



Evidence Summary

A Combination of Citation Analyses Can Reveal the Nature of a Journal's Scholarly Communication, Its Influence in a Scientific Community, and the Geographic Location of Its Authors and Citers.

A review of:

Bonnevie-Nebelong, Ellen. "Methods for Journal Evaluation: Journal Citation Identity, Journal Citation Image, and Internationalisation." *Scientometrics* 66.2 (Jan. 2006): 411-24.

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Abstract

Objective – To conduct a number of citation analyses of the *Journal of Documentation* (JDOC), comparing the results with analyses of the *Journal of Information Science* (JIS), and the *Journal of the American Society of Information Science and Technology* (JASIST) to illustrate features of JDOC.

Design – Bibliometric study.

Setting – Library and information science journal literature.

Sample – Citations given by and given to the JDOC were analysed and compared to

those from the JASIST and the JIS. Author affiliation data were analysed from articles published in JDOC and from articles citing JDOC. The data were drawn from three time periods: 1975-2003, 1980-2003, and 1990-2003.

Methods – Journal Citation Identity was examined for the period 1990-2003. The analysis involved calculating the number of different journals represented by citations given by a journal in a publishing year. The resulting citation/citee ratio is indicative of diversity and extent of scholarly sources used by a journal. Journal Citation Identity was also examined by calculating the number of journal self-citations (in the period 1980 to 2003) as a proportion of the

total number of citations given by the journal. A high rate of journal self-citations suggests introspection or isolation from other journals in its field. The content of the three journals was examined for the period 1973-2003 to determine the proportion of scientific content (i.e. articles, notes, reviews, and letters).

Journal Citation Image was examined by calculating journal self-citations as a proportion of the citations given by other journals to the sample journal. The result signifies the degree of a journal's visibility in its field. A second aspect of Journal Citation Image was investigated using the New Journal Diffusion Factor (N JDF). The N JDF was carried out for each year between 1975 and 2003 and calculated the average number of different journals that cite an article in a sample journal. A high number of different citing journals implies influence in the field. The N JDF for the sample journals was compared with their Journal Impact Factor (JIF) over the same period.

Two further analyses of data gathered from 1990 to 2003 were conducted for the Journal of Documentation. The first identified journals most frequently co-cited with JDOC, an analysis that can locate a journal within or outside its field. Lastly, Internationalisation analyses were carried out for JDOC. Internationalisation relates to the geographic affiliations of authors of JDOC articles and of authors citing JDOC. Geographic affiliation was analysed using three classifications: affiliation in North America, Western Europe, or other geographic locations.

Main results –

Journal Citation Identity: JASIST was found to have the highest citation/citee ratio at 1.88, while JDOC and JIS had similar ratios of 1.50 and 1.44 respectively. This finding suggests JASIST draws its citations from fewer journals than JDOC and JIS. The

scientific content of JDOC ranged from 18% to 50% in the period analysed, the lowest proportion of the three journals. All journals had seen a reduction in the proportion of journal self-citations over 23 years. Average journal self-citations for the period were 4.3% for JASIST, 3.9% for JDOC, and 3.4% for JIS.

Journal Citation Image: The number of journal self-citations as a proportion of the total number of citations given to a journal was relatively stable for the three journals in the period 1991-2003. JASIST had a slightly higher rate at around 30%, the rate for JDOC was approximately 15%, and JIS showed the greatest variation ranging from 25% to 12%. In the years 1980 to 1990 JIS was found to have a much higher proportion of journal self-citations, spiking to over 85% in 1986. JDOC and JASIST self-cited at a rate that differed little over the full 1980 to 2003 period.

The average N JDF for JDOC increased from just over 0.3 in 1975 to almost 0.5 in 2003. JIS had a steady average N JDF around 0.2 and JASIST an average of just over 0.3 in the same period. A comparison of the journals' JIF in these years shows JIS is the only journal with an average JIF that is decreasing. The average JIF for JDOC and JASIST increased.

JASIST was the most frequently co-cited journal with JDOC, followed by Information Processing and Management and JIS.

Internationalisation: A large proportion of authors publishing in JDOC were affiliated with Western European institutions with a general trend showing decreasing numbers of authors from North America and other geographic areas. Authors citing JDOC were predominantly from North America in the 1990s, but by 2002 authors from Western Europe were citing JDOC in larger numbers. The proportion of citing authors from other

regions remained steady at around 10% over the thirteen year period.

Conclusions – In comparison with JASIST, the Journal Citation Identity of JDOC shows a broader scientific base with less dependence upon articles from its previous issues. JDOC is cited by a larger number of other journals than JASIST and JIS, indicating a higher degree of visibility in the scholarly community. The journals most often cited alongside JDOC mark it as firmly grounded in the field of library and information science. JDOC is attractive to Western European authors both as a publishing channel and as a journal to which they make reference.

Commentary

In this study, well-known analyses are imaginatively applied to three important research journals in library and information science. The findings provide an overview of the journals' citing practice and the extent to which the journals are cited by others.

Most of the analyses conducted in this study are common in the bibliometrics literature. It is the combination of analyses and the New Journal Diffusion Factor analysis, a newcomer to the field, that makes this study different. The journal diffusion factor was first proposed in 2002 and modified in 2004 by Frandsen (hence the name New Journal Diffusion Factor). It is this analysis that could capture attention, if as the author suggests, the NJDF emerges as a possible alternative to the Journal Impact Factor for evaluating journals.

There are several shortcomings in the way in which the study is reported. While the methods follow a pattern like many others in the field of bibliometrics - from which it might be assumed that Thomson Scientific ISI data were used as units of analysis - the source of citation data is not discussed. The

study focuses on journal-to-journal citations and yet citations to non-journal literature would also exist in the sample journals. If citing characteristics of journals are indicative of their scientific base and reach in a field, the number and nature of citations to non-journal literature is an important factor to consider. No mention is made of these citations. Also confusingly, four different time spans are used for different analyses with no explanation as to why. Interested readers might find answers to a number of these concerns in a paper co-authored by Bonnevie-Nebelong, also published in 2006, which reports the same study in much greater detail.

The analyses discussed in the paper are not without theoretical interest and could form the basis of further research, particularly in regards to the New Journal Diffusion Factor and Internationalisation. However, it is not immediately clear how this information could be utilised by library practitioners. Bibliometric analyses can be useful in collection management, although possibly less so as publishers and database vendors increasingly package journals. Interdisciplinary citing patterns and the age of citations are also aspects of bibliometrics that might have application for collection managers making decisions about acquisition, retention, or disposal of resources.

The author's conclusions seem tenuous based on the information provided in the paper and do not add a great deal to our knowledge about the three journals sampled. They are core research journals in the field with established reputations. Due to the (assumed) dependence upon Thomson Scientific ISI data, it is doubtful that the alternative methods of journal evaluation proposed could be applied effectively to a broader and more diverse journal set. Furthermore, it is unlikely we will see these methods used widely in the profession

unless they are routinely calculated and published as is the case for the Journal Impact Factor.

Works Cited

Bonnevie-Nebelong, Ellen and Tove Faber Frandsen. "Journal Citation Identity and Journal Citation Image: A Portrait of the Journal of Documentation." Journal of Documentation 62.1 (2006): 30-57.

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