

Journal Cross-citation Analysis: Tracing the Role of Individual Journals in the Communication Network and Validation & Improvement of Journal-Based Subject Classification in Bibliometric Research

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The first objective of this study is uncovering structural patterns of information flow among scientific journals. The study is based on the Web of Science for the period 2002-2006. Cross-citation links are determined on a item-by-item procedure for individual papers published in the corresponding journal. Beyond measuring the individual journals position in the communication network, we shed light on their cognitive background as well. Centrality, isolation and entropy are influenced by many factors such as the subject area, document types, number of publications, specialisation, inter-disciplinarily, language barrier, national or international orientation, visibility, 'quality' and other related issues.

The second objective is to use journal-network analysis for validation and improvement of existing journal-based subject classification schemes. This part of the analysis is based on cross-citation link clustering. We have found 15 an appropriate number of journal clusters and the 15-field subject classification scheme of the Steunpunt O&O Indicatoren is used as the "control structure". First the cognitive structure of cross-citation clusters is studied then the subject classification is evaluated according on the basis of the cluster analysis. Finally, a direct field-to-cluster comparison is applied and the "migration" of journal is studied in order to adjust and improve the existing "intellectual" classification scheme.