Comparing metrics of influence, impact, and prestige among ecology journals (importance)

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Scientists are interested in quantifying the universe, so the interest in quantitative metrics of publishing influence is not surprising. The competitive nature of academia and scientific publishing also increases the interest in metrics of influence, impact, and prestige. The importance of journals can influence the choice of publication venue for scientists. Some researchers may even make submission decisions based on a cost-benefit analysis where cost may be financial or based on rejection rate compared with the benefit of publishing in journals with high importance (ref: aarssen et al 2008). In addition to the general interest in objective metrics of influence, these metrics are increasingly being used for promotion and tenure evaluation. They are also used by librarians to inform journal subscription decisions. This may become increasingly important with the increasing number of journals and increasing challenges of funding higher education.

Define importance, influence, impact, and prestige?

The most widely know metric of importance is the Thompson Reuters Journal Impact Factor (JIF).

Calculation –

Frequent criticisms –

In response to these criticisms, numerous alternative metrics have been put forth.

The JCR on WoS reports:

JIF, 5-year JIF, EigenfactorTM, Article Importance, and Immediacy

Additional metrics can be calculated based on numbers of citations per article. These citation numbers can be found through various science database searches (e.g. Scopus, JSTOR, WoS, etc.), however, the easiest and often most comprehensive search engine across disciplines (but not necessarily within disciplines) is Google Scholar ([www.scholar.google.com](http://www.scholar.google.com)). Unfortunately, his may be complicated by the recent removal of discipline filter in Google Scholar’s advanced search features, which reduces the ease and speed of queries (<http://www.seroundtable.com/google-scholar-discipline-16631.html>).

Table of Definitions and Calculations

Diagram of JIF vs Eigenfactor (vs H-index) citation network

Methods

I identified 134 ecology-related journals based on the Web of Science (WoS) Journal Citation Reports (JCR) Ecology category. For these journals, I downloaded the 5-year journal impact factor, EigenfactorTM, Article Importance, number of citations, immediacy, and citation half-life from WoS (retrieved 05 April 2013, <http://admin-apps.webofknowledge.com.libproxy.unh.edu/JCR/JCR?RQ=HOME>). I used Publish or Perish software (ref) to search Google Scholar and calculate the H-index, G-index, Hc-index, Hi-index, Hi-norm, Hm-index, E-index, and AW-index. I removed all results where Google Scholar indicated the reference type was a citation and checked for articles with incorrectly identified journals and books with the same name as a journal. All metrics of importance were calculated for articles published in the 5-year interval from 2007 – 2011. The metrics derived from Google Scholar include citations from the date of publication until the date of the query (05 – XX April 2013).

Analysis

JIF relation to EF: log-log regression and nonlinear regression

JIG to AI: Linear regression

Pearson or Spearman correlation (spearman rank correlation?)

Results

I compiled a total of xxxx citations for xxxx articles from xxxx ecology journals from Google Scholar searches. From the PoP software results, I estimate mean values of……

Xxxx journals were ranked in the top 10 most important for all (JIF5, Eigenfactor, and H) indices.

Discussion

References