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Counting the buttons: rewarding research

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Misuse of journal impact factors?
Should and/or could journal impact factors be used in a result-based plan for financing research, which primarily rewards scientific quality documented through publications or other ”products”?

This was proposed 28 February 2003 by the Publishing Committee at the University of Oslo. According to the Senate, the University's highest administrative and academic authority, up to 100 million Norwegian Crowns could be allocated using the proposed model. [1]

The University of Oslo Library was very critical to the proposal and meant that journal impact factors could not be used as a basis of a model for a result-based scheme for financing research which primarily rewards scientific quality documented by publications or other ”products”. The University of Oslo Library based its opinion on the fact that both ISI and a number of researchers considered that journal impact factors cannot be used as criteria for quality.

Dr Eugene Garfield, Founder and Chairman Emeritus, ISI, writes (Der Unfallchirurg 1998; 48(2):413)
“The source of much anxiety about Journal Impact Factors comes from their misuse in evaluating individuals, e.g. during the

Habilitation process. In many countries in Europe, I have found that in order to shortcut the work of looking up actual (real) citation counts for investigators the journal impact factor is used as a surrogate to estimate the count. I have always warned against this use. There is wide variation from article to article within a single journal as has been widely documented by Per O. Seglen of Norway and others."

Professor Per O Seglen, NIFU, Oslo concludes in his article "Why the impact factor of journals should not be used for evaluating research" [2]

"**Summary points**

- Use of journal impact factors conceals the difference in article citation rates (articles in the most cited half of articles in a journal are cited 10 times as often as the least cited half)
- Journals' impact factors are determined by technicalities unrelated to the scientific quality of their articles
- Journal impact factors depend on the research field: high impact factors are likely in journals covering large areas of basic research with a rapidly expanding but short lived literature that use many references per article
- Article citation rates determine the journal impact factor, not vice versa"

Professor Seglen also warns against negative consequences for scientists' publication behaviour by using journal impact factors.

"The increasing awareness of journal impact factors, and the possibility of their use in evaluation, is already changing scientists' publication behaviour towards publishing in journals with maximum impact, often at the expense of specialist journals that might actually be more appropriate vehicles for the research in question."

Professor Seglen considers that there is a weak correlation between journal impact factor and the number of citations for one single article.

"The uneven contribution of the various articles to the journal impact is further illustrated in figure 2): the cumulative curve shows that the most cited 15% of the articles account for 50% of the citations, and the most cited 50% of the articles account for 90% of the citations. In other words, the most cited half of the articles are cited, on average, 10 times as often as the least cited half. Assigning the same score (the journal impact factor) to all articles masks this tremendous difference–which is the exact opposite of what an evaluation is meant to achieve. Even the uncited articles are then given full credit for the impact of the few

highly cited articles that predominantly determine the value of the journal impact factor."

"Since any large, random sample of journal articles will correlate well with the corresponding average of journal impact factors, the impact factors may seem reasonably representative after all. However, the correlation between journal impact and actual citation rate of articles from individual scientists or research groups is often poor".

Professor Seglen also points out that journal impact factors are dependent on the subject field. The committee has taken this into account in the suggested model by using ISI's 200 subject fields and that the 12% of the "best" articles in the world are classified as category A, the next "best" as category B and the rest as category C.

BioMed Central also considers that the usage of journal impact factors can be an obstacle for authors wishing to publish their articles in open access journals. [3]

BMC 2003 wrote:
"ISI currently only "tracks" a minority of the 80 BioMed Central open-access journals. If a journal is not tracked it will not have an impact factor. Despite their imperfections as a measure, impact factors and/or "ISI tracking" are widely used as an indicator of research quality, and this may deter some potential authors from submitting papers to new journals."

"Furthermore, when trying to examine how often a particular paper is cited, ISI is limited to the reference lists of "tracked" journals. This means that citations from one open-access journal article to another on BioMed Central are frequently missed by ISI's database."

Open Access of Information
There is today a worldwide movement towards Open Access of Information. The introduction of a system that might deter authors from publishing their article in an open access journal is very unfortunate. Officially the University of Oslo supports the two routes to open access:

- open access journals with author-fees and/or institutional subscriptions to author-pays journals
- institutional e-print repositories where scientists can self-archive their preprint or published papers

Open access journals
The Library of Medicine and Health Sciences pays the institutional

member's fee to BioMed Central, which means that all the scientists at University of Oslo can publish articles free of charge in BioMed Central journals.

Institutional repositories

The institutional repository, DUO – Digital publishing at the University of Oslo [4], is run by the University of Oslo Library. DUO is a system for net-based publishing. That is, support for authors, conversion, submission, searching and archiving of UiO's electronic publications in diverse formats. DUO is developed by the University Centre for Information Technology and the University of Oslo Library.

The challenge in setting up an institutional repository is not a technological issue (although the problems of long-term preservation are very far from being solved), but consists of managerial, organizational and cultural issues. The biggest problem is persuading faculty to use such a depository, i.e. submitting documents for inclusion.

For other than postgraduate students, it is difficult for the University to have a policy of compulsory deposit. However, DUO is trying to persuade the University of Oslo to introduce a policy whereby research output is expected to be deposited in the DUO repository. The library has submitted a proposal to the University that a part of the departmental budget should be allocated according to the number of deposited papers in DUO and/or published in Open Access journals.

All researchers at the University of Oslo must report their published papers in FRIDA (ForskningsResultater, Informasjon og Dokumentasjon av vitenskapelige Aktiviteter). FRIDA is used to allocate resources to the various departments at the University of Oslo, according to the number of published scientific papers, based on journal impact factors. In order that the scientific personnel can avoid registering their electronic documents twice, FRIDA will be extended so that electronic documents will be registered in FRIDA and then will be transferred automatically to DUO.

Conclusion

The University of Oslo is committed to Open Access publishing but our efforts at the University of Oslo Library might be obstructed by a resource-allocating system based on journal impact factors. During 2004 10 million Norwegian Crowns were allocated through the system based on these.

Links

[1] (Forskning med tellekanter: publiseringsutvalgets innstilling. Oslo: Universitetet i Oslo, 2003.) **http://www.admin.uio.no/sfa/forskning/forskkom**

/2003/180303/publiseringsutv_innstilling.rtf

[2] (BMJ 1997; 314 (7079):498-502)
http://bmj.bmjjournals.com/cgi/content/full/314/7079/497

[3] http://www.biomedcentral.com/info/authors/citation_tracking

[4] The institutional repository, DUO – Digital publishing at the University of Oslo, http://www.duo.uio.no/englishindex.html

Norsk sammanfattning

14. juni 2002 oppnevnte rektor ved Universitetet i Oslo et publiseringsutvalg. Publiseringsutvalget fikk følgende mandat: Utarbeide en skisse til et resultatbasert opplegg for finansiering av forskning, som først og fremst premierer vitenskapelig kvalitet dokumentert gjennom publikasjoner eller andre "produkter". Utvalget bes legge særlig vekt på å finne frem til et opplegg som tar hensyn til de store forskjellene som eksisterer mellom ulike fag- og fagtradisjoner med hensyn til publiseringsmønster, samarbeid i forskningsgrupper og andre forhold som kan ha betydning for valg av kriterier, og utforme modellen slik at den vil være rimelig enkel i bruk og ikke påfører universitetet store administrasjonskostnader. Bruksområdet vil i første omgang være UiO internt, men det vil være ønskelig at utvalgets opplegg utformes slik at det i hovedtrekk kan generaliseres også til andre norske universiteter.

Publiseringsutvalget la frem sin innstilling 28. februar 2003, Forskning med tellekanter. Publiseringsutvalget forslag til modell for bruk av publikasjoner som resultatfaktor inn i finansieringsmodellen for forskning var basert på journal impact factors. Innstillingen ble sendt på høring 5. mars 2003.

Universitetsbiblioteket i Oslo var meget kritisk i sin høringsuttalelse. Universitetsbiblioteket konkluderte med at journal impact factors ikke kan anvendes som modell for et resultatbasert opplegg for finansiering av forskning og at en slik modell kan motvirke overgangen til et nytt system for vitenskapelig publisering for eksempel overgang til publisering i fritt tilgjengelige e-tidsskrifter - Open Access tidskrifter.