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Counting the buttons

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Background

A new overall budgeting model for research was introduced in 2005 by Norway's Higher Education Sector. The model was planned and developed during the years 2002-2004, and it includes Norway's six universities and almost forty other Higher Education institutions. It will concern 15.000 researchers and their relevant scientific and scholarly publishing, amounting to a number of about 8.000 publications per year.

The idea behind this new budgeting model is that scientific quality, documented mainly through publications, should be economically rewarded.

Being the largest university in Norway, the University of Oslo was in 2002 asked by the Higher Education Sector to develop a model for this kind of result-based plan for financing

research. A working group at the university finished its report, named *Forskning med tellekanter (Counting the buttons)* in February 2003. This report was expected to work as a model both internally for the University of Oslo and nationally for other institutions.

The report states that only “products” should be rewarded, which mainly means publications of scientific quality. Some American universities also reward grants, but this rewarding-model is described as unwanted in the Norwegian model.

Some types of publications are excluded as rewarding-products, like doctoral theses, dissemination of science and research, and patents. The actual publications of scientific quality must be grouped in four different categories, A, B, AB and C. These categories will count differently in the assessing and budgeting. This difference will partly be based on whether the publication is an article in an ISI-journal, in another journal, or belonging to another publication type.

One of the debates about the suggestions in this report has focused on the use of ISI-journals as a criteria. Should and /or could journal impact factors be used in such a result-based plan for financing research?

Misuse of journal impact factors?

The University of Oslo Library was very critical to the proposal and argued 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” (BMJ 1997; 314(7079):498-502):

”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.”

and he continues

“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.

http://www.biomedcentral.com/info/authors/citation_tracking

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 the 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 (<http://www.duo.uio.no/englishindex.html>), 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.

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. In addition the resource-allocating system might also have negative consequences for scientists' publication behavior as the scientists chase high journal impact factors regardless of how appropriate the journal is for their article. During 2004 10 million Norwegian Crowns were allocated through the system based on these criteria.

To conclude: Journal impact factors should not and could not be used in a result-based resource-allocation system.