



Hindawi Publishing Corporation: The Open Access Contributor Pays Model

Cairo, Egypt
www.hindawi.com

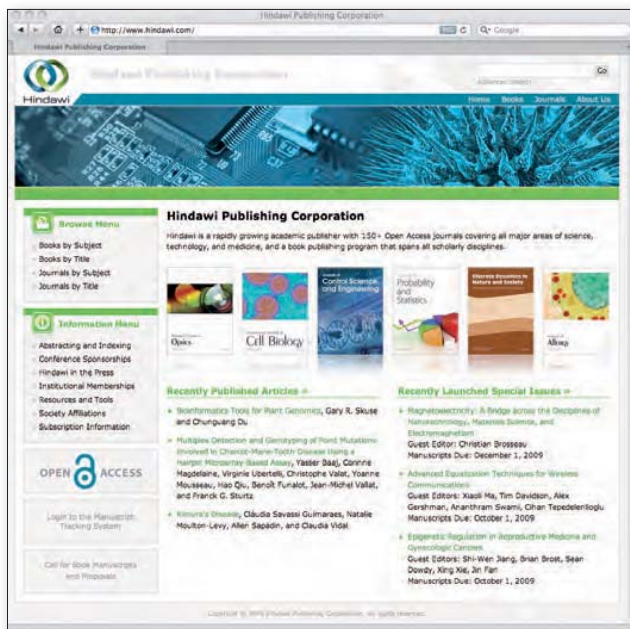
Hindawi Publishing Corporation, a Cairo-based for-profit publisher of journals in science, technology and medicine, was founded as a subscription-based publisher in 1997. By 2003, Hindawi had begun exploring Open Access (OA) models, and by 2007 had become an entirely OA publisher; its current list consists of 160 OA journals. Hindawi's financial model is based on charging contributors a fee per article published, a model also currently used by BioMed Central and the Public Library of Science (PLoS), among others. Since 2007 Hindawi has continued to refine its business model, in particular through its partnership with the scholarly publisher SAGE and by introducing institutional memberships earlier this year. This case study will explore Hindawi's path to choosing this financial model, the opportunities this choice has offered and the challenges it has posed.



Introduction

Hindawi Publishing Corporation began in 1997 as a small scholarly publisher of subscription-based peer-reviewed online journals. Its founders, Ahmed Hindawi and Nagwa Abdel-Mottaleb, were motivated to start their company because of their belief that the 'low cost base and access to a large workforce of ambitious, well-educated young professionals' in Cairo would allow them to offer 'a labour-intensive service at a level that is not economically viable for most publishers based in the West'.¹ In particular, they built their business by stressing the administrative and editorial support they could offer their editors and referees, the strength of their custom-built web-based submission and publication platform, and the efficiency of their highly automated production process.

After some early success in building the subscription-based business, the owners became keenly aware of the increased competition among publishers for a shrinking pool of subscription dollars from libraries. Seeking another model, they decided to experiment with Open Access, and in 2004 launched a hybrid model that permitted journals to include both subscription and OA content. In the following years they expanded the OA side of the business, selling off some subscription journals and converting others to the OA model. The company was profitable well before its conversion to Open Access, and since February 2007 it has been an exclusively OA publisher, sustained entirely by its article processing charges. Originally specialising in mathematics and engineering, Hindawi has since moved into other areas including biomedicine, perceiving this as a growth



This case study was researched and written by Nancy L. Maron as part of the Ithaka Case Studies in Sustainability project.

¹ Paul Peters, 'Case Study: Going All the Way: How Hindawi Became an Open Access Publisher', *Learned Publishing* 20, no. 3, (July 2007), pp. 191-95.

area for journals. As of January 2009, Hindawi publishes 160 OA journals, and it expects to publish over 3,500 articles this year, with a target of publishing 10,000 articles per year by 2011. New journals are scheduled to continue launching at a rate of eight per month, as Hindawi seeks to grow its business from approximately \$2 million in revenue in 2008 to \$3 million in 2009.²

Sustainability model

Goals and strategy

A subscription-based journal publisher assumes the up-front costs of developing and producing a work that it then hopes to sell. This model, still in use by the vast majority of publishers of traditional print journals, relies on building a base of institutional and individual subscribers who pay an annual fee to gain access to the content, whether in print or online. In recent years, this financial model has been challenged by experiments with Open Access, whose proponents seek to make scholarly materials freely available to the widest audience possible. 'Open Access' refers specifically to the fact that anyone is permitted to read the content at no charge – without prejudice to the business model that supports it. The predominant business model that has emerged in recent years for financing Open Access journals has been the 'contributor-pays' model.

“For Hindawi, the initial transition away from subscription journals took place at the high and low margins of the business.”

The contributor-pays model, also referred to as an 'author-side' contribution model, relies on the authors to subsidise the publication of their articles, often with the help of research grants or contributions from their university departments. Hindawi administers this system through its article processing charges. Whereas a subscription-based model seeks to cover costs through the fees paid by subscribing institutions or individuals, under the author-pays model a publisher must think about the volume of articles, rather than the number of subscribers required for a journal to achieve its financial goals. Article fees are established to cover variable costs and a share of fixed costs, with the publisher determining the required minimum number of articles in order to recover costs. Hence, rather than focusing on the cost and price of a journal, the author-pays model focuses on the costs of the discrete unit of the article.

For Hindawi, the initial transition away from subscription journals took place at the high and low margins of the business. For its subscription-based journals, Hindawi determined the equivalent per-article revenue by dividing a journal's revenue by the number of articles published per year. In the case of four subscription-based maths journals, they

felt that the per-article revenue was too high to successfully translate to article processing charges, and so these journals were sold to Oxford University Press. For those journals for which the subscription revenue was low (and therefore forgoing it would not be a risk to the company), a per-article equivalent cost was determined for each journal. An interesting middle-ground approach was taken in the case of one of Hindawi's first and most successful journals, the *EURASIP Journal on Advances in Signal Processing from the European Association for Signal Processing*. Although it was a successful subscription product, the transition was already under way: the journal had offered an OA option to authors, and over 35% of its articles were in fact already being paid for by article processing charges. Hindawi management was persuaded that this percentage was likely to increase.

Revenues

Article processing charges. Hindawi's article processing charges range from nothing, for publication in *Advances in High Energy Physics*, to \$1400 per article for publication in its best-established journal, the *EURASIP Journal on Advances in Signal Processing*; of the 160 Hindawi journals listed as of February 2009, 119 carry charges of \$550 per article or less.³ Article processing charges are determined by Hindawi management based on market research assessing both the subject area and competitive pricing. For example, according to Head of Business Development Paul Peters, maths journals, even those with high impact factors, tend to carry low fees per article, and the field simply will not support higher pricing. While the average marginal cost to publish an article is \$500, some new journals may launch with lower charges or no article processing charges at all in order to remove barriers to participation; once a journal is better established, prices can be raised to a level that makes the journal 'more sustainable for us'.⁴

Institutional memberships. Recently Hindawi introduced an institutional membership programme to complement its article processing charge model. Starting in August 2008, institutions were presented with the option of paying a flat yearly fee that would allow scholars at that institution to contribute articles to Hindawi journals without needing to pay article processing charges from their own individual research budgets. In most cases, the membership is held by the library.

This feature, already a staple of other OA publishers including BioMed Central and PLoS,⁵ was not initially favoured by Hindawi management. According to Peters, they felt that it eliminated an important feature of the contributor-pays business model, namely that this model made 'the costs of publication visible to authors and thus helped to create more price-based competition in the publishing market'. While institutional membership eliminates some of these incentives, Hindawi felt they needed to take this step in the interest of their authors who wanted it, and

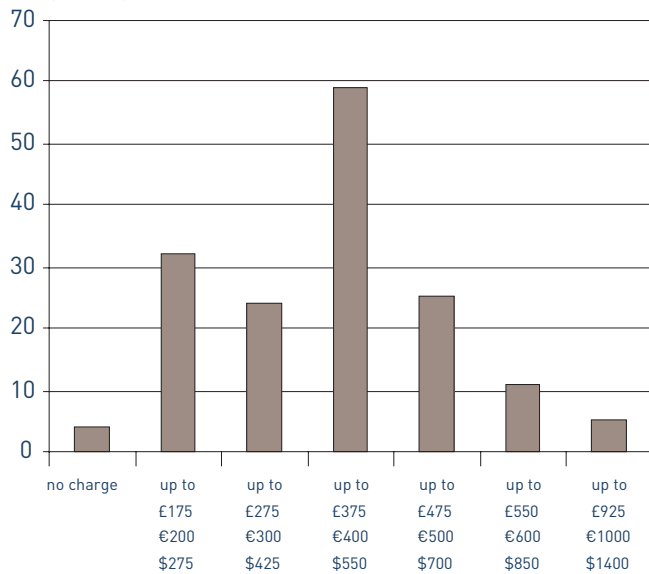
³ As of December, 2008, Hindawi has begun billing authors in their local currency: euros and pounds for Europe and the UK, and US dollars for everywhere else. This was in response to the economic downturn that began in autumn 2008, and to significant losses due to the company's dependence on the euro. They see this new policy as both making business easier for their customers and an effort to diversify their revenue sources.

⁴ Unless otherwise noted, all quotations from Hindawi staff members and other individuals knowledgeable or associated with Hindawi are drawn from interviews conducted as part of this case study between October 2008 and February 2009. A full list of interviewees is included in Appendix A.

⁵ For more details on the BioMed Central model, see www.biomedcentral.com/info/about/instmembership. For further details on the PLoS model, see www.plos.org/support/instmembership.html.

² All financial data were either supplied by project leaders or drawn from external sources cited in the text. For further detail on the financial data presented in this report, please see Appendix B: Summary of revenues and costs.

Article Processing Charges for Hindawi OA Journals
 (n=160)



because they felt there were institutions that were interested in supporting OA in this way.

Unlike subscription fees, which tend to remain fairly stable from year to year, the fees Hindawi charges under its institutional membership model are closely tied to the volume of articles published by faculty on the campus in question. While this has the effect of protecting the publisher's per-article revenue model, it can result in wide year-to-year variations in cost to the institution, to keep pace with the output of its authors. Annual membership fees are calculated by examining the past output of scholars from that institution and using that as a basis for estimating what publication charges may total over the next 12 months. Peters says that this figure is expected to be an 'underestimation' of the cumulative charges that year, 'since we expect that the membership will result in an increase in submissions from member institutes'. So, as the number of articles published by a university's faculty increases, so will its financial contribution to Hindawi.⁶ This protects Hindawi's revenue but can be difficult for librarians, who may support the OA concept but find the year-to-year variations in pricing difficult to manage.

⁶ A case in point is the decision of Yale University Libraries to drop BioMed Central membership in 2007. Yale explained that 'while the technology proved acceptable, the business model failed to provide a viable long-term revenue base built upon logical and scalable options. Instead, BioMedCentral has asked libraries for larger and larger contributions to subsidise their activities. Starting with 2005, BioMed Central article charges cost the libraries \$4,658, comparable to single biomedicine journal subscription. The cost of article charges for 2006 then jumped to \$31,625. The article charges have continued to soar in 2007 with the libraries charged \$29,635 through June 2007, with \$34,965 in potential additional article charges in submission...As we deal with unprecedented increases in electronic resources, we have had to make hard choices about which resources to keep. At this point we can no longer afford to support the BioMedCentral model.' See 'Library Drops BioMed Central's Open Access Membership', Science Libraries News, 3 August, 2007, Yale University Science Libraries, www.library.yale.edu/science/news.html.

Print editions and new content types. Another, smaller revenue stream for Hindawi, bringing in about 10% of its annual revenue, consists of print editions of its e-journals and a new line of scholarly monographs.

Containing costs: the Cairo effect

Perhaps the most important element that has permitted Hindawi to accomplish what it has is its location in Cairo, Egypt. Cairo is home to a plentiful labour market of college graduates, and the company makes an effort to provide their staff of 250+ with benefits the management feels are exceptional: generous holiday entitlement, medical coverage and free transportation to work, benefits that are apparently not common. Salaries in Cairo are substantially below those typical in Europe or in the United States, with a full-time editorial staff member earning the equivalent of \$3,000–4,000 per year. There is some anecdotal evidence from past employees who set up their own Facebook page that while Hindawi's salaries are not high, the company is considered a great place to start a career because of its training and emphasis on high standards.⁷

And it is this staff that Hindawi deploys to create the value of its enterprise...

And it is this staff that Hindawi deploys to create the value of its enterprise: The 250+ employees include 40 business development staff who research new subject areas in order to develop new journals and topic-oriented special issues; 30–40 editorial staff who liaise with authors, editors and reviewers; 60–80 editorial production staff who meticulously prepare manuscripts for publication; and 20 in-house programmers who build and maintain the platform and functionalities on which the entire enterprise relies. Given that many publishers are already in the habit of outsourcing certain labour-intensive activities, such as production, to countries with a low cost base, Ahmed Hindawi estimates that the company's costs in these areas are on a par with those of its competitors. It is in the areas of editorial and business development that Hindawi's location is most likely to result in significant cost reductions, since it is much less common for publishers to outsource these functions to countries with a low cost base. Salaries make up approximately half of Hindawi's operating expenses; with overheads – including everything from office space, to marketing costs, to editorial fees – comprising the other half.⁸

Key factors influencing the success of the sustainability model

As the scholarly community continues to explore sustainable paths to providing content to an unlimited audience free of charge, the OA author-pays model that Hindawi and other publishers have adopted continues to be closely watched. Several

⁷ See www.facebook.com/home.php?#/group.php?sid=eb4b3cf1447cb4f45b7413dd56968172&gid=4514932615&ref=search

⁸ Details of the financial arrangements Hindawi has with its partners SAGE, EURASIP and its editors-in-chief are confidential.

factors stand out in the path Hindawi has taken that are worth highlighting, some replicable and others not.

Understanding and creating value for users: authors as customers

With the shift from subscriptions to article processing charges came a significant shift in understanding users. No longer required to sell subscriptions to libraries, Hindawi turned its attention to its new customers, the authors themselves. This new focus, according to Peters, has helped to clarify Hindawi's mission to be a 'service provider for authors...With authors as the customer, it is always very clear'.

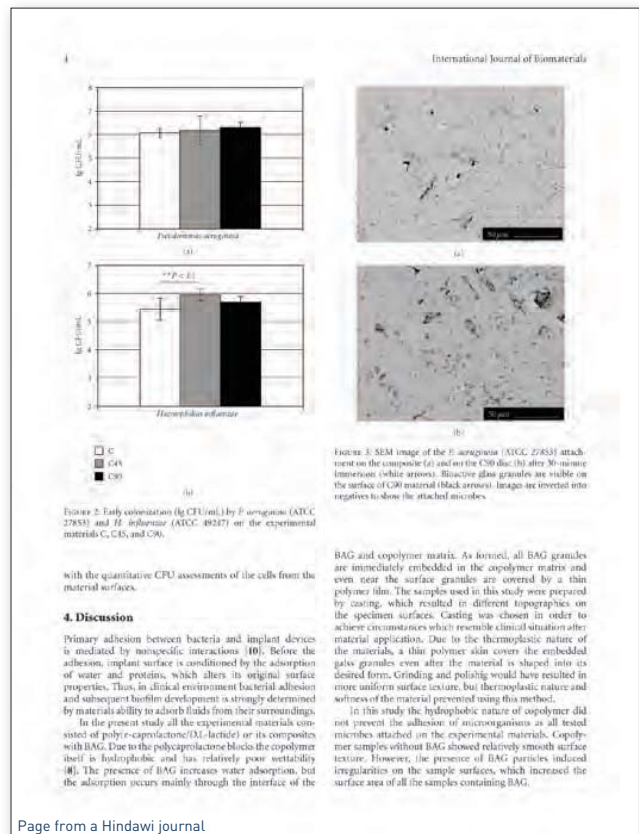
Among the things Hindawi feels authors care most about are the scholarly excellence of the publication, the prestige that participating in a well-regarded publication confers, high-quality production services and increased visibility of their work.

“As of early 2009, only 10% of Hindawi journals have an impact factor, which is still considered a very important mark of a journal's weight in the field.”

Building reputation. As of early 2009, only 10% of Hindawi journals have an impact factor, which is still considered a very important mark of a journal's weight in the field. This is largely because 90% of Hindawi's journals have only been in existence for a few years. 'Technically, it isn't difficult to set up a journal,' according to EURASIP president Marc Moonen, who has worked in partnership with Hindawi for seven years, and who was the publications officer for EURASIP when the society started moving its journals towards Open Access. Rather, he said, the biggest challenge for starting new journals is in building a credible reputation: 'that's the hard part and a slow process'.

Many of the issues that Moonen feels are important in developing a digital Open Access journal are similar to the issues for print journals: 'You have a handicap because you start from zero reputation-wise, and in terms of impact factors (which can take five years or so); many authors would never submit to a journal that doesn't have an ISI ranking.' One way to jump-start the process of reputation-building, he said, is to 'get many people involved, a well-reputed editor-in-chief, with a good collection of reputed colleagues to populate the editorial board, and that's the first step'.

Other specific strategies Hindawi has found useful include creating special issues with guest editors who can invite colleagues to submit papers. This strategy works particularly well for creating interest in the new community-edited journals Hindawi is launching. As Moonen explains, the goal is to create excitement around a special issue so that scholars start to think, 'Who can afford not to be represented on this topic?'



Where there is an editor-in-chief, the main responsibility for attracting authors generally falls to him or her. 'It takes tremendous effort and focus [to attract authors],' says Badr, 'a constant awareness of the field, who publishes what and from where; knowing quality work from less-than-quality work... Contacting colleagues, attending conferences, inviting people with certain reputations to submit work...'

Building brand through affiliation: partnerships. For authors considering where to publish their work, journal reputation matters, and so another strategy Hindawi has employed is to forge partnerships with well-established societies and publishers.

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About seven years ago, Hindawi began working with EURASIP, which also publishes some subscription journals with Elsevier, and together Hindawi and EURASIP launched a new OA title and experimented with optional OA for one of EURASIP's subscription journals, before eventually also converting it to the OA model. This partnership in particular has been very valuable for Hindawi: in 2008, EURASIP journals accounted for about one-quarter of the total number of articles Hindawi published, as well as one-third of Hindawi's annual revenue of \$2 million (the proportion of revenue is higher than the

proportion of articles because these journals carry the highest article fees).⁹

In 2008 David Ross, business development manager at SAGE Publishing, was investigating new revenue models and saw that several Open Access publishers in this space were having some success: BioMed Central, PLoS and Hindawi all appeared to be profitable or on the way to profitability. The benefits of a partnership appealed strongly to both sides. SAGE was eager to experiment with this new model by working with a partner who had strengths in technology and business models. Hindawi benefited, in turn, from SAGE's established brand and its strengths in the more traditional publishing functions of editorial management and marketing efforts. By working with SAGE to develop a collection of Open Access journals, Hindawi would benefit from SAGE's established reputation within the academic community, while SAGE would be able to enter the Open Access arena without the financial risk of major new investment in technology.

While the contributor-pays model is built to sustain itself on the fees paid by authors, it relies, however, on the assumption that there will be a sufficient number of contributors each year to cover the operating costs of the enterprise. Each journal need not generate a pre-determined revenue level, per se, but the total collection of OA journals must bring in enough contributors' fees to cover costs for all. With two OA journals launched in 2008 and another four just launched in early 2009, the SAGE-Hindawi partnership is not yet at break-even.¹⁰

Delivering quality production services and tools. Hindawi must also appeal to the scholars who volunteer their time to edit journals, many of whom may be authors themselves. By removing much of the 'clerical side' of the job by creating a system that makes the process of trafficking manuscripts through the peer review process less cumbersome, Hindawi sees itself as providing a valuable service to the editors who donate their time. In exchange, Hindawi offers them discounted article processing charges for their efforts. One editor, who has also contributed articles of his own, raved about the article-tracking system in comparison to those of other companies with whom he has published.

Increasing visibility. Advocates of Open Access often cite in its favour the increased visibility that OA can provide for published work. Peters agrees that this is a major advantage of the model, in terms of benefit to the authors: 'We encourage people to take their articles and put them everywhere they want without worrying about revenues, so we work with content-aggregation services to distribute content just to increase visibility, without having to worry about revenue. This has simplified our mission in a lot of ways.' Mostafa Z. Badr, associate professor of pharmacology and editor-in-chief of PPAR Research, launched his journal with Hindawi in 2005, and has been pleased with the range of submissions he has received from all over the world – the result, he feels, of the journal's Open Access status.

⁹ For example, the Hindawi journal that published the most articles in 2008 was the *EURASIP Journal on Advances in Signal Processing*, with 105 regular-issue articles and an additional 183 articles appearing in 14 special issues over the course of the year. At a rate of \$1,400 per article, this journal may have generated as much as \$403,200 in article processing charges.

¹⁰ Four of the journals that have been launched in 2009 as part of the SAGE-Hindawi partnership will be subsidised initially by the publishers, enabling authors to publish in these journals without charge while the journals are in the process of establishing their reputations.

While Hindawi journals' Open Access policy, by definition, makes the articles available to anyone with an internet connection, the company also works actively with content-aggregation services, in order to increase visibility even further. To measure impact, Hindawi analyses statistics on PDF downloads and watches general usage trends to get an idea whether the journals are being discovered. While citation and impact factors are a widely accepted measurement of an article's importance in the field, many of Hindawi's journals are still too new for this.

Developing innovative growth strategies: community journals

Hindawi's continued growth depends on increasing the number of articles it publishes, while maintaining a high quality of scholarship to continue to encourage participation from authors and editors. Recently, Hindawi is starting partnerships – for example, the one with SAGE – as a strategy to develop new journals, though so far, the number of new publications through this channel has been modest, with a total of six to date.

“...Hindawi has set a rapid pace for launching its 'community journals'...”

At the same time, Hindawi has set a rapid pace for launching its 'community journals', a format whose decentralisation and automation make it the motor behind the Hindawi strategy for growth. Within the business development group, Hindawi allocates 20 people to the function of researching the scholarly landscape to identify promising areas in which to launch new journals. Working in small teams of three to four people, staff research a promising field, assemble editors and launch new publications, a process that takes, on average, three to four months. In 2008, these teams launched eight new 'community-edited' journals and one new 'editor-in-chief' journal per month. Unlike staff in journal development positions at many other publishers, Hindawi's staff do not travel extensively, but rather they identify potential editors for their journals using objective selection criteria based on data from a number of publication databases as well as from academic websites. To reach potential authors, Hindawi runs display advertisements in areas where journals have strong readership, conducts email marketing to reach out to new authors, and launches topic-oriented special issues.

Community journals are run by a large editorial board, ranging from 30 to over 100 members, recruited by Hindawi staff. An author seeking to have an article considered is asked to determine which board member would be the most appropriate reader for his or her paper, based on examination of board members' research interests and recent publications. Hindawi staff monitor the process to control for conflicts of interest, but aside from that, they leave the process in the hands of the editorial board. The benefit of these community-based journals is that they can cover broad subject areas while at the same time ensuring that every submitted manuscript is handled by an expert on the subject of the article, since each editorial board member is expected to handle only those articles that are closely related to his or her area of expertise. Although Hindawi's management admits that many of its strongest journals are

those run by designated editors-in-chief, they see a number of advantages in developing journals that are not run under the leadership of a single editor. One important benefit is that this enables Hindawi's editorial staff to manage the editorial boards of its journals, replacing editors who do not act in a timely manner with editors who more promptly handle the submissions assigned to them. The board members, who are asked to handle an average of two submissions per year, are unpaid, but they receive a discount of 50% of publication charges for any articles of their own that they submit.

The board members can discuss issues among themselves via an electronic mailing list, but there are generally no in-person meetings or regular conference calls. The community journals have been in existence for only about a year and a half, so it is still too early to gauge their success long-term.

Balancing volume with quality

For a financial model that generates more revenue the more articles are published, the question of quality control must be raised. While in theory a publisher stands to make more money the more articles are published, the reality is more subtle than that. First, all of those interviewed stressed that allowing sub-par work to be published would only backfire by lowering the prestige of a journal and its publisher. Indeed, Hindawi rejects, on average, 60% of the submissions it receives. Its leaders point out that their success will rest, ultimately, on maintaining the high quality of the work they publish.

Technology and innovation

Several elements in the organisational structure of Hindawi contribute to what it sees as one of its greatest strengths: the ability to shift gears quickly in response to the market and to user needs. Rather than engage outside programmers, Hindawi has custom-built its platform with its staff of 20 programmers, which Paul Peters sees as critical to providing 'better quality control and providing much more flexibility, since changes can be implemented in a matter of hours or days, rather than weeks or months'.¹¹

Hindawi's technological solutions and a decentralised editorial process have been important factors in allowing it to quickly scale up its volume of articles.

Hindawi's technological solutions and a decentralised editorial process have been important factors in allowing it to quickly scale up its volume of articles. A strong selling point to the editors who must manage the traffic flow of hundreds of articles is the Manuscript Tracking System, an automated system

that Hindawi developers created to follow the workflow from submission through peer review, and then through production. Other recent examples of innovation include releasing of articles in the ePUB format which, according to Peters, combines the 'beauty of a PDF with the flexibility of HTML', allowing greater portability of the journal content without any loss to the production values Hindawi feels are important. In general, having highly qualified, inexpensive full-time programming staff on hand has helped the publisher be flexible and respond quickly to changes.

Another interesting use of technology is illustrated by the first co-published journal from the SAGE-Hindawi partnership, *Human Genomics and Proteomics*. Launched by SAGE-Hindawi in September 2008, the journal is notable for its connection to a database. As Ross said at the time, 'We keep hearing, as publishers, that open data is going to be the next big development. With the internet, we can now disseminate the datasets that underpin articles, and in genomics there is a willingness to share data.'¹²

Benefits and challenges

The most obvious benefit of the contributor-pays model is that it supports the mission of providing free and unlimited access to all readers with access to an internet connection. Hindawi's management hopes that this will increase readership and expand the audience for published work. In addition, supporting the Open Access movement itself confers a certain prestige, or at least the endorsement of many in academia who believe Open Access is a value that deserves to be championed.

A second advantage of the model is the securing of revenue in advance of publication. The cost-recovery level is established and covered as each article comes in, so that in theory, the publication is paying for itself as it goes, in contrast to a situation in which the publisher is hoping to recoup costs only after having made all of the investment.

A third benefit to the publisher of an author-pays publication is the lower barriers to entry for new journals. While creating a new subscription journal today requires competing with deep-pocketed and well-established publishers for a share of the shrinking pie of library collections (serials) budgets, the relatively new OA model can appeal directly to authors seeking venues in which to publish and who have funds available to them through research grants or departmental budgets.

A fourth benefit, at least in the case of electronic journals, is the absence of a limit on the number of articles that can be published in an issue. In this respect an electronic journal is very different in concept from a print journal, for which there are fairly clear minimum and maximum numbers of articles or pages that an issue can accommodate. As applied to electronic journals, the contributor-pays model acknowledges that there is no need for these limits due to space constraints; as the volume of articles increases, so will the revenues to cover the costs of producing them.

¹² David Ross, quoted in Siân Harris, 'Journal Unites Research Articles with Raw Data', *Research Information*, August/September 2008, www.researchinformation.info/features/feature.php?feature_id=186

¹¹ Peters, 'Case Study', 193.

There are, however, several challenging factors to be considered with regard to this model.

The first challenge is that not all authors may have access to the funds needed to pay article processing charges. While these charges have become a standard practice in many science, technology and medical (STM) fields, they are nearly unheard of today in the humanities and social sciences. And even within STM, while journal prestige is likely to be the most important factor in attracting authors, all things being equal it is not clear that all authors would necessarily choose to pay fees to support the logic of Open Access, if there were available a publishing venue of similar or better quality that did not charge for publication.

The institutional membership model may facilitate author participation by shifting the burden of payment to departmental or library budgets, but in practice, this ends up looking very much like a subscription, albeit a subscription whose price may change widely year to year. The variability of the annual charges may not be acceptable to all librarians, and may be even more difficult to manage when budgets are shrinking. So far, Hindawi's institutional membership has been quietly rolled out to those institutions who feel it suits their needs.

Another challenge is the concern that allowing authors to pay for publication could produce an incentive to accept a higher volume of articles, of lower quality. Because this model places more emphasis on the unit of the article than on the journal, there may appear to be less incentive to create a corpus of scholarly content of consistent quality. When there are no paying subscribers at stake, the peer review process takes on even greater importance than it has had traditionally, as it becomes the only direct control on the quality of the articles accepted for publication. Determining the right balance of attracting sufficient volume and sufficient quality is a difficult but necessary step.

And the flip side of rapid expansion of the volume of material published is the demand this makes on readers' attention, particularly in the system of community-based journals, where the subject areas are broad and the journals lack the vision of a single person or board responsible for shaping the content of the journal. The special issues have been one means to focus attention on specific themes, and this seems a necessary strategy to guide readers to the material they are most likely to want to read.

Finally, several elements critical to the success of the Hindawi model – a responsive technology group, meticulous production standards and a large team of people focused on market research and new product development – have been feasible for Hindawi due to the lower average salary paid by its Cairo office. Without the number of skilled workers who make these features possible, reaching a financial break-even point would be much more challenging.

Broader implications for other projects

In an OA/author-pays model, it is critical to find the right balance between scale and quality. This should be an obvious concern for any publisher employing a revenue model based on contributor payments. While publishing as much as possible would, in theory, lead to greater returns, Hindawi is aware of

the delicate balance between driving volume while maintaining high scholarly standards: if the volume is not sufficient, the entity will not be sustainable, and yet if publishing a high volume of articles permits inferior articles to be published, the reputation of the journal will suffer, making it more difficult to attract future authors, which will in turn harm the sustainability of the enterprise. It is a difficult balance that must be carefully maintained.

Look for areas in which you can offer a competitive advantage. Hindawi had the benefit of a highly educated but inexpensive workforce which it could leverage to build and maintain a competitive infrastructure and to offer personal attention to authors. The company also chose a business model based on attention to authors as customers that favoured this low-cost-base advantage. The exceptional circumstance of location and a favourable labour market may make some of Hindawi's best features impossible to replicate elsewhere.

Experimentation is a valuable and ongoing part of business development strategy. Hindawi's market research exploring new areas of growth within STM has allowed them to rapidly increase the number of journals they publish year to year. Once the journals are launched, the experimentation does not stop: the special-issues concept allows Hindawi to continue to try out more specialised journal topics at little risk, and to foster the ones that perform best.

Seeking out partnerships that complement your organisation's strengths can allow it to focus its energy on the things it does best. Hindawi's partnerships with established publishers such as SAGE have allowed Hindawi to continue to develop content, build its audience and explore new ways of publishing, while benefiting from SAGE's established brand and strength in editorial management and promotion.

Customers are not necessarily the same as end users, and the needs of both must be considered. Hindawi focuses great efforts on attracting and serving its main customers, the authors who pay the article processing charges to have their work published. But these authors make up only a part of the full audience of a journal. Making it easy for end users to find the articles they need, whether through various online discovery mechanisms or by the framing of topics that special issues provide, is a critical part of maximising the impact of the articles.

Appendix A: Interviewees

Note: An asterisk (*) denotes a primary contact.

Mostafa Badr, Associate Professor of Pharmacology, University of Missouri, Kansas City, and Editor-in-Chief of PPAR Research, 25 February 2009

Ahmed Hindawi, President and Founder, Hindawi Publishing Corporation, 10 February 2009

Marc Moonen, President of EURASIP and former Publications Officer for EURASIP, 9 January 2009

Ann Okerson, Associate University Librarian for Collections and International Programs, Yale University, 17 February 2009

***Paul Peters**, Head of Business Development, 12 October 2008, 13 January 2009 and 12 February 2009

David Ross, Business Development Manager, SAGE Publications, 22 December 2008

Appendix B: Summary of revenues and costs

Hindawi Publishing Corporation

Revenue Category	Description	Approx. amount
Article processing charges		\$2,000,000
Sales of books and print journal copies		\$200,000
Total revenue		\$2,200,000

Cost Category	Budgeted Costs				In-kind/volunteer contributions
	Description	FTE	Included in budget?	Approx. cost	
Personnel					
Management	7 FT upper management	7	yes		
Content selection & production	80 FT production staff 50 FT editorial staff	130	yes		In addition, journal editors, members of editorial boards and peer reviewers volunteer their time
Sales & marketing	40 FT journal development 10 FT marketing and design staff	50	yes		
Technology	20 FT programmers 10 FT content management staff	30	yes		
HR, Financial, Accounting	50 HR, Accounting, Administration staff	50	yes		
Total personnel costs		267		\$1,000,000	
Non-personnel costs			Included in budget?		
Administration & overhead	All organisational overheads		yes	\$700,000	
Scanning, metadata, etc.	Database subscriptions		yes	\$50,000	
Hosting & technology infrastructure	External costs related to hosting and infrastructure		yes	\$100,000	
Other	Revenue shared with societies, editors and partners		yes	\$150,000	
Total non-personnel costs				\$1,000,000	
Total budgeted costs				\$2,000,000	

Explanatory note

The information presented in this table is intended as a broad picture of revenues and costs associated with the project, not as a detailed financial report. The financial data, which are presented in the currency in which the project reported the information, were compiled as part of the interview process with project leaders and staff, and in some cases were supplemented with publicly available documents, such as annual reports. Project leaders were asked to review the information prior to publication. The column labelled 'Included in budget?' indicates whether or not the organisation includes that category of cost in its own definition of its budget. In many cases, the information was difficult for project leaders to provide because their institution does not record information in these categories, or because the project was combined with other projects in a larger department or unit. As a result, many of the figures are rounded or best estimates. Some leaders preferred not to offer figures at all, but suggested percentages instead. Frequently, certain types of costs are provided as in-kind contributions by the host institution. Although we did not attempt to place a value on these contributions, we felt it was important to highlight the significant role they play in many projects. Because of the variability in the way each institution estimated the various categories of revenues and costs, the information presented in the table is of limited value for detailed cross-project comparisons.