

How to Build a Case for University Policies and Practices in Support of Open Access

How to Guide

February 2010

Open Access

Open Access is the immediate, free-to-use access to peer-reviewed research literature. By definition, it applies to journal articles and peer-reviewed conference papers, though in practice it is extending to book chapters, monographs and research data. This paper describes how to model the costs and benefits of Open Access for individual universities.

Opening up access to the literature enables research to proceed more efficiently and more effectively. It provides much greater visibility and impact for research – and consequently, for the researchers and their universities. It also enables research managers to monitor, measure and assess research programmes.

In a world where not even the best-financed libraries can afford to buy subscriptions to all the journals their patrons need, and where (despite dedicated initiatives) more than half of research libraries in developing countries can afford no subscriptions at all, levels of access to the literature by researchers are clearly far from ideal. In the UK, a recent report by the Research Information Network concludes that ‘many researchers are encountering difficulties in getting access to the content they need and that this is having a significant impact on their research’. The difficulty most frequently expressed by researchers within universities is

their inability to access journal articles they have identified as useful because of a subscription barrier, and this issue also heads the list of top concerns for researchers across all disciplines.

As well as the hampering of research that the current subscription-based system of scholarly communication brings, there are other drivers for Open Access. In the UK in particular, the forthcoming Research Excellence Framework promises to assess and reward research impact as one component of the overall exercise, and with budget cuts and a period of straitened times ahead for UK higher education, strategic thinking needs to focus on courses of action that deliver better value for money in terms of visibility and impact.

A better system of scholarly communication

Is it possible to get a better system for less money for UK universities? The answer is yes. Open Access, widely adopted, can save universities money, increase the efficiency of their research operations, enable them to share research outputs more effectively and provide greater visibility and impact for their research programmes. It has been estimated that the potential saving to the UK higher education system could be as high as £115m per year. The value of increased returns on investment in research and development could amount to a further £170m per year.

JISC has developed an economic model to help universities calculate the costs and benefits of different modes of scholarly communication. The model calculates the costs of these alternative forms of communication, identifying and then attaching costs to each element in the scholarly communication lifecycle. It then models the economic benefits from switching to new modes of communication. Specifically, it enables universities to see the economic implications of:

- Open Access journals (where journals make their content freely available online using new business models, where cash flows in from article-processing charges or other sources rather than from subscriptions)

Types of Open Access

Open Access journals: these are journals that make their content freely available online. This type of Open Access is often referred to as ‘Gold’ Open Access.

Open Access repositories: these are digital archives that are maintained in institutions or elsewhere for the collection of research articles. The repositories make these freely available online. This type of Open Access is often referred to as ‘Green’ Open Access

Open Access repositories plus overlay services: this type of Open Access uses repositories to collect content and overlays them with services that provide editorial and quality control processes.

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- Open Access repositories (where the current subscription-based system is supplemented by the provision of Open Access through the collection of freely-available articles in repositories)
- Open Access repositories with overlay services (where content is collected in repositories and service providers carry out the publishing services necessary, such as managing the peer review process, proofreading and copy-editing).

This model is available for universities and research institutions to use to examine what Open Access would bring to their own situation. It is an economic model that can help make a case within a university for introducing the policy and the practices needed to provide Open Access to research outputs.

Economic benefits of Open Access

Economic benefits of a move to Open Access accrue from efficiency savings, from an increase in the effectiveness of a university's research efforts and from direct cost savings. Savings from Open Access are found in both the research and library communities within a university.

Researchers spend less time searching for information and accessing it if the literature is freely available on the web and can be easily located using Google Scholar or other web

search engines. With Open Access, researchers can also: reduce duplication of effort; reduce the time spent seeking access permissions and on other copyright and licensing-related tasks; and more easily and quickly find the information they need to consult while peer-reviewing articles, thereby increasing the efficiency with which they carry out this task. They also save the time and cash spent on locating and accessing articles through pay-per-view systems.

Libraries save handling time on a range of journal-processing tasks such as negotiation and licensing, subscription processing, checking in, chasing missed issues and so forth, none of which need to be carried out for Open Access journal literature. There are also savings from a reduction in time spent by libraries on authentication system work and advising users about discovery and access. Direct cost savings include the cost of subscriptions and of accessing articles by other means (inter-library provision and pay-per-view).

Economic modelling of Open Access benefits

The modelling process developed by JISC is based on the online model devised by the Australian economist John Houghton and his colleagues, with some adaptations for UK university use.

The modelling process is described in detail in the report *Modelling scholarly communication transitions: Costs and benefits for universities*. Universities wishing to model the benefits of a move to Open Access for themselves will find all the information they need there about the methodology, along with real examples of modelling the benefits of Open Access for four UK universities that differ markedly in the size and scope of their research activity. Most UK universities will be similar to one or other of these case studies, so they provide a general picture of the benefits that the range of UK universities can enjoy from Open Access.

Collecting the data needed for economic modelling of Open Access

Several different types of data need to be collected within a university for use in the model. These are shown in the box to the left. In essence, the model requires data about:

- library operations, in the form of handling times for various tasks and the cost of acquiring research information
- research activities in the university
- the institutional repository

Types of data for collection

Library-related data

- Number of subscriptions:
 - Print-only
 - Electronic-only
 - Dual mode
- Cost of subscriptions
- Handling time for journals/books
- Inter-library loan and article purchase costs

Research-related data

- Total research income per annum
- Number of researchers
- Average researcher salary
- Publications per annum (university)
- Time spent reading and writing articles and books
- Number serving as editors and on editorial boards
- Time spent peer-reviewing articles

Repository-related data

- Operational cost of repository per annum
- Time taken to deposit
- Average salary of depositor
- Number of articles produced per annum by the university

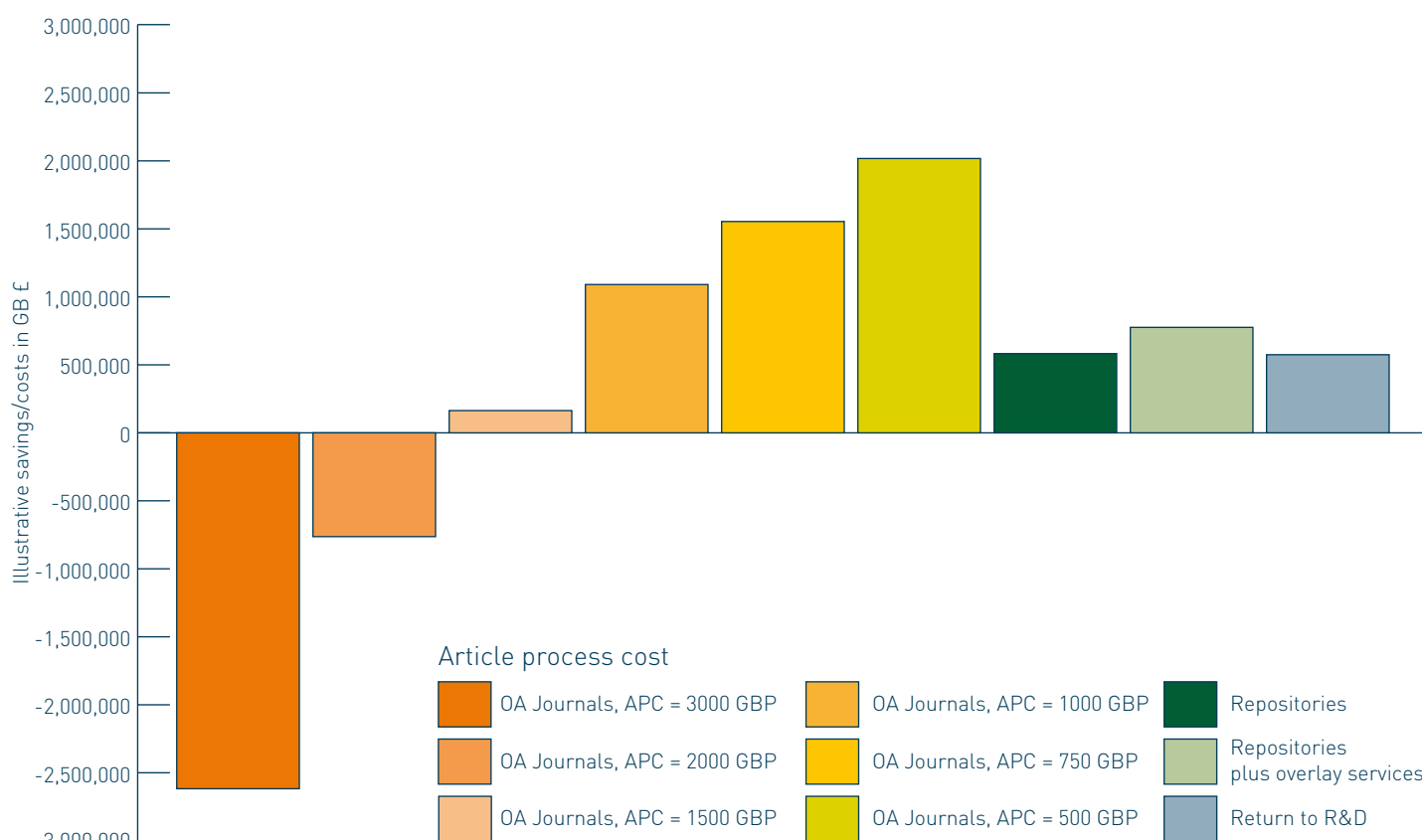


Fig 1: Likely savings or costs of different Open Access routes

Library handling times are calculated by summing the time taken in minutes per journal per year to do a specific range of tasks: collection development, negotiation and licensing, subscription processing, receipt and check-in, routing, cataloguing, linking, physical processing, stacks maintenance, circulation, reference, user instruction and preservation. This exercise is carried out for journals that are used by the library in hardcopy, electronic-only and dual (both hardcopy and electronic) formats, and for Open Access journals that the library processes in some way (ie catalogues or links to them). Libraries may not routinely cost out their activities in this kind of way, but it is informative and useful to do so. Armed with these data, the model then calculates the annual costs of these library operations.

Research-related data are sourced from university central departments such as the Research Office and Human Resources, from the university's management information systems and, if necessary, from external third parties (such as bibliographic databases). Data on time spent reading, writing and peer-reviewing articles can be sourced directly from researchers within a university, though there are reliable data about these activities in the literature that can be used in this modelling exercise. Once the data are entered into the model, it calculates the annual costs to the university of its research-related operations.

Institutional repositories have operational costs that include the cost of software, hardware and the personnel involved in running the repository. Deposit of items may be carried out by the authors themselves or by the repository staff – or both. Whatever the case in any one university, the salary of depositors is a data point that the model requires. The total cost of depositing per year – based on how long it takes to deposit one item and the salary of the person depositing – is then calculated by the model.

What the modelling shows for a university

By using the modelling process developed by JISC, universities can calculate a number of things.

System costs

They can see at once the costs of all the scholarly communication system processes for their particular university. The model calculates the annual cost of each component of the system, such as the value of researchers carrying out peer-reviewing duties or the comparative costs of library handling of journals subscribed to in print, electronically or in both formats. This is the first time that scholarly communication system costs have been identified in this way in UK universities, and the exercise is a valuable one in itself for libraries and university managers.

Cost savings and benefits

As well as identifying system component costs, though, the modelling also shows the benefits in economic terms that a university can enjoy from a communication system transition to Open Access, and the savings from the different types of Open Access (Open Access journals, Open Access repositories and Open Access repositories plus overlay services). For Open Access journals, it is possible to model the effects of different levels of article-processing charge (APC): this approach reveals the level of fee where a university would 'break even'; that is, the point, in terms of decreasing APC values, where the system begins to cost less than at present. This gives a university a guide as to the levels of APC that it might be prepared to pay to enjoy economic savings, and the levels of APC that it might resist paying because they would lead to higher costs than at present.

The model also shows two other useful things. First, it calculates the economic return for the university's research system from the greater efficiency that Open Access brings. In other words, it calculates the value of the increase in efficiency for the research process that Open Access delivers. Second, it calculates a more far-reaching economic benefit: the estimated increase in returns on investment in the university's research that come about because the findings from that research are openly available. This element can be considered a measure of the value a university contributes to the economy and society through quantifying the differences between two courses of action – making its research results available to all or keeping them unavailable except to those who can access them through subscriptions to journals.

After all the modelling is completed, then, users will be able to generate data on the benefits to their university of Open Access by different means, and to show other, societal, benefits as well.

Both repository-related routes to Open Access can work out cheaper for a university

Figure 1 illustrates the kind of information that a university can generate using the model. The figures in this graph are purely illustrative. However, the report that JISC has published does suggest that there are positive savings to be made in most scenarios, except where publishers charge high article processing charges (for example, over 1500 per article). At lower APCs, the university would save money and, of course, many research funders, including the Research Councils and the Wellcome Trust, may contribute to APCs as a part of normal research grants, so that all universities have a potential source of income to cover the majority of such costs. Both repository-related routes to Open Access (the green bars on Fig. 1) also work out cheaper for the university. Furthermore, it is worth noting that this chart excludes the considerable economic benefits of all forms of Open Access, as noted above.

This briefing paper was written by Alma Swan and Frederick Friend on behalf of JISC.

Alternative formats of this briefing paper can be found at:
www.jisc.ac.uk/publications

Further Information and Resources

Modelling scholarly communication options: costs and benefits for universities, Alma Swan, February 2010 (the full report on which this paper is based, including the relevant references):
<http://ie-repository.jisc.ac.uk/442>

Publishing research papers: Which policy will deliver best value for your university? JISC briefing paper:
www.jisc.ac.uk/publications/briefingpapers/2010/publishingresearchpapersbpv1

Online modelling tool for Open Access:
www.cfses.com/EI-ASPM

Economic implications of alternative scholarly publishing models: Exploring the costs and benefits:
www.jisc.ac.uk/publications/reports/2009/economicpublishingmodelsfinalreport

JISC's Open Access programme, policy and reports:
www.jisc.ac.uk/whatwedo/topics/opentechnologies/openaccess

Open Access Briefing Paper published by JISC:
www.jisc.ac.uk/publications/documents/bpopenaccessv3

Enabling Open Scholarship: Open Access policies for universities and research institutions:
www.openscholarship.org/jcms/c_6226/open-access-policies-for-universities-and-research-institutions?hlText=policies

Research Information Network, Paying for Open Access publication charges guidance:
www.rin.ac.uk/our-work/research-funding-policy-and-guidance/paying-open-access-publication-charges