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COST/BENEFIT ANALYSIS OF BIOMEDCENTRAL MEMBERSHIP AT A LARGE RESEARCH INSTITUTION

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Abstract

Researchers publishing in BioMedCentral publications are entitled to a 15% reduction in article-processing charges if their institution has a BMC Supporter Membership. The Health Sciences Library of Columbia undertook a basic cost/benefit analysis to see whether the membership would have saved researchers fees equal to or greater than the cost of the membership. The process and findings may be of interest to other libraries with similar concerns. In addition to finding out the characteristics of the authors and papers submitted by Columbia researchers to BMC publications, questions were raised along the way, on the significance of author order, who pays article processing fees on research papers and the responsibility of the Health Science Library, the university library system and the university to support of open access publication.

History of membership

In 2000, BioMedCentral (BMC) entered the expanding world of open access publishing as a for-profit open access publisher. The journal collection of BMC has since grown to 202 biomedical journals primarily using article-processing charges to cover the cost of publication.

Columbia University was an early supporter of open access publishing and supported open access models including that of BMC. The premise of BMC and many other open access models was that the cost of publishing would be included in research grants rather than library subscriptions. The resulting publications would be financed upfront by research and the end product journal would be free to anyone who wished to see an article. This was a fundamental change in the way journal publishing would be financed, one not entirely embraced by researchers already facing diminished research funds. Early in the life of BioMedCentral institutions were encouraged to support the open access movement by becoming institutional members with a variety of benefits including reduced article-processing charges. Some institutions decided upfront to pay open access charges institutionally to support open access publishing.

Columbia University had a Supporter Membership in BMC and paid memberships fees at the level of "large institution". The cost rose from \$7383 in 2006 to \$8612 in 2008, a rate increase of 8% a year. In 2009, a decision was made to discontinue the Columbia BioMedCentral membership, which had increased to over \$9400, a 10% increase in a single year. The decision was made because of reduced collection budget funding in the 2009/2010 budget year and the rate of increase, which was greater than the level CU had tried to hold publishers to during this budget year.

Columbia University: Morningside campus and Columbia University Medical Center (CUMC)

Columbia University consists of two major campuses. The Morningside Heights campus has about 1400 faculty and 20,000 students (undergraduate, graduate and professional school) and includes the Biology and Chemistry Departments, which are part of the Graduate School of Arts and Sciences. The Medical Center has 5,462 affiliated faculty members, including 2416 primary faculty members. There are 3300 students, all at the graduate level, in the schools of Physicians and Surgeons, Dentistry, Nursing and Public Health on a campus that includes the Columbia side of New York Presbyterian Hospital. According to the Medical Center website, Columbia's nearly \$2.4 billion annual budget is divided roughly between the Morningside and Medical Center campuses.

The Health Sciences Library is part of the Columbia University Libraries but reports to the Medical Center and is funded directly by the Medical Center. Some budgetary disparity had grown over the past few years-- the Morningside libraries collection budget regularly increased at 8% a year while the Health Sciences Library collection funding stayed flat until 2009, when there was a 10% decrease in the materials budget.

Benefit of BMC Supporter Membership

The primary benefit of BMC Supporter Membership was a 15% reduction in article-processing charges for CU authors. After discontinuation of the membership, Health Science reference librarians were occasionally asked if Columbia had a membership in BMC by a researcher hoping to get a reduction in article-processing charges. Columbia had been told by BMC that its researchers were prominently represented among BMC authors. It was a widely held belief that most of the BMC authors were from the Medical Center. The fact was Columbia didn't really know how many of its researchers published in BMC and more importantly whether the savings to CU researchers would have offset the cost of the BMC membership if they had been eligible for the 15% discount. During the summer of 2009, a study was undertaken to develop a profile of Columbia authored publications in BioMedCentral.

Data collection

It was decided to carefully look at the articles published in BMC journals during 2008. Identification of Columbia authors in BMC was not easy. Although the advanced search feature permits searching the affiliation field by institution, the many variations on "Columbia University" make using that phrase an incomplete representation of Columbia authors. After some discussion with librarians who had searches for Columbia authors on other projects, the terms "Columbia" [or] the Morningside zip code "10016" [or] the Medical Center zip code "10032" limited to 2008, were used in the affiliation search box.

Using this search strategy, 265 citations were identified, most of which were not published by CU authors. Fortunately, the set was small enough that the citations were examined and publications by authors from University of British Columbia; University of Missouri-Columbia; University of South Carolina, Columbia, South Carolina; University of the District of Columbia, etc. were removed.

We were left with a set of 65 articles that included at least one Columbia University author. Because all of the papers had more than one author, there were 134 CU authors on the 65 papers. Among the Columbia authors, 45 or 69% identified themselves as from the Medical

Center specifically College of Physicians and Surgeons (28) and the School of Public Health (11). Other researchers identified themselves as from one of the Columbia affiliated hospitals (St. Luke's, Harlem). One identified himself as from the Psychiatric Institute of New York, a New York State facility adjoining the Medical Center where many of the researchers have joint appointments with Columbia University. Fifteen researchers identified themselves as from Biology, Chemistry, or other Morningside departments of the Graduate School of Arts and Sciences.

Article-Processing Charges

Article-processing charges vary depending on the BMC journal, so that information was also collected.

Columbia authors published in 44 different BMC journals, and 4 journals each contained 3 Columbia papers in 2008. The stated 2009 article-processing charges on papers in BMC journals with Columbia authors ranged from \$276 to \$1940. One journal did not have article-processing charges, and the policy of a BMC journal containing two more papers was not clear. The total 2008 article-processing charges for articles having a Columbia author was \$86,121. An institutional BMC Supporter Membership would have reduced the article processing charge by 15% or \$12,918. Therefore, on the surface, it appeared that the membership of \$8612 would have easily been recouped by savings in article-processing charges.

Did CU authors pay?

As papers by Columbia authors were examined, it became clear that the issue of who actually paid the article processing charges was more complex than just determining which papers included a Columbia author. None of the papers written by a Columbia affiliate were single-author papers. The number of authors ranged from two to 20. On most of the papers, the Columbia researcher was far down the list of authors and one among many non-Columbia authors.

On ten papers, all of the authors were Columbia affiliates. The article-processing charge for those papers was \$11,242, so a 15% savings would have amounted to \$1686, much less than the cost of the membership fee.

Discussion ensued about which of the authors would have paid the article processing. Some people assume the last author is the major author, often the head of the research group. That person was also thought to be the person likely to have a grant, to which the article-processing fee could be charged. On 30 of the 65 papers, a Columbia affiliate was last. The total article processing fees for those papers would have amounted to \$38,252. A 15 % reduction in fees due to a Supporter Membership would have resulted in savings of \$5737, again less than the membership fee. Other people attribute the first author significance and in that case, 26 of the 65 papers had Columbia affiliates as the author in that position. The cost of the processing fees was \$30,753, and the 15% saving was \$4632.

In the end, we were unable to determine exactly who paid the article-processing fees for the CU authored BMC papers. But when we sliced the data different ways, the bottom line remained the same: The cost savings did not equal the cost of the membership.

Questions raised

The bottom-line question of the BMC membership--cost vs. benefit--was resolved by the early work we did on the 2008 BMC papers authored by CU researchers. This research also answered a couple of other questions and raised many more questions about CU publishing in BMC. An early one had been, how much Columbia published in BMC publications. The answer for 2008 was 65 papers, and BMC marketing people said that was "a lot". But what did 65 mean in the overall context of publishing at Columbia? Since Columbia does not maintain a registry of publications, a quick search of SCOPUS for the 2008 publications with one of the many CU affiliations: 6,702 papers with at least one CU affiliate were found. The Scopus data suggests that 65 papers in 2008 may represent a lot of papers to BMC. But in the total world of CU publishing, it is a very small number.

The point had also been made that the CU researchers publishing in BMC were located at the medical center. In fact, 45 of the authors or about 70% of the authors were located at there. Most were affiliated with the College of Physicians and Surgeons, but there was also strong representation from the School of Public Health. Some of the researchers counted as medical center researchers were actually affiliated researchers at hospitals outside the medical center, at the Psychiatric Institute and Teacher's College. Many papers had Columbia authors who listed not only a Columbia affiliation but also an additional, often foreign affiliation. One author listed affiliations at Columbia University, Teacher's College and Reykjavik University. Another author listed Columbia and the Greek University of Patras. This was not uncommon.

Another observation was that the BMC CU authored papers in this set might more accurately characterized as BMC authored "documents". Ten of the "papers" were designated as oral presentations, meeting abstracts, poster presentations or editorials. Two poster presentations noted, "Part of the supplement: 28th International Symposium on Intensive Care and Emergency Medicine" and another said, "Article is part of the supplement: Seventeenth Annual Computational Neuroscience Meeting". Surely these slight documents would not be charged the \$1500+ article-processing fee noted by the journals in which they appeared. Likewise, it is unlikely that the two editorials would have necessitated the \$1400+ fee charged by the journal in which they appeared. The overall article-processing charges to CU would be lower than the strict article-processing fee counts suggested.

Going forward

This small data analysis project proved to be of interest to library administrators beyond the question of the value the BMC membership. In the fall of 2009, library administrators began to consider the funding necessary to participate in the "Compact for Open Access Publishing Equity" also known as the "Harvard Compact". The Compact is an institutional commitment to support open access by creating an institutional budget to cover article-processing fees for its researchers. Research papers with grant funding that could cover the article processing fees would not be eligible for support from the fund, and only fees for 100% open access journals would be supported. The present study's window into Columbia publication with BMC helped to suggest the level of funding that would be needed to support participation in the Compact. Further analysis of the set of 2008 papers used for this project was done on grant support indicated in the BMC papers.

Conclusion

Determining the cost/benefit analysis of the BioMedCentral membership to the Columbia University research community proved to be more difficult than originally thought. It is difficult to identify papers that include a Columbia author, but it can be done. It is not easy to determine if that author would have taken responsibility for paying an open access article processing charge. This first analysis of the Columbia authors suggests that that the savings realized through a reduction in article-processing charges would most likely not be equal to the cost of membership.

It must be stated, however, that cost savings are not the only reason for university support of BioMedCentral membership. As suggested by Columbia interest in participation in the "Compact for Open Access Publishing Equity," there may be an institutional commitment to aid researchers' publication in open access journals. What is not discussed in this research effort is the issue of cost saving in an institutional budget. Although the BMC membership would have saved researchers' grant money, the cost would have been borne by the library materials budget, resulting in a new expense.

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