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2016

# Open access papers have a greater citation advantage in the author-pays model compared to toll access papers in Springer and Elsevier open access journals

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### APA Citation

Sullo, E. (2016). Open access papers have a greater citation advantage in the author-pays model compared to toll access papers in Springer and Elsevier open access journals. *Evidence Based Library and Information Practice*, 11 (1). <http://dx.doi.org/10.18438/B84W67>

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*Evidence Summary*

**Open Access Papers Have a Greater Citation Advantage in the Author-Pays Model Compared to Toll Access Papers in Springer and Elsevier Open Access Journals**

**A Review of:**

Sotudeh, H., Ghasempour, Z., & Yaghtin, M. (2015). The citation advantage of author-pays model: The case of Springer and Elsevier OA journals. *Scientometrics*, 104(2), 581-608.  
<http://dx.doi.org/10.1007/s11192-015-1607-5>

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**Received:** 30 Nov. 2015

**Accepted:** 10 Feb. 2015

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**Abstract**

**Objective** – To investigate the citation performance of open access (OA) and toll access (TA) papers published in author-pays open access journals.

**Design** – Longitudinal citation analysis.

**Setting** – Publications in Springer and Elsevier’s author-pays open access journals.

**Subjects** – 633 journals published using the author-pays model. This model encompasses both journals where the article processing charge (APC) is required and journals in which authors can request open access and

voluntarily pay APCs for accepted manuscripts.

**Methods** – The authors identified APC funded journals (journals funded by mandatory author processing charges as well as those where authors voluntarily paid a fee in order to have their articles openly accessible) from both Springer and Elsevier, and analyzed papers published in these journals from 2007 to 2011. The authors excluded journals that adopted the APC model later than 2007. To identify Springer titles, the authors created a search strategy to identify open access articles in SpringerLink. A total of 576 journals were identified and double checked in the Sherpa-Romeo database (a database of copyright and open access self-archiving policies of academic

journals) to verify their open access policies. The authors then downloaded the journal content using SpringerLink, and using Springer Author-Mapper, separated out the open access articles from the toll access articles.

In order to identify the Elsevier APC funded journals, the authors referred to "Open Access Journal Directory: A-Z," which contained 35 OA journals (p. 584). Once the authors consulted "Sponsored articles" issued by Elsevier and verified titles in Sherpa-Romeo, they identified 57 journals that fit the "author-pays" model. The bibliographic information was downloaded and OA articles were separated from TA articles. The authors confirmed that all journals were indeed OA publications by downloading the full-text from off-campus locations; they also verified that the journals were using the APC model by visiting each journal's website.

Because of the large number of subject areas of the identified journals, the researchers decided to classify the journals into four broader categories: Health Sciences, Life Sciences, Natural Sciences, and Social Sciences and Humanities. To calculate the impact of OA papers, citation per paper (CPP) was calculated for each subject area. Impact values were calculated on an annual basis as well. The researchers calculated the citation advantage of OA articles as the "difference between the open access and toll access impacts in terms of a percentage of the latter" (p. 585).

**Main Results** – The authors categorized their findings according to three themes: the growth of APC funded OA papers, the number of OA papers by discipline, and citation advantage of OA vs. TA in general and by subject area.

Together, Springer and Elsevier published 18,654 OA papers in the APC journals; this number represents 4.7% of the 396,760 papers published between 2007 and 2011. While the number of OA and TA papers has been growing annually, the number of OA papers has been growing more rapidly compared to the TA papers.

In terms of subject areas, Life Sciences had the largest number of OA and TA papers (184,315), followed by Health Sciences (149,341), Natural Sciences (121,274), and Social Sciences and Humanities (42,824). Natural Sciences had the most OA papers (5.7%) in terms of the number of papers in this subject area being OA papers, followed by Social Sciences and Humanities (5.2%), Health Sciences (4.6%) and Life Sciences (3.6%).

Overall, the researchers found that the impact values of OA papers were larger than those of the TA papers for each year examined. In considering subject areas, in all disciplines except Life Sciences, the most highly cited paper in the field is an OA paper. In Life Sciences, the most highly cited TA paper had 2,215 citations, compared to the OA paper, which had 1,501 citations. Even though the TA paper had more citations, overall, the OA papers had a higher impact (citation advantage). In Health Sciences, the most highly cited OA paper received 1,501 citations, which is 1.2 times the most highly cited TA paper, with 1,252 citations. The citation advantage for the OA group is 33.29% higher than the TA group. In Natural Sciences, the number of citations from the highest cited OA paper is 1,736, or 2.52 times higher than the most highly cited TA paper. The OA papers in this discipline had a 35.95% citation advantage. In Social Sciences and Humanities, the most highly cited OA paper had 681 citations, compared to the TA paper, with 432 citations. For this subject area, the citation impact of the OA paper is 3.14% higher than the TA paper.

**Conclusions** – In sum, the number of article processing charge funded open access papers has grown tremendously in recent years. Furthermore, open access papers have a citation advantage over toll access papers, both annually and across disciplines.

### Commentary

This study will certainly be of great interest to academic librarians, especially those who navigate electronic journal subscriptions and open access publishing options, as well as those who advise faculty on publishing

opportunities. The authors note that their research represents the first large scale study to focus on the OA author-pays model for two publishers who have been pioneers in adopting the model. The research adds to the body of published literature related to open access citation advantage. Study findings also demonstrate that articles published by the open access author-pays model have an impact on authors' visibility and impact in their area of scholarly expertise; academic librarians may want to relay this important information to faculty who may be wary about publishing in open access journals.

This study was evaluated using the ReLIANT Instrument (Koufogiannakis, Booth, & Brettle, 2006). The significant strengths of this research related to study design include the clearly explained research methodology and data collection procedures. However, readers who are not familiar with the current trends in open access publishing may have to review parts of the article multiple times to understand the types of open access models. The article in general uses many abbreviations – OA, TA, OACA, APC, and CPP, for example – which can be confusing at times. Additionally, the way that the citation advantage was calculated might be difficult for readers to understand. Fortunately, the authors fully explain, in both tables and in the text, how the calculations translate into meaningful information.

The study had several limitations. Readers should keep in mind that the authors' analysis may have shortcomings, considering that the author-pays OA model is only a small part of the overall OA landscape. Also, because many OA papers fall into the "Green" model (self-archiving in open access repositories or

archives), there may be other confounding variables related to the trends observed in this research. In addition, the research was limited to two large, well-known publishers. As such, the citation advantage of OA papers could be due to factors related to the reputation of the publishers and the associated visibility of journals published by Springer and Elsevier. Furthermore, in assessing the journal citations, other contributing factors were not considered, such as "institution reputation, journals prestige, co-authorship, and impact of the Green model" (p. 592). However, due to the large amount of data collected, the broad subject coverage, and a long time span, the conclusions may be generalizable to the entirety of APC open access journals. Additionally, the authors noted that in the years studied, the APC open access model was still in its infancy, and thus it may be necessary to conduct further research in the future, when the model is more established.

Because of the wide subject area range of the 633 journals that were analyzed, the researchers categorized the journals into broad subject categories. As the authors noted, there is the opportunity for further research in specific disciplines, perhaps analyzing the citation performance in narrower subject areas.

## Reference

- Koufogiannakis, D., Booth, A., & Brettle, A. (2006). ReLIANT: Reader's guide to the Literature on Interventions Addressing the Need of education and Training. *Library and Information Research*, 30(94), 44-51. Retrieved from <http://www.lirjournal.org.uk/lir/ojs/index.php/lir/article/view/271>