Evidence Based Library and Information Practice

Evidence Summary

Open Access Pricing Models would Reduce Journal Expenditure at Most Colleges and Universities

A review of:
Walters, William H. "Institutional Journal Costs in an Open Access Environment." Journal of the American Society for Information Science and Technology 58.1 (2007): 108-20.

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Abstract

Objective – To determine journal expenditure at nine colleges and universities using three pricing models, and to investigate the impact of an open access pricing model on journal costs according to institution type.

Design – Cost analysis of three pricing models for journals.

Setting – Nine college and university libraries in the United States.

Subjects – 349 journal titles indexed by the *Science Citation Index* from four subject fields (general biology, cell biology, organic chemistry, and applied physics).

Methods – Institutions included in the study were selected from *America's Best Colleges* (2004) on the basis of type of institution and quality ratings. Stratified sampling was used to randomly select an institution from the top 25% (Tier 1) and bottom 25% (Tier 4) from four institutional categories (doctoral national universities, master's universities, bachelor's liberal arts colleges, and bachelor's comprehensive colleges). An additional institution was selected from Tier 1 of the doctoral universities category to ensure both a large and small institution was represented in the sample.

Institutional access to the 349 journals was determined by searching the nine institutions' library catalogues between August and October 2004. Print, online and

combined print/online access was identified for each title at each institution.

A component of the pricing models (below) included costs incurred when academics at the institutions published articles in some journals. To arrive at an estimate of these fees, articles published by authors at each institution were identified in the journal titles. All articles in the 349 titles by staff (first author only) at the nine institutions were costed at the lowest rate listed and assigned as journal expenditure for the institution.

The cost analysis of institutional journal expenditure at each institution was conducted using three pricing models:

1. A conventional subscription model.
Journal expenditure was calculated from four elements: individual title subscriptions; online journal collection costs; online journal aggregator costs; and submission/publication fees. These costs were determined from: online information about journal subscription prices; estimating a proportion of journal collection and aggregator databases costs; and page charges, publication and submission fees for authors from the institution.

2. An open access publishing model based on the Public Library of Science (PLoS) pricing model.
Two costs comprised the open access publishing model: publication fees and print title subscriptions. Publishing fees were calculated from determining the average number of articles published by authors from an institution in one year. This number was then multiplied by $1,500 – the rate charged by *PLoS* in 2005. The second component was the cost of existing subscriptions to print titles, on the assumption that libraries will continue these subscriptions despite receiving online access to them. Print titles were costed at $160 per subscription.

3. *An equal revenue open access model (designed by the researcher to allow for the assumption that publishers considering taking up the PLoS model would not accept a reduction in revenue).*
If the *PLoS* model was implemented across the 349 titles, a substantial reduction in revenue to publishers would occur. Therefore, a multiplier was calculated for each subject area by dividing the aggregate amount (in the conventional model) paid for journals in a subject area by the amount paid under the *PLoS* model. The multiplier was then applied to the *PLoS* title cost. An adjustment was also made to reduce the effects of the non-representative sample of institutions.

Main results – The conventional pricing model calculations indicate that the association between journal expenditure and library size is stronger than the association between journal expenditure and type of institution. However, type of institution is a factor in journal expenditure with doctoral universities' expenditure much higher than that of other types of institutions. No associations or trends were found when comparing journal expenditure across institutions for the four subject fields.

Under the *PLoS* pricing model, journal expenditure at all nine institutions would be substantially reduced. If this model was adopted by all publishers they would receive only 15% of the total amount expended on journals by the institutions under the conventional pricing model. The *PLoS* model would affect institutions' proportion of total expenditure, with doctoral universities paying 96% of journal expenditure compared with 86% under the conventional model. This result is directly related to publishing activities at institutions. Large research universities, where staff publish at higher rates, would pay a proportionally higher amount of the total expenditure than other types of institutions, where publishing activity is low.

The equal revenue model, when compared with the conventional model, would provide substantial reductions in journal expenditure for seven of the institutions. However, under this model the largest doctoral university would see an increase in journal expenditure of 337% from conventional model expenditure: an increase primarily due to the higher publishing activity at the university. Institutions with low publishing activity and least print subscriptions would see the greatest reductions in expenditure if publishers moved from the conventional model to the equal revenue model.

Up to 90% of American colleges would see a reduction in journal expenditure if publishers adopted the *PLoS* or the equal revenue pricing models.

Conclusion – Most colleges and universities are consumers rather than producers of scholarly literature and, therefore, a shift from the conventional subscription model to a model based on publication activity will reduce their proportion of total expenditure. On the other hand, large research universities will see an increase in their expenditure as a proportion of total journal costs.

Given the cost savings and the access to journals, a pricing model such as the *PLoS* would benefit most colleges and universities. In turn, under this model revenues to publishers would be reduced substantially.

The equal revenue model would benefit the majority of colleges and universities by increasing their access to journal titles while reducing their journal expenditure. For example, a master's university journal holdings could increase up to ten times with expenditure reduced by between 20–60%. Large research universities, however, would see an increase in journal expenditure for very few additional journal titles.

Commentary

This study investigates the impact of open access journal pricing models on journal expenditure at nine American colleges and universities. Open access pricing models are currently operating for a number of journal collections, including *Public Library of Science* and *BioMed Central*, and shift the cost of institutional journal access from one based on subscriptions to an author-pays model. The findings of the study will provide some useful information for college and university librarians considering taking up an open access journal collection.

To conduct the study, the researcher required a defined journal set and institutions for the sample. While the journal sample is clearly described and justified, the sample size is small as a proportion of all colleges and universities in the United States. Only nine, from over 1,300, colleges and universities were included in the sample. Although the equal revenue pricing model applies a multiplier that adjusts for institutional representation in the sample, the researcher acknowledges sample size as a limitation to making generalisations. However, given the extensive data collection activities involved in the study, the researcher's decision to limit the sample to nine institutions is understandable; although it means associations and trends are discussed, rather than statistically significant findings.

The methods used to calculate journal expenditure at the nine institutions, across four subject fields, and for three pricing models are highly complex. This is particularly true for the equal revenue model. It should be noted that since the study was conducted *PLoS* has substantially increased its fees, which in turn will affect results for the *PLoS* and equal revenue models. However, the assumptions made in designing the pricing models are sound and

the study's results assist the reader comprehend the methodological complexities.

An earlier study at Cornell University (Davis) found the majority of ARL institutions would pay more in journal expenditure under an open access model than the conventional subscription model. This study was criticised on a number of fronts, including: setting the lower level publishing fee too high; and assuming science and humanities journals would incur the same average costs. Walters' set lower publishing fees when calculating for the *PLoS* model and included some print subscription costs. These adjustments, and the pragmatic approach taken by Walters in his equal revenue model, contribute to the argument that open access publishing models are advantageous for many institutions and result in an alternative conclusion to the Cornell study. Clearly, the methods used to measure journal expenditure in an open access publishing environment can greatly affect results. Unless there is a consistent application of methods, the profession will find it difficult to draw conclusions from study findings.

Several suggestions for further research are made by the author, including research using a larger sample of institutions and an examination of the sustainability of different pricing models from a publisher's perspective. A study of publishers may raise some interesting issues for discussion, but based on the current range of pricing models used by publishers, it is doubtful whether the findings would provide greater clarity about the future. The author also notes a number of broader questions to address. These range from scholarly communication issues, such as the effect of pricing models on publishers' acceptance rates, to budgetary considerations, such as shifts in institutional expenditure on journals.

This study contributes to our knowledge of how open access pricing models might impact on institutional expenditure on journals and raises important issues to consider as consequences of open access publishing. While the methods used in the study are complex and involve extensive data collection activities, further research incorporating more institutions would be of great value. However, at the heart of the debate about open access publishing is an important question – which pricing models are publishers seriously thinking about?

Works Cited

Davis, Philip M. Calculating the Cost per Article in the Current Subscription Model. 2004. 13 Nov. 2007 <http://hdl.handle.net/1813/236>.