What does publication output tell us: indicators from the institutional databases of higher education institutions


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Background

Publications constitute one of the major means for transmitting results of research of higher education institutions, alongside formal teaching, direct (largely tacit) transmission of knowledge, mobility of people and technological outputs. Publications represent an important indicator more and more used by scholars, policy makers and stakeholders for different purposes, thanks to the existence and the diffusion of international databases, which allow analysis of the production and productivity of countries, institutions and research groups, fields of science and sub-fields, and are powerful instruments for assessing the scientific effort, mapping science (van des Besselaar and Leydesdorff, 1996), its evolution and dynamics (van den Besselaar et al., 2008). They allow for quite fine-grained analyses and they have been widely used to evaluate the output of universities as a whole, to produce international bibliometric rankings (Van Raan, 2004), and to evaluate productivity and efficiency of higher education institutions (Bonaccorsi et al., 2007).

Nevertheless the most widely used databases of publication outputs of universities do not represent the entire set of publications produced by the HEIs. This is the case of the Web of Science and, more recently, Scopus, which cover adequately only scholarly publications addressed to an international audience, mostly in English (Larédo, 2003), but are really less relevant for the outputs able to address different audiences such as stakeholders.

Methodological limitations (i.e. the limited coverage of most domains in social sciences and humanities) become extremely problematic when assessing the publication activities of generalist universities, and the absence of coverage of national publications and of non-journal publications as books, reports, communications, which are likely to be not so relevant for academic international visibility but are extremely important at national and regional level (Hicks D., 2004; Nederhof A., 2006; Gomez et al., 2009). Field-specific bibliographic database (see MEDLINE for instance) show other drawbacks, which can be avoided only with a deep knowledge of the fields and sub-fields under examination, and with a knowledge of the authors’ affiliation too; other web-based databases as Google Scholar, although having a wide coverage of publications, have also strong limits of data quality and coding (Walters, 2007).

Experiments for characterizing publication outputs using different sources have been carried out and a promising trend in this respect is the development of databases internal to higher education institutions. The Spanish GREC, developed by University of Barcelona, and UNIVERSITAS XXI, used by Carlos III University of Madrid as well as other 10 Spanish universities, UNISCIENCE database of the University of Lausanne, and the DARE, the Digital Academic Repository, and METIS developed in the Netherlands are some examples.

This paper wants to assess the extent to which institutional databases can be used to produce simple indicators of publications at the level of whole higher education institutions.
The purpose is to use output indicators in order to highlight profiles of activities, rather than to evaluate quality of research. Here we adopt the positioning indicators rationale, which is not based on an input/output relationship, rather it is oriented toward positioning each actor in a "complex and fragmented institutional space" where the characteristics of the institutions themselves, in our case the HEIs, their competitive behaviors, and their collaborations and linkages with other actors are important elements of their performance (Lepori, Barré, Filliatreau, 2008).

We also distinguish between descriptors and indicators, the former aimed at describing some aspects of reality without adding any interpretation, the latter explicitly aimed at building the connection between quantified information and non-observable properties. According to this distinction, only indicators are able to supply knowledge on the underlying phenomena, and their explanatory power is much higher than descriptors (Lepori and Reale, 2009). Thus, in our work we will make a clear distinction between the two in order to assess the real potentiality of institutional databases of output publication.

Moreover we assume a policy orientation promoting the differentiation of higher education institutions according to different missions and social and geographical spaces rather than their competition along the unique dimension of the international academic reputation (Lepori, Barré and Filliatreau 2008).

Methodology

The paper is based on the work developed within the UNIPUB Project launched by the PRIME Network of Excellence aimed at exploring how institutional datasets of output publications can be used for building positioning indicators on academic research activities.

A sample of 5 universities, two for Spain and Italy and one for Switzerland, have been selected according to the following criteria: presence of a good database, adequate time and disciplinary coverage, size and location. We defined a common framework for databases examination, which include several dimensions, grouped in three mains items:

- institutional information (University, Department, individuals)
- bibliographical information (author's information, scientific domain, condition and type of publication, language, aim of publication and type of audience)
- procedures for construction and updating databases and guidelines for access and exploitation.

Descriptors and indicators encompassed several dimensions aimed at characterizing HEIs research activity by using publication output. They were oriented to provide evidences on:

- orientation of the institution (national, international, regional);
- differentiation of the publication within the discipline;
- subject domains (disciplinary specialisation, trans-disciplinarity);
- research collaborations in different research fields;
- type of knowledge (basic, applied, technology, education, communication, practical)
- reference community (academics, policy makers, society).

Furthermore, a country based survey to assess the state of the art, the level of information, the use and main trends of institutional publication databases has been developed, for understanding commonalities and differences in the interested countries.

Results

The produced descriptors on publication output show interesting results as to the national and international relevance of the research results, the tendency toward collaboration and the size of the research group, the publication in journals with external peer review or not, in journals indexed in international databases or not, the preference for basic or applied research in different scientific domains. The comparison with results obtained through
bibliometric indicators highlight converging results, as well as significant differences, which emerge when all the types of outputs are considered, and allow to discuss some common beliefs on academic publications. Institutional datasets provide a deep insight on humanities and social science, and should help HEIs to evaluate their own position and to assess their strengths and weaknesses.

The possibility to build indicators covering different dimensions (as well as their combination) like the regional vs. national vs. international orientation of the institution, the subject domains covered, the type of knowledge produced and the reference community (academic vs. policy vs. companies) is also discussed.

Information gathered both by the test and the national surveys supply empirical evidences about the state and perspectives of institutional publication databases, and provide also recommendations and examples of good practices for the organizations.

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