for researchers within the country or institution to which the grant was awarded). These effects combined may impact the productivity of existing co-authorship networks in the face of mobility. By providing insight into 2,720 institutions we offer researchers new opportunities to explore mobility impacts on a global scale.

As scholars, administrators, mentors, and employees of business schools, we want to understand globalization processes in our industry. We believe that exploring the landscape of global research performance is a step in this direction. Interconnected research streams on scientific networks, careers and inter-organizational mobility of faculty, and portability of knowledge workers' performance can now progress to the global level of analysis. Our research performance database is a useful tool to facilitate this research in the future.

REFERENCES AVAILABLE FROM THE AUTHORS

TABLE 1

General View of Our Research Performance Database with the Sample of Data (sample columns, excludes several)

Organizations	Country	Papers published in 2007-2009	Papers, weighted by journal impact factors, in 2007-2009	Average Impact Factor 2007-2009	Papers published in 2010-2012	Papers, weighted by journal impact factors, in 2010-2012	Average Impact Factor 2010-2012	Average volume 2007-12	Average weighted output 2007-12
UNIV INDONESIA	Indonesia	0	0.000	0.000	1	1.908	1.908	0.5	0.954
UNIV INNSBRUCK	Austria	23	41.252	1.794	40	66.758	1.669	31.5	54.005
UNIV INSUBRIA	Italy	5	8.239	1.648	2	1.288	0.644	3.5	4.763
UNIV INT BUSINESS ECON	China	9	15.466	1.718	27	55.491	2.055	18	35.478
UNIV INT CATALUNYA	Spain	1	0.941	0.941	1	2.128	2.128	1	1.535
UNIV IOANNINA	Greece	3	4.636	1.545	7	12.005	1.715	5	8.320
UNIV IOWA	USA	97	251.080	2.588	91	232.665	2.557	94	241.873
UNIV ISFAHAN	Iran	0	0.000	0.000	2	2.797	1.398	1	1.398
UNIV IULM	Italy	4	6.848	1.712	5	7.095	1.419	4.5	6.972
UNIV JAEN	Spain	10	18.124	1.812	7	9.940	1.420	8.5	14.032
UNIV JAUME 1	Spain	13	25.066	1.928	21	36.769	1.751	17	30.917
UNIV JEAN MONNET ST ETIENNE	France	1	1.388	1.388	3	3.767	1.256	2	2.577
UNIV JENA	Germany	12	20.391	1.699	25	40.935	1.637	18.5	30.663
UNIV JOHANNESBURG	South Africa	2	2.646	1.323	9	14.655	1.628	5.5	8.650
UNIV JORDAN	Jordan	0	0.000	0.000	2	2.650	1.325	1	1.325
UNIV JYVASKYLA	Finland	22	38.967	1.771	21	33.871	1.613	21.5	36.419
UNIV KAISERSLAUTERN	Germany	5	8.472	1.694	3	3.494	1.165	4	5.983