Excellence and Emergence

A New Challenge for the Combination of Quantitative and Qualitative Approaches

Book of Abstracts

10th International Conference on
Science and Technology Indicators

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Edited by the Local Organising Committee

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PREFACE

The 10th International Conference on Science and Technology Indicators takes place at the University of Vienna 17-20 September. It is jointly organised by the Austrian Research Centers GmbH – ARC and the University of Vienna and is dedicated to "Excellence and Emergence - A new Challenge for the Combination of Quantitative and Qualitative Approaches".

International competition in research and technology development has intensified remarkably during the last decade. Performance of the science producing system has to be surveyed and should become measurable. Research grants and programmes are allocated according to performance indicators. Excellence clusters are required to transfer inventions into innovation and emerging technologies have to be identified to ensure the international competitiveness of the industrial societies. The adequate application of indicators, their content specific development as well as the introduction and discussion of new indicators, are of vital importance in scientometrics.

Scientometric methods are well established in natural sciences and technology, however, their application to other fields such as Social Sciences and Humanities is obviously not clear defined. New data sources and different approaches have to be introduced to measure the quality and impact of research in these disciplines. At the same time, the availability of Open Access resources becomes more important and requires its own metric measurement.

The conference in Vienna raises the issues of excellence and emergence in science and opens the floor for the discussion about the topics mentioned above.

Additionally, two pre-conference workshops will focus on specific themes. One will discuss the quality and impact of Social Sciences, and the other one gives some detailed introduction into the BibTechMon methodology as powerful tool for science mapping.

Furthermore, we defined seven topics for the conference:

- Theme 1: Quantitative and qualitative approaches: a special focus in evaluation of the academic performance;
- Theme 2: S&T indicators for the identification of emerging fields;
- Theme 3: Disciplinary relevance of bibliometric indicators: Science and Technology, Social Sciences and Humanities;
- Theme 4: Interactions between Open Access initiatives and scientometrics;
- Theme 5: Visualisation and Science Mapping: tools, methods and applications;
- Theme 6: Accuracy and reliability of data sources for scientometric studies;
- Theme 7: Management and measurement of bibliometric data within scientific organisations.

Over 160 contributions were received after the call for papers. Following the tradition of the conference, the authors sent extended abstracts with up to 800 words. All contributions were evaluated by three reviewers of the International and Local Committees. Exactly 24 contributions were withdrawn by the authors or rejected during the review process. Finally 137 contributions were selected to be presented in the conference.

We used text mining, co-word analysis and science mapping to assign the reviewers' competences to the topics of the contributions. The same method was used to cluster accepted papers and posters to the respective sessions.

The programme includes 3 keynote speakers, 9 oral presentations in 3 plenary sessions and 63 other oral presentations distributed into 18 parallel sessions. In addition 62 posters will be shown in 2 consecutive sessions.

The book of abstracts comprises all extended abstracts of oral presentations and posters grouped according to their thematic sessions.

By organising the 10th International Conference on Science and Technology Indicators in Vienna we hope to promote scientometric and bibliometric activities in Austria and to recall their importance and indispensability in measuring science and technology.

On behalf of the Local Organising Committee and Organisers we want to thank Anthony van Raan for bringing the conference to Vienna, Henk Moed for his cooperation and support compiling the conference programme, all the contributors for their submissions, the members of the International Committee for reviewing as well as the sponsors for their generous financial support.

Edgar Schiebel
Conference Chair

Juan Gorraiz
Programme Co-Chair

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LIBRARY CATALOG ANALYSIS IS A USEFUL TOOL IN STUDIES OF SOCIAL SCIENCES AND HUMANITIES

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Theme: Disciplinary relevance of bibliometric indicators: Science and Technology, Social Sciences and Humanities; Accuracy and reliability of data sources for scientometric studies.

Keywords: Library catalogs; scientific-scholarly books; research performance; social sciences and humanities; bibliometric indicators; economics.

1 Background

Bibliometrics studies confirm the important role of books as scientific media in Social Sciences and Humanities [WOLFE-THOMPSON, 2002; LINDOLHOM-ROMAN, 1996; HICKS, 1999]. However bibliometric studies of books are mainly small scale studies because no databases are readily available that allow a systematic, computerised analysis of large sets of book titles. This paper explores the use of Library Catalog Analysis (LCA), defined as the application of bibliometric techniques to a set of library online catalogs, to describe quantitatively a scientific-scholarly field on the basis of published book titles.

2 Problem

The paper focuses on the value of LCA as a tool in studies of Social Sciences and Humanities, especially their cognitive structures, main publishers of book titles, and the performance of the researchers active in these domains of science and scholarship. The aim was to identify the main technical problems and theoretical issues involved, to provide solutions and answers, and finally to make an inventory of issues that need to be further addressed in future research.

It proposes an analogy model between traditional citation analysis of journal articles and library catalog analysis of book titles (Table 1). The most attractive element is the parallelism between the number of received citations and the number of libraries in which books are included.

Table 1 Analogy between citation analysis of journal articles and library catalog analysis of booktitles

Citation analysis of journal articles		*Library catalog analysis of book titles*
	Main Concepts	
Article Author	↔	Book Author/editor
Research article	↔	Book
Publication database	↔	Library catalog
Publication database coverage	↔	Library catalog coverage
Journal Publisher	↔	Book Publisher
Journal´s Prestige	↔	Prestige of book publisher or library's institution
	Indicators and methods	
Create a set of papers published by a unit	↔	Create a set of book titles published by a unit
Measure the prestige of a journal	↔	Measure the prestige of a publisher or a library's institution
Numbers of citations received by a paper	↔	Numbers of catalog inclusions of a book title
Number of received citations per paper	↔	Numbers of catalog inclusions per book title
Compare a unit's citations per paper to an overall or world average	↔	Compare a unit's catalog inclusions per book title to an overall or world average
Geographical spread of authors citing the unit's papers	↔	Geographical spread of catalogs containing the unit's book title
Thematic mapping of publication databases (keywords)	↔	Thematic mapping of library catalogs (subject headings)

The first objective of this exploratory study was to develop a general methodology for data collection and analysis. It was decided to collect data for one discipline: Economics. A second objective was to carry out an exploratory performance assessment study of a particular country, Spain, and the research departments in Economics in a particular institution, the University of Navarra.

3 Data and Methodology

The methodology consists of the following steps:

- Selection of Bookwhere Academic 6.0 for download books from libraries. This software uses the Z39.50 protocol.
- Selection of university libraries applying the following criteria: a) The Z39.50 protocol should be implemented. b) The library should be a part of a university with a leading position in Economics. c) The selected set should contain a number of Spanish catalogs.

- Download of bibliographic records and creation of an off-line database. The search was carried out for the string ECONOM* in the subject headings of book titles; the chronological period was 1995-2005.

The following indicators were constructed

- Number of Titles (NT).
- Catalog Inclusions (CI)
- Catalog Inclusion Rate: CIR= (CI/NT)
- Relative Catalog Inclusion Rate: RCIR = (CIRa/ CIRb)

  Where:

  CIRa= Catalog Inclusion Rate of the aggregate to be assessed

  CIRb= Catalog Inclusion Rate of the 'benchmark' aggregate used for comparison
- Dispersion Rate: DR= (CIs/CIm)

  Where:

  CIs= Catalog Inclusions for a given set of titles

  CIm= Maximum number of possible inclusions that the set of titles can reach

4 Results

The total number of catalogs included was 42; they were located in 7 countries and belonging mostly to the Anglo-Saxon world. The number of titles collected was 121,147 accounting for a total of 417,033 inclusions; hence the *Catalog Inclusion Rate* is 3.4. 45 per cent of the titles appear in one catalog only.

Books have been published in a total of 89 different languages with a dominant position of English. The average number of authors per book title amounts to 1.63; 62 per cent of the titles were written by one author.

22,000 publishers have published at least one book title related to Economics. 61 per cent of these have published only one book title and only 133 published more than 10 titles per year. Table 2 shows indicators for the main publishers.

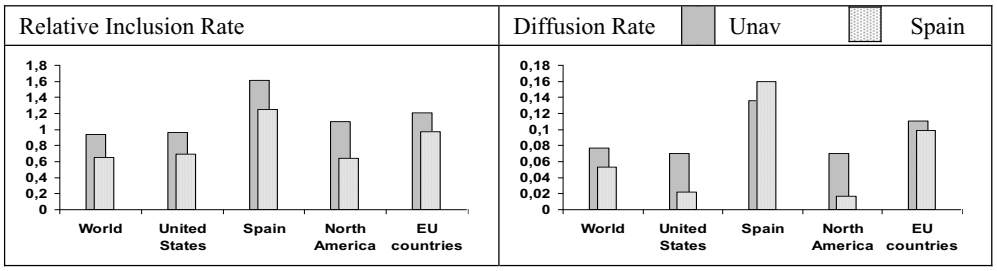
The number of books produced by Spain amounts to 6,704. The Relative Inclusion Rate of Spanish book title is below 1.0 in each geographical area outside Spain. The University of Navarra have published a total of 211 titles, 44 of which were found in at least one library. The total number of inclusions is 142 and the worldwide Relative Inclusion Rate amounts to 0.9. Figure 1 compares national and institutional indicators.

Table 2 The 25 most productive publishers in Economics

						Diffusion Rates		
Publisher name	*Nr Titles*	*Titles per year*	*Nr Inclusions*	*Inclusion Rate*	*Relative Inclusion Rate*	*All countries DR*	*European Countries DR*	*United States DR*
Routledge	3,589	326	19,985	5.6	1.6	0.13	0.10	0.24
Edward Elgar	2,102	191	13,922	6.6	1.9	0.16	0.13	0.22

Oxford University Press	2,092	190	14,576	7.0	2.0	0.17	0.14	0.29
Cambridge University Press	2,040	185	14,710	7.2	2.1	0.17	0.15	0.29
Macmillan Press	1,827	166	10,054	5.5	1.6	0.13	0.09	0.25
World Bank	1,509	137	8,612	5.7	1.7	0.14	0.07	0.30
Official Publications of the EC	1,344	122	6,528	4.9	1.4	0.12	0.12	0.17
United States GPO	1,281	116	8,613	6.7	2.0	0.16	0.00	0.67
OECD	1,260	115	6,308	5.0	1.5	0.12	0.09	0.19
Her Majesty's Stationery Office	1,209	110	2,315	1.9	0.6	0.05	0.08	0.02
Palgrave	1,188	108	8,905	7.5	2.2	0.18	0.11	0.37
United Nations	1,109	101	4,993	4.5	1.3	0.11	0.05	0.25
Springer	1,078	98	3,995	3.7	1.1	0.09	0.06	0.12
Ashgate	966	88	5,992	6.2	1.8	0.15	0.10	0.24
Kluwer	944	86	4,133	4.4	1.3	0.10	0.08	0.17
St Martin's Press	894	81	6,904	7.7	2.2	0.18	0.09	0.45
Harmatan	727	66	1,506	2.1	0.6	0.05	0.02	0.15
International Monetary Fund	646	59	2,856	4.4	1.3	0.11	0.09	0.15
McGraw Hill	645	59	2,111	3.3	1.0	0.08	0.10	0.07
Wiley	633	58	2,380	3.8	1.1	0.09	0.08	0.13
MIT Press	632	57	3,984	6.3	1.8	0.15	0.13	0.22
Sage	606	55	2,995	4.9	1.4	0.12	0.09	0.21
Blackwell	574	52	3,318	5.8	1.7	0.14	0.13	0.19
Prentice Hall	518	47	2,060	4.0	1.2	0.10	0.11	0.10
Earthscan	416	38	2,352	5.7	1.6	0.14	0.14	0.19

Figure 1 Relative Inclusion Rates and Diffusion Rates of the University of Navarra (Nava) and Spain



5 Conclusions

Within the framework of the analogy model between citation analysis and library catalog analysis a series of useful indicators was proposed. It was illustrated how LCA can be used to assess book production and research performance at the level of universities, countries and publishers. However there are at least three limitations that must be taken into account. Firstly, the set of libraries selected has a rather strong Anglo-Saxon bias. Secondly, the felid delimitation method based on the string ECONOM* in subject headings may not cover the entire discipline sufficiently well. Thirdly, no categorization is currently available of books into types, such as books primarily for teaching versus those primarily for research, and for a specialized versus a broad scientific-scholarly audience,

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