WEIGHTED CONSENSUS METRICS FOR EVALUATING SCIENTIFIC JOURNALS

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Today, a lot of scientific papers in different subject areas are published. So determining the influence of each paper or journal where these papers are published is very important. Nowadays the most used indicator for journal influence measuring is impact factor proposed by E. Garfield [1]. Although IF is an important quotient for evaluation of scientific journals used by librarians, researchers, science policymakers, there are many critiques against the IF efficiency [2-3]. During the last decades new indicators for journals evaluation were proposed; in this paper weighted consensus metrics was proposed which aggregates 10 journal ranking indicators:

- Impact factor – the generally accepted as an indicator of journal prestige the Thomson Reuters (earlier Institute of Scientific Information - ISI) calculates the impact factor of journal in current year as ratio of number of citations in current year to articles published in this journal during previous two years to number of these articles;

- Five-year Impact Factor – View a more informative snapshot over a longer time span, showing you a broader range of citation activity. For journals in subjects where citation activity continues to rise through several years, this allows more of their total citation activity to be included in a critical performance metric;

- Eigenfactor®Metrics– Discover the metric that uses citing journal data from the entire Journal Citation Report file to reflect the prestige and citation influence of a journal by considering scholarly literature as a network of journal-to-journal relationships [4];

- Immediacy Index is defined as the average number of times that an article published in a specific year within a specific journal is cited over the course of that same year[5];

- The Article Influence Score for each journal is a measure of the per-article citation influence of the journal;

- The h-index is an index that attempts to measure both the productivity and citation impact of the published body of work of a scientist or scholar. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications. The index can also be applied to the productivity and impact of

a scholarly journalas well as a group of scientists, such as a department or university or country. The index was suggested in 2005 by Jorge Hirsch, as a tool for determining theoretical physicists' relative qualityand is called the Hirsch index [6];

- The SCImago Journal Rank (SJR) is based on the transfer of prestige from a journal to another one; such prestige is transferred through the references that a journal do to the rest of the journals and to itself. [7];

- IF5IF – was proposed impact factor weighted by citing journals' 5-year impact factors, which consider not only quantity of citations, but also quality of citing journals [8];

- MIFCJ – is quotient of multiplication of impact factors of citing journals by the number of cited articles to the total number citing articles, weighted impact factor of a journal is the average of MIFCJ and IF from ISI Journal Citation Ranking reports [9];

- Habibzadeh and Yadollahie suggested weighted impact factor with relative weights of journals by their IF in the previous year normalized using logistic function [10];

Assume that, we have k indicators for journal ranking. The weighted consensus metrics (WCM) is defined as follows:

$$\text{WCM} = \sum_{i=1}^{k} \beta_i \text{ Indicator}_i ,$$

where the weights β_i of the indicators (Indicator_i) which will be defined below. Suppose each of k indicators which produces a ranking list for the journals. Then we have k ranking lists $\{r_1, r_2, ..., r_k\}$ and $r_l \in \mathbf{R}^n$ ($l = 1, 2, ..., k$), n is the total number of journals. The problem is to find a weighted consensus ranking of the journals r^* with a set of weights $\{\beta_1, \beta_2, ..., \beta_k\}$ assigning to each of the individual indices. Goal of the weighted consensus model, is to minimize weighted distance between r^* and all the $r_i \in \mathbf{R}^n$. Thus, the problem can be formulated as follows [11]:

$$\min_{\beta, r^*} (1 - \lambda) \sum_{i=1}^{k} \beta_i \left\| r^* - r_i \right\|^2 + \lambda \left\| \beta \right\|^2$$

subject to $\sum_{i=1}^{k} \beta_i = 1; \beta_i \geq 0 \ \forall i$ where $0 \leq \lambda \leq 1$ is the regularization parameter which specifies the tradeoff between the minimization of the weighted distance and the smoothness enforced by β. The experiments were carried on twenty journals from Journal Citation Report – 2013. In our study, the MATLAB version 7.13 toolkit is used to solve the optimization problem.

Keywords: journal ranking; impact factor; weighted impact factor; weighted consensus metrics

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NEW TRENDS OF COMPETITION POLICY OF THE STATE IN THE INDUSTRY

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The purpose of the present research is to identify new trends in the state of competition policy in the industry based on a comprehensive study of the current situation in the industry, and develop evidence-based proposals and recommendations in this regard. The study made an analysis of the current state of the industry, studied the rules of sound economic performance in