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Crisis in scholarly journal publishing: 'For-profit' open access model as a sustainable alternative - the case of MedKnow Publications

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Abstract

The steep rise in prices of journals in the past three decades has led to a crisis in scholarly journal publishing, as expenditure of institutional libraries on journals shot up leading to a drop in the number of journals subscribed to. Research content published globally is becoming increasingly inaccessible for academia due to the exorbitantly large prices of journals, as shown by several studies. Scholarly journal prices have steadily increased even after many journals went digital in the past decade. On the other end of the spectrum, open access journals on the internet are seen as an alternative to the high–priced, subscription based journals by commercial publishers. However, the long-term viability of open access journals supported through government funds, publication fees paid by authors or sponsors, and donations from members and charity, remains an issue of concern. Given this, examining how MedKnow Publications, a 'for-profit' open access journal publisher based out of Mumbai, India, has created a sustainable business model is the objective of this paper. The findings show that the business model of MedKnow could effectively address the question of long-term financial viability by generating revenues through multiple sources which include selling print journals to subscribers from different regions across the world. An analysis of the costs and prices of an open access journal published through MedKnow has also been provided, in order to illustrate the model's success.

Keywords*:* Scholarly journals, pricing, crisis, digital publishing, open access models, sustainability, MedKnow, for-profit

1. Introduction

Scholarly journals have a history of more than three centuries, dating back to 1665 CE when the first peer reviewed journals were published by the Royal Society of London (Wells, 1999). In about 300 years, the number of scholarly journals globally has swelled to about 23,000, which collectively publish about 1.4 million articles per year (Mark Ware consulting, 2006). Given the recent surge in online journal publishing, these numbers are predicted to be higher, as another estimate shows that about 25,000 serials publish 2.5 million peer-reviewed journal papers annually (Hajjem et al, 2005).

Journals are an integral part of the scholarly communication process and scientific research. The major functions of journals include dissemination of information, provision of a mechanism for the registration of author's precedence, maintenance of quality through peer review, and archiving of the information for future reference (Bjork et al, 2009). Besides, publishing in top-ranked journals is a prerequisite for tenure and promotion for university faculty worldwide.

2. Crisis in scholarly journal publishing

The pricing of scholarly journals has been a subject of debate and criticism for a long time. The ability of most institutional libraries to purchase scholarly resources has been affected by the large increase in the prices of journals, both on-line and off-line. For instance, expenditures on journals by libraries rose by about 321% in North America from 1986 to 2006, while Consumer Price Index rose by only about 86% during the same period (ARL Report, 2006).

The steep rise in prices of journals, which led to a substantial increase in expenditures, has in turn affected the cash-strapped institutional libraries in two ways: one, there was a drop in the number of journals subscribed to in a year; and two, there was almost zero growth in the number of monographs purchased annually (ARL Report, 2006). To make the problem worse, subsidies for university presses and libraries steadily declined over the years while operational costs rose (MLA Report, 2002). The average cost for an annual subscription to a chemistry journal is USD 3,792, while some journals cost more than $10,000. Journals nowadays consume about 65% of the library budgets (Monbiot, 2011). The rise in prices of academic journals continued, even after content digitization became a possibility in the past few decades (Lipscomb, 2001 and McCabe, 1999).

Table 1 Growth* in unit cost, expenditure and number purchased for monographs and serials in ARL libraries from 1986 to 2006**

	Unit cost	Expenditure	Number purchased
Serials	180%	321%	51%
Monographs	78%	82%	1%

*Consumer Price Index (CPI) rose by about 86% during the period
**Includes electronic resources from 1999-2000 onwards
Source: ARL Report, 2006

2.1. Journal prices and costs: a reality check

Since 1980's, the publishing industry in Europe and the U.S. witnessed a spate of mergers and acquisitions. The consolidation that was prompted by rising costs of production and distribution, dwindling margins and rise in competition from new channels altered the industry landscape, leading to market situation where a few large firms vied for a dominant position in specific segments. Reed-Elsevier, Wolters Kluwer, Taylor and Francis were among these large players which held significant market shares in STM journal publications and textbooks. Even though the mergers provided long-term financial viability for publishers, it impacted the pricing

structure of the industry, adversely affecting individuals and libraries that subscribed to scientific, technical and medical (STM) journals (Watt, 2007).

For instance, the acquisition of Harcourt by Reed-Elsevier in 1991 gave control of around 1,500 journals in science, technology and medicine to the merged entity. McCabe (1999) in a research on the economic behaviour of publishers and libraries found that Pergamon/Elsevier and Lippincott/Kluwer mergers led to substantial rise in prices of scholarly journals which was fully or partly attributed to increased market power that resulted from the mergers. Published by Elsevier, the journal Biochimica et Biophysica Acta is priced at USD 20,930 annually; and Tetrahedron, a chemistry journal, is priced at USD 20,773 per year. On an average, each article in journals published by Elsevier, Springer and Wiley-Blackwell costs about $31.50, $34.95 and $42.00 respectively (Monbiot, 2011).

A detailed analysis of the costs of publishing print scholarly journals by King and Tenopir (1998) showed that at 500 subscriptions, the price that would recover costs is $847 per subscription. This price reduces to $120 at 5,000 subscriptions and at 50,000 subscriptions the price necessary to recover costs decreases to $48 per subscription. The breakeven price for 1,900 subscriptions (the average annual subscriptions for journals published in the US) is only about $250. Here lies the truth: even if the price of a journal is arrived at by charging a margin of 100% on the break-even price of $250, it would be far lower than the prices charged for many journals by commercial publishers.

2.2. Digitization of scholarly journals

As discussed, the traditional model of journal publishing has built its business around restricted access, both by authorization control (subscription) and restrictive copyright laws (Chang, 2006). In 1990's, publishers started digitizing the scholarly journals in order to make them available online for sale. If the value created by content digitization through cost reduction, improved convenience and better selection/comprehensiveness (Brynjolfsson et al, 2003; Auletta, 2010; Jensen, 2007) can be passed on to the users, it would improve access to published materials - scholarly journals being no exception. Brynjolfsson et al (2003) in a study found that consumer welfare in book publishing is increasing as a result of lowering transaction and search costs, owing to the increased product variety made available by online book sellers.

However, no significant drop in journal prices was experienced, even after 90% of the scholarly journals published globally were made available digital online in the past decade (ARL Report, 2006). In order to make research output more and more accessible to users around the world, open access publishing of digitized scholarly content on the internet was conceived as an alternative to traditional journal publishing in early 1990's.

3. Open access publishing

"Open access literature is digital, online, free of charge, and free of most copyright and licensing restrictions" (Suber, 2007). Open access removes 'price barriers' (subscription fees) and 'permission barriers' (copyright) to 'royalty-free literature', making them available with minimal restrictions (say, author attribution) on their use. There are two ways in which authors can make their work open access: publishing articles in an open access journal is called "the Gold Open Access"; and self-archiving or depositing copies of articles in open access repositories after

publishing in non-open access journals is referred to as "the Green Open Access". About 20% of the 1.4 million articles published annually are made available through open access platforms (Bjork et al, 2009).

There are three types of open access (OA) journals through which published research can be accessed freely. In the first type called the immediate full open access journals, the print version is subscription-based, but the online version is free and immediately accessible. There are also online-only immediate full open access journals such as Public Library of Science (PLOS) journals and First Monday. The second type, hybrid OA journals make their research articles freely available immediately, but charge a subscription fee for value added content such as commissioned review articles. A variant of hybrid OA journals provides authors the option to make a payment in order to have their articles available immediately online, an example being journals published by American Physical Society. Delayed OA journals, the third type, have adopted the policy of making the whole content freely available after a specified period (6-12 months) of publishing the print format.

3.1. Viability of open access journals

Open access journal publishing does not come without a cost. The long-term financial viability of open access models has remained an issue of concern ever since the movement was initiated in early 1990's. The platforms need funds for developing and maintaining electronic tools for peer-review and publication, making the full-text article open globally, and creating appropriate indexing mechanism that enables cross-referencing and more citations. Financial support for these platforms comes in the form of article processing fee charged on authors, funds from the institution that promotes the platform, membership fees, and donations from charitable organizations. About 50% of the OA journals charge publication fees in the form of submission charges, page charges, illustration fees, and surcharges for colour, which constitute about 30% of the revenue generated by OA journals (Crow, 2009).

3.1.1. Author fees

An examination of 14 open access journal publishers from around the globe shows that except First Monday and MedKnow with most of its journals (about 85%), all of them charge article processing fees (Refer to Table 2). OxfordOpen does not charge authors from select developing countries. First Monday, a Great Cities initiative of the University of Chicago is supported by the university library. Thus, MedKnow is the only commercial publisher that does not charge an author fee for publishing in most of its journals.

The average article processing charges by the twelve publishers in question is computed to be 1,926 US dollars which is high for an individual author unless sponsored by her institution through research grants. Even though this estimate is much lower than is generally charged by subscription publishers in order to make individual articles OA in hybrid journals published by them (Solomon, and Björk, 2012), the catch is that unlike the universities in North America and Europe, institutions from Asia, Africa and Latin America, barring a few, would find sponsoring such large author fees beyond their ability. Large article processing fees would lead to fewer submissions to open access journals from less developed countries, resulting in a polarization of scholarship in such journals. The severity of this problem may also vary by discipline, based on the policies of funders in a given area and by the practices of comparable journals (Crow, 2009).

Table 2 Article processing charges (Author fees) for select full and optional OA journals

Journal Publisher	Type of OA	Publication fee (USD)
American Physical Society	Optional	1,700 - 2,700
BioMed Central	Full	635 - 2,640
BMJ Group	Optional/ Full (1)	970 - 4,050
CambridgeOpen	Optional	1,350 - 2700
Elsevier Open access	Optional/Full (25)	3,000 - 5,000
First Monday	Full (1)	0
Hindawi Publishing	Full	0 - 1,750
Medknow Publications	Full	0 (for 85% journals)
OxfordOpen	Optional/ Full (11)	0 - 3,000
PLoS	Full	1,350 - 2,900
Royal Society Publishing	Optional/ Full (1)	1,932 –2,380
Sage Open Journal	Full (1)	695
SpringerOpen	Full	130 - 1,950
Wiley Open Access	Full (11)	1,500 - 3,000

Source: Publishers' websites

4. Methodology

An embedded case design (Yin, 2003) was used to analyze the publishing economics of MedKnow, a 'for profit' open access publisher. The embedded design is used to study the main and smaller units at different levels. Apart from examining how MedKnow (main unit) compares with other open access publishers, the costs of production and revenues for a select journal (smaller unit) published by MedKnow were analyzed in order to address the question of long-term viability of MedKnow as an open access model for scholarly journals.

5. MedKnow's business model

Launched in 1997 by Dr. Sahu, a pediatrician based out of Mumbai, India, MedKnow publishes peer-reviewed 'online' and 'print plus online' journals on behalf of learned societies and associations, mainly from the developing world. MedKnow, as it claims, is a 'for-profit' publisher, providing services to 221 open access journals at present. It considers itself as the largest open access publisher in this category, providing a "fee-less-free" model that offers immediate free access to the online editions of journals, most of which do not charge the authors or authors' institutions a fee for submission, processing or publication of articles.

5.1. Acquisition of MedKnow by Wolters Kluwer

Since 1997, MedKnow registered a steady growth in the number of journals it published. From being a small open access platform with 20 journals in 2002, MedKnow grew into a large publisher of open access journals with 85 journals in 2009, 155 journals in 2011, and 221 journals in September, 2012. The model has led to a growth in subscription of many obscure journals published by learned societies in developing countries (Sahu, 2006), giving a boost to

the revenues earned from individual journals. The success of MedKnow prompted Wolters Kluwer Health, a leading provider of information and business intelligence in medicine, nursing, allied health, and pharmacy, to acquire it in December 2011. The key motive behind the acquisition was the expansion of Wolters Kluwer business in developing markets by supporting its strategy to increase locally written content and incorporating more open access platforms in its business. The need for a closer look at MedKnow's publishing economics acquires more significance in the light of this buy-out.

5.2. Publishing Economics of MedKnow

The average annual subscription charges of print journals by MedKnow are around Rs 2,000 in India and USD 200 internationally (Refer to Table 3). The price of USD 200 is much lower compared to that of most journals published by commercial publishers. For a comparison, MedKnow's journal prices are lower than the average annual subscription prices (around 300 USD on an average) of journals on Hindawi Publishing, an open access publisher based out of Cairo, having about 400 journals in its fold.

Table 3 Summary of annual subscription prices* charged by MedKnow

Type of Subscription	Median Price		Mean Price	
	INR	USD	INR	USD
Institutional (Print)	2,000	200	2,105	229
Institutional (Online)	1,600	160	1,692	183
Institutional (Print + Online)	2,400	240	2,535	275

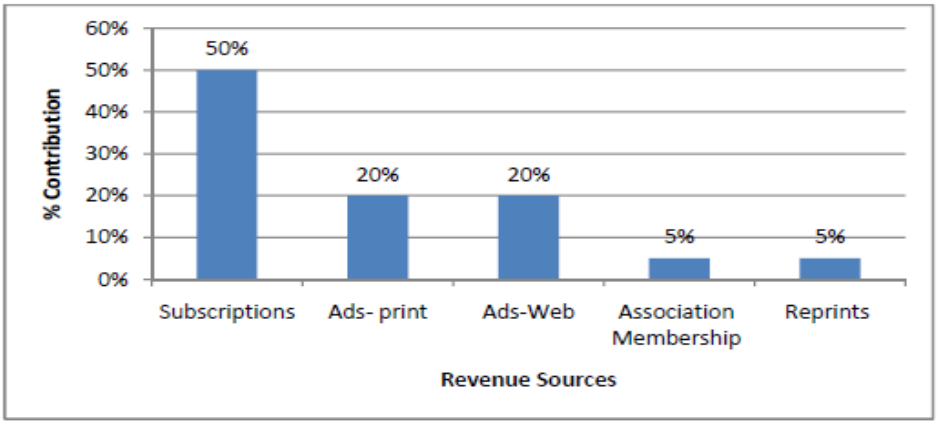
*For 137 journals in October 2011
Source: Computed using data obtained fromMedKnow.com

5.2.1. Revenues

Let us consider the publishing economics of MedKnow for a journal that has 1,000 print subscriptions. Unlike several open access models that came into existence in the past two decades, a significant part (50%) of MedKnow's revenues is obtained from subscriptions of its open access journals (Refer to Figure 1). Revenues from print and web advertisements stand at 20% each; and membership fees and reprints account for 5% of revenues each. That means print subscriptions, including reprints, generate about 75% of total revenues from the journal.

MedKnow's model is a significant departure from the commonly available models of open access where most of the revenues come from article processing fees and publicly funded research grants. Over-dependence on public funds, especially during a time of economic hardship and drop in government subsidies for education in several countries, would attract questions about the long-term viability of such models. Charging article processing fees would deny authors from poorer regions access to publishing in open access journals, thus widening the already existing gap between scholarship in the developed and developing world. MedKnow's for-profit open access model has been effective in addressing these two issues from its early days itself.

Figure 1 Revenue sources for journals with 1,000 print copies on MedKnow

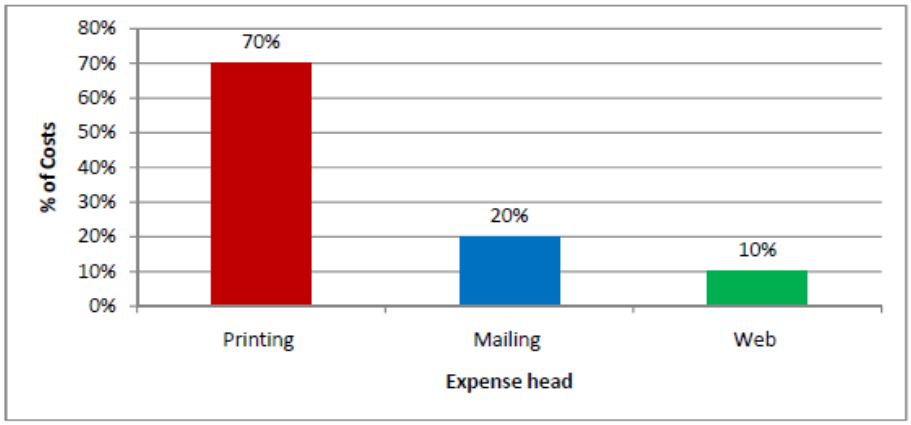


Source: Power point presentation by Sahu (2006)

5.2.2. Costs

The costs of a MedKnow journal with 1,000 print subscriptions are plotted in Figure 2. Printing cost (cost of prepress, paper, printing and binding) accounts for about 70% of the costs of the journal. Mailing of print copies costs about 20% and enabling digital access costs about 10%.

Figure 2 Expense break-up for journals with 1,000 print copies on MedKnow



Source: Power point presentation by Sahu (2006)

Thus, print subscriptions bring about 75% of revenues from the journal and account for about 90% of its publishing costs. A comparative analysis of print costs and revenues of a journal published by MedKnow would help understand this economics better.

5.3. MedKnow's economics: the case of Journal of Cancer Research and Therapeutics (JCRT)

Journal of Cancer Research and Therapeutics (JCRT) is the official publication of the Association of Radiation Oncologists of India. Published quarterly through MedKnow, the journal has about 1,000 subscriptions per annum (Minj et al, 2008). In 2012, an institutional subscription of the journal costs Rs. 2,500 in India and USD 250 internationally. Two issues

published in the first two quarters of 2012 had about 320 pages combined, which means one volume of 4 issues a year will have a combined length of about 640 pages. The cost of producing and shipping 1,000 print copies of 1 issue containing 160 pages on an average for JCRT is computed (Refer to Table 4). The cost calculations in detail are provided in the appendix.

Based on the analysis, the total cost for 4 issues with 1,000 copies each will be INR 527,600 (USD 9,592) in a year. In a study, Minj et al (2008) had estimated the annual cost of publishing JCRT in both print and electronic format as USD 10,000 which works out to be $10 for each of the 1,000 subscriptions without providing the details of how they calculated the costs. Our computation of the costs for print subscriptions showed an annual cost per subscription of about 528 Indian rupees (9.60 US dollars) for JCRT which almost conforms to the estimate of $10 per subscription made by Minj et al (2008).

Table 4 Cost break-up for JCRT per annum

Expense head	Cost (INR)	Cost* (USD)
Editing	16,000	291
Formatting/designing interior	2,400	44
Cover design	2,500	46
Paper, printing and binding	56,000	1018
Shipping (in India)	55,000	1000
Total cost for 1 issue of 1,000 copies	131,900	2398
Per copy cost for 1 issue	132	2.4
Annual journal production cost per subscription (4 issues)	528	9.6

*USD 1 = INR 55 in September 2012

Source: Computed using data obtained from a printing firm (digital + offset) that handles the production of JCRT; and two digital publishing platforms

Based on Dr. Sahu's estimates (Refer to Figure 2), printing and mailing together account for about 90% of the expenses and the web maintenance charges are only about 10% of the total cost. Applying these percentages to our calculation of costs, the total expenses (print + electronic) incurred for the journal are USD 10,657, resulting in an annual cost per subscription of USD 10.70. Considering the rise in Consumer Price Index since 2008, this value also does not deviate much from the cost estimates made by Minj et al (2008).

5.3.1. MedKnow and profits

Computing the gross profits obtained from JCRT revealed startling figures (Refer to Table 5). The journal made a total gross profit of about 1,973,000 Indian rupees annually, assuming that all subscriptions are sold in India. These profits are a source of income for MedKnow and the society publishers. Thus, the gross profit margin for JCRT before meeting overheads is about 79%. If JCRT's international subscriptions and online subscriptions are also accounted for, the profits will be much more.

Table 5 Costs, revenues and profit margins for JCRT for print subscriptions

Particulars	Amount	
	In INR	In USD
Annual cost of production per subscription	528	9. 60
Subscription price per annum (in India)	2,500	45.50
Gross Profit per subscription	1,972	35.85
Gross Profit from 1,000 subscriptions	1,972,000	3,585.00
Gross profit margin (Print)	79%	

Source: Computed by authors

5.4. MedKnow's prices after acquisition

An analysis of the prices of MedKnow journals (Refer to Table 6) showed that there was no significant change in prices of international subscriptions before after acquisition. In fact, the mean prices for print subscriptions and online subscriptions dropped by a small percentage after the acquisition. However, after the buyout, the mean prices of MedKnow journals in the Indian market rose between 8%, 13% and 18% for online, print and print plus online subscriptions respectively. The rise in journal prices is almost in tune with the Consumer Price Index (CPI) inflation in India, estimated to be about 10% during the one year period from August 2011 to August 2012 (Inflation.eu, 2012). Even though the 18% increase in prices for print + online subscriptions could be a reason for concern, overall the acquisition of MedKnow has not resulted in any significant rise in prices of open access journals it publishes.

Table 6 Comparison of prices before and after the acquisition of MedKnow

Type of Subscription	Before acquisition[1]				After acquisition[2]			
	Median Price		Mean Price		Median Price		Mean Price	
	INR	USD	INR	USD	INR	USD	INR	USD
Institutional (Print)	2,000	200	2,105	229	2,000	200	2,384	227
Institutional (Online)	1,600	160	1,692	183	1,500	155	1,833	177
Institutional (Print + Online)	2,400	240	2,535	275	2,500	250	2,987	285

[1]For 137 journals in October 2011
[2]For 176 journals in October 2012
Source: Computed using data obtained from MedKnow.com

6. Conclusions

Open access journals which make published articles freely available on the internet for anyone to access and use are viewed as an alternative to high-priced commercial journals. However, the long-term financial viability of open access journals which depend on article processing charges, government support, membership fees and charity in order to raise funds remained an issue of concern. Besides, charging an article processing fee which is unaffordable

for many authors, especially those from the developing world, would deny them an opportunity to publish their research.

MedKnow Publications, a "fee-less-free", 'for-profit' open access model, is one of the few open access platforms that make published content immediately open access. An independent commercial publisher without any external support, MedKnow built its business model around journals brought out by learned societies. MedKnow defied convention by not charging article processing fees on authors who want to publish their research in any one of the many journals published by it. Without processing charges, the article submission rates on MedKnow steadily increased, boosting popularity and subscriptions for many journals. MedKnow's major revenue source was print subscription of open access journals which accounted for about 75% of revenues through subscription fees, print advertisements and reprints.

Comparison of the costs and prices of print subscriptions of a journal on MedKnow showed that even at a fraction of the prices charged by commercial journal publishers, it could gain large margins on print subscriptions. The journal subscription prices did not show any significant swings after the acquisition of MedKnow by Wolters Kluwer, a large commercial publisher. Thus, MedKnow has been successful in creating a profitable open access model that serve the interests of publishers, authors and users of scholarly content from across the world.

7. Limitations and directions for future research

As a preliminary analysis, the research considered only one journal from the whole lot of MedKnow journals for a comparative analysis of the costs and prices. The analysis could be performed for a few more select journals to have a better understanding of MedKnow's economics. The authors used proxies for some cost data which was obtained through MedKnow's printers and digital publishing firms because obtaining data directly from MedKnow, especially in the wake of the acquisition, was near impossible. Perhaps, a comparison of growth in article submission rates across open access journals by treating article processing fee (APC) as an independent variable would provide a better understanding of APC's influence on submissions and subsequently on subscriptions.

References

Auletta, K., 2010. Publish or perish: Can the iPad topple the kindle and save the book business?. The New Yorker, available at: <http://www.newyorker.com/reporting/2010/04/26/100426fa_fact_auletta?printable=true> [Accessed 7 July 2010].

Björk, B. C., Roos, A. & Lauri, M., 2009. Scientific journal publishing: yearly volume and open access availability. *Information Research*, 14(1) paper 391. Available at: <http://informationr.net/ir/14-1/paper391.html> [Accessed 5 Jan 2012].

Brynjolfsson, E., Hu, Y. and Smith, M. D., 2003. Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Booksellers. Management Science, INFORMS, Vol. 49, No. 11, November 2003, pp. 1580–1596, available at: <http://ebusiness.mit.edu/research/papers/176_erikb_onlinebooksellers2.pdf> [Accessed 6 July 2009].

Chang, C. C, 2006. Business models for open access journal publishing. Online Information Review, Emerald, available at: <http://www.emeraldinsight.com/journals.htm?articleid=1583937&show=abstract> [Accessed 8 Feb, 2011].

Crow, R., 2009. Income models for open access: an overview of current practice, Scholarly Publishing & Academic Resources Coalition (SPARC), Available at: http://www.arl.org/sparc/bm~doc/incomemodels_v1.pdf [Accessed 5 Jan 2012].

Hajjem, C., Harnad, S. and Gingras, Y., 2005. Ten-year cross-disciplinary comparison of the growth of open access and how it increases research citation impact, IEEE Data Engineering Bulletin 28(4): pp39-47, available at: <http://eprints.ecs.soton.ac.uk/11688/> [Accessed August 11, 2009].

HighWire Press, 2009. Librarian eBook survey. Stanford University. Available at: <http://www.scribd.com/doc/43193588/Report-and-Analysis-of-HighWire-Fall-2009-Librarian-Survey-on-eBooks#outer_page_22> [Accessed 5 June 2012].

Inflation.eu, 2012. Inflation India 2012. Available at: <http://www.inflation.eu/inflation-rates/india/historic-inflation/cpi-inflation-india-2012.aspx> [Accessed 5 October 2012].

Jensen, R, 2007. The digital provide: Information (technology), market performance, and welfare in the South Indian fisheries sector. The Quarterly Journal of Economics. Vol. 122, No.3, pp. 879-924, available at: <http://www.mitpressjournals.org/doi/pdf/10.1162/qjec.122.3.879> [Accessed 8 July, 2010].

King, W.D. and Tenopir, C, 1998. Economic Cost models of scientific scholarly journals. Paper presented to the ICSU Press Workshop, Keble College, Oxford, UK, 31 March- 2 April Available at: <http://www.bodley.ox.ac.uk/icsu/kingppr.htm> [Accessed 15 April 2010].

Lipscomb, C. E., 2001. Mergers in the publishing industry, Bulletin of the Medical Library Association, V. 89(3), pp. 307-308 July, available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC34566/> [Accessed 7 Feb 2010].

Mark Ware Consulting, 2006. Scientific publishing in transition: an overview of current developments, White Paper. September. Available at: <http://www.stm-assoc.org/2006_09_01_Scientific_Publishing_in_Transition_White_Paper.pdf> [Accessed 16 Jan 2012].

McCabe, M. J., 1999. The Impact of Publisher Mergers on Journal Prices: An Update, ARL: A Bimonthly Report, no. 207, (December), available at <http://www.arl.org/resources/pubs/br/br207/br207jrnlprices.shtml> [Accessed 9 Feb 2010].

Minj, S., Singhal, M. and Abraham T., 2008. Barriers to electronic publishing of scholarly journals from India: Findings from the Scientific Journal Publishing in India (SJPI) Project, available at: <http://www.codesria.org/IMG/pdf/11_Suvarsha_Walters-2.pdf> [Accessed 24 Jan 2011]

MLA Report, 2006. The future e of scholarly publishing. The Ad Hoc Committee on the Future of Scholarly Publishing, Modern Language Association. Available at: <http://www.mla.org/pdf/schlrlypblshng.pdf> [Accessed 16 Jan 2012].

Monbiot, G., 2011. Academic publishers make Murdoch look like a socialist. The Guardian, 29 August. Available at: <http://www.guardian.co.uk/commentisfree/2011/aug/29/academic-publishers-murdoch-socialist> [Accessed 16 Jan 2012].

Sahu, DK (2006) Open access publishing in the developing world: economics and impact. Power Point presentation, In: Asia Commons: Asian Conference on the Digital Commons, 6-8 June 2006, Bangkok, Thailand. Available at: <http://openmed.nic.in/1598/01/Openaccess_Medknow.pdf> [Accessed 16 October 2011].

Solomon, D. J. and Björk, B., 2012. A study of open access journals using article processing charges. Journal of the American society for information science and technology. 63 (8). pp. 1485–1495. Available at: <http://onlinelibrary.wiley.com/doi/10.1002/asi.22673/abstract> [Accessed 16 Sep. 2012].

Suber, P., 2007. Open access overview: Focusing on open access to peer reviewed research articles and their preprints. June 19. Available at: <http://www.earlham.edu/~peters/fos/overview.htm> [Accessed 24 April, 2009].

Watt, G. M., 2007. Research on the textbook publishing industry in the United States of America, IARTEM e-Journal, 1:1 (August) by the International Association for Research on Textbooks and Educational Media. Available at: <http://biriwa.com/iartem/ejournal/volume1.1/watt.pdf> [Accessed 7 Feb 2010].

Wells, A., 1999. Exploring the development of the independent, electronic, scholarly journals. Electronic Dissertations Library, University of Sheffield. Available at: <http://panizzi.shef.ac.uk/elecdiss/edl0001/ch0200.html> [Accessed 5 Jan 2012].

Yin, Robert K, 2003. Case study research: Design and methods, Third edition, Sage Publications

Appendix

Production Cost for JCRT per annum

1. Editing cost when outsourced is about 100 rupees per page (160×1,000=16,000)
2. Formatting/design cost when outsourced is about 15 rupees per page (160×15=2,400)
3. A popular package offered for cover design is 2,500 rupees

[The above costs 1, 2, and 3 are one-time (fixed) costs, as they do not vary with the volume of output]

4. Paper, printing (offset) and binding charges for 1,000 copies of an A4 size book containing about 150-200 pages with black and white interior and coloured cover is about 0.35 rupees per page [160×1,000×0.35=56,000].

5. Shipping charges per copy in India is about 55 rupees [55×1,000=55,000]

[Costs 4 and 5 are variable with the volume of output]

6. Total cost for 1 issue of 1,000 copies [Sum of the costs 1, 2, 3, 4, and 5]
7. Per copy cost for 1 issue [Cost 6 divided by 1,000]
8. Production cost for 4 issues per annum [4×Cost 7]