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Creating Sustainable Value in Developing Countries

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Abstract

The extent to which people living in developing countries have access to scholarly literature has historically been severely constrained. The constraints in part are created and enforced by academic publishers, primarily for reasons of finance, and in part are a result of the digital divide: the glaring inequality of access to the Internet that pervades the developing world. In this article, we assess the first of these two constraints and explain how open access electronic journals have the potential to create sustainable value for people living in developing countries. We first review the current situation with regard to print and electronic journals, before looking at the open access phenomenon in greater detail. We then present a case description of one current open access electronic journal that is increasingly exerting an impact in the field of information systems on this constraint. The salient issues are then discussed, with a view to identifying good practices for open access electronic journals, in both editorial and financial terms. Finally, we conclude the article with some closing thoughts.

Keywords: Open Access, Electronic Journals, Developing Countries

1. Introduction

Academic journals have proliferated greatly in recent years, with the general surge in scientific publishing since the middle of the last century. This is as true in information systems (IS) as it is in other disciplines, notably medicine, engineering and physics. Furthermore, since the mid-1990s and with the increasing popularity of the web, we have witnessed an increasing trend for journals that were formerly available only in print to be additionally available online in a digital format that we have come to know as e-journals. In addition, a few journals exist purely in an online format, such as the *Communications of the AIS* (http://cais.isworld.org), the *Journal of the AIS* (http://jais.isworld.org), The Journal of Research Practice (http://jrp.icaap.org/), and the Journal of Orthopaedics (http://www.jortho.org). However, the vast majority of these journals, whether print, online or both, require subscriptions that few individuals, or even libraries, in developing countries can afford. In this article, we explore the field of e-journals, with particular reference to e-journals that adopt an open access (i.e. free of charge) policy and consider how these e-journals can create significant value for the various stakeholders who live and work in the developing countries of the world. Following this introduction, we first identify a number of salient issues associated with print journals today in the context of their readers and authors, particularly in developing countries. This is followed by a similar description of electronic journals and their potential for developing countries. We then refine our focus further and consider how open access materials can be made available online and what the implications of open access are for both publishers and the readership. After this literature-based section, we illustrate the potential impact of open access electronic journals with a description of the

Electronic Journal of Information Systems in Developing Countries (http://www.ejisdc.org). This is followed by a discussion of the salient themes that emerge from the study and finally a conclusion, wherein we summarise our findings and suggest how this genre of publishing can be extended.

2. Print Journals and the Marketplace

Journals today almost invariably seek to establish their identity and credentials in terms of an international marketplace. The word "international" or "global" may not appear on the journal's masthead, but nevertheless the vast majority of journals aspire to international status. Notwithstanding this international flavour, the vast majority of articles published in these journals appear to be written both by and for people located in developed countries. This does not detract from the international status of the journals, but it does indicate how the developing countries of the world can be marginalised (or ignored) even in publications that claim to be international. Most of these journals implicitly require authors to follow established guidelines for presentation of their material, as well as for rigorous conception, design and execution of their studies. Such guidelines are second nature to people trained in the developed countries of Europe, North America and a few other locations in Asia and Australasia. These guidelines are also 'in the blood' of reviewers from these same locations, who often have a very hard time offering authors constructive advice when confronted with a manuscript that manifestly ignores the 'status quo'. However, potential authors from (or trained in) developing countries are likely to have experienced a very different instructional regimen. This does not invalidate the veracity or usefulness of their research, but it does complicate the publication of this research in the many journals that emphasise rigour at the cost of relevance. It is not surprising that very few people from developing countries succeed in publishing articles in these 'international' journals, unless they are 'fortunate' enough to have a co-author familiar with the rules. Furthermore, few people in the poorest countries of the world have access to these journals. As Aronson (2004) notes, researchers and academics in developing countries have identified access to licence-fee-protected literature as the most serious of their information-related problems.

Notwithstanding our comments above about the parochialism of journals with respect to truly global content, there are a small number of prominent exceptions. In the IS field, journals such as the *Journal of Global Information Management*, *Journal of Global Information Technology Management*, and *Information Technology for Development*, regularly publish articles written by and for people in less developed countries. The *Electronic Journal of Information Systems in Developing Countries*, which is the focus of more special attention later in this article, specifically targets this domain. Furthermore, a number of journals, such as the *Communications of the ACM* (*CACM*), run occasional special issues on IT in different parts of the world. The April 2005 issue of *CACM*, for instance, incorporates a special section on the role of IT in transforming China (Martinsons, 2005).

A prominent characteristic of most academic journals is the cost associated with accessing articles. These costs can act as a significant barrier to access in developing countries. Yet academic publishers depend on journals for a large chunk of their income. This applies equally to print and online journals. Subscription fees for online journals are seldom significantly lower than those for print journals. Indeed, many of the larger publishers have developed the policy of bundling journals, essentially forcing libraries to buy many titles in which they have little interest, in order to secure relatively cheaper overall costs for those titles that they do need. These bundling policies usually include access to both print and online versions of a journal. Since the cost of both print and online is often only 10-15% more than the cost of print alone, libraries tend to subscribe to both. In times of budget cuts, however, library subscriptions are falling. At the City University of Hong Kong, for instance,

the serials budget was cut by 24% from 2000 to 2003 and in consequence about 1100 serials titles had to be cancelled. The same situation occurs even in the developing world: Falk (2004) documents how some universities have asked academics to consider cutting their ties (editorships, submissions, reviews) with Elsevier journals, because of this publisher's policies with respect to the bundling of journals. Meanwhile, Cornell University Library (2003) did not renew a bundle of Elsevier titles that represented only 2% of the total number of serials but 20% of the serials budget.

3. Electronic Journals and the Marketspace

Electronic publishing relates to the publication of information in an electronic format. This can be accomplished on physical media such as CD ROM, and with technologies such as email, but is most commonly associated with websites on the Internet. Electronic journals (e-journals) are thus journals that are published on websites. The 'soft' copy of an e-journal article should look at least as good as (and often better than, for reasons that we explain below) its 'hard' copy counterpart. The fact that a journal is available online should not have any implications for the quality of the material being published, the quality and credibility of the peer review process used to screen and improve articles (MacDonald, 2002), or the quality of the editorial processes used. Indeed, e-journals should be able to offer an enhanced form of presentation to readers, with, for example, colour graphics (that are very expensive to produce in print journals), extensive appendices (that are often precluded by page-restrictions in print journals) and even more interactive features (such as reader surveys, virtual communities, online demonstrations, hotlinks to literature references, and updatable links to data and databases). All these features can be hosted on the web site of the e-journal (Liew et al., 2000; Rowley, 2000).

The editorial processes supporting e-journals (and print journals) are often Internet-driven as well. It is entirely reasonable for all the different activities, i.e. initial submission, contacting the reviewers, submission of reviews, request for revisions, submission of the revised manuscript, communication of acceptance/rejection of the manuscript, to be handled online. This however, assumes that all the different stakeholders in the process have adequate Internet access, and are able to use it effectively. The assumption is a reasonable one to make in developed countries, but it may not be in developing countries, where users may be charged by the minute (or second) for access time, and where line speeds may be so slow as to preclude extensive up/down-loading of material. Broadband is a wonderful medium – if you have it, but many people in developing countries still rely on dial-up modems. This means that there is a pressing need to produce low-bandwidth material that all can access easily at all stages of publishing, including reviewing and distribution.

E-journals have a range of opportunities to deliver an enhanced experience to a large number of widely-dispersed readers, breaking the formerly strong inverse relationship between richness of medium and breadth of distribution (Evans and Wurster, 1997). In consequence, it is not unreasonable to describe the emergence of e-journals as a revolutionary development in the history of publishing. Google Scholar (http://scholar.google.com) is taking this revolution a step further with its attempt to make articles and abstracts, as well as citation counts, widely available online for free. Furthermore, e-publishing has the potential to ensure drastic reductions in the cost of producing and disseminating publications, but this has significant implications for publishers that have traditionally relied on the revenue streams generated by journals to cover their various costs. In consequence, e-publishing is something of a disruptive technology (Odlyzko, 2002) and e-journals may be seen as a major threat by traditional publishers given their potential to outperform the traditional paper-based model.

Much of the literature describing the benefits of e-journals and open access (which we discuss below) is, perhaps unsurprisingly, targeted at the developed economies of the world (e.g. Ashcroft, 2002), though a notable exception is Willinsky et al.'s (2005) paper on access to Internet-based research in Cameroonian universities. However, while e-journals are undoubtedly important for readers in developed countries, it is arguably the case that the potential impact will be greater still for readers in developing countries. Aronson (2004) reports the results of a World Health Organisation (WHO) study showing that in the lowest income countries of the world, 56% of institutions had no subscriptions to international journals at all (cf. also Willinsky et al., 2005). As a consequence of these findings, the WHO established the HINARI (Health InterNetwork Access to Research Initiative) project (http://www.healthinternetwork.org) to enable either free or low cost access to scientific publications for low income countries.

4. Open Access E-Journals

In order to explain how e-journals can be rendered still more valuable to developing country readers, we next investigate the topic of open access to content. "Open access literature is digital, online, free of charge and free of most copyright and licensing restrictions" (Satyanarayana, 2004, p.67). Indeed, the only aspect of copyright that is relevant to open access is granting authors the right to "control the integrity of their work and the right to be properly acknowledged and cited" (BOAI, 2002).

A fundamental premise of the open access concept is that research outputs should be accessible to the public. This access is only possible if and when there is free and unrestricted access to published articles, irrespective of where the articles are published and where the readers are located. As we have described above, journal publishers generally make this impossible, with restrictive licensing practices that may expressly prohibit access to materials by individuals who are not collectively (e.g. by virtue of their employment with an institution of higher education) or individually licensed.

While the open access concept is easy to describe and understand, implementation has been much more difficult. Clearly, academic publishers (which dominate the academic publishing market) are unlikely to find much favour with the concept given the implications for their revenue streams. Professional societies (such as the Association for Information Systems) operate a less restrictive policy, often opening access to their archives for free, though access to recent issues of journals may still be charged. Independent, not-for-profit publishers have started to emerge in developing countries, often publishing a single journal title, though these journals tend to have very low readership levels (Ramachandran and Scaria, 2004) because they are little known. Marketing these open access journals, often with a negligible budget, is a challenge, though one that is facilitated by the Internet. These difficulties do not detract in any way from the value that can be realised from the open accessibility of articles. For example, a recent article in the open access Calicut Medical Journal [http://www.calicutmedicaljournal.org] was translated into the Indian vernacular and reissued in a popular health magazine, making the information available to a much wider audience, without any fees being involved. A similar practice in the developed world can be seen with such online offerings as Knowledge@Wharton [http://knowledge.wharton.upenn.edu]. These research portals popularise academic research output, using professional writers, with costs covered through sponsorships. In general, open access e-journals can function with very low levels of direct funding, so long as there is no print journal to support and no major salaries to pay (Wellcome, 2003).

In the last year or so, the UK Government has started to back open access via self-archiving. This system requires academics to maintain a personal repository of their full text papers on their websites which anyone with Internet access can obtain (MacLeod, 2005). At

the same time, the Joint Information Systems Committee in the UK and the Public Library of Science in the US are promoting open access journals. However, currently only 5% of journals are in fact open access, though "http://www.openarchives.org aims to create a global online archive of all published research" (Tamber et al., 2003).

5. The Electronic Journal of Information Systems in Developing Countries
Following this review of the issues facing print and electronic journals, as well as the potential offered by open access, we now introduce the *Electronic Journal of Information Systems in Developing Countries* (*EJISDC*) (http://www.ejisdc.org), an open access e-journal based in Hong Kong. Firstly, we briefly review the historical background of the journal before going on to describe its funding arrangements and editorial policies and in particular its open access philosophy. In order to assess the impact of the *EJISDC*, we briefly summarise the papers that we have published over the last 5 years and also consider the nature of both our authors and our readers. The material here is primarily drawn from the experience of the first two authors as former and current Editors-in-Chief of the journal.

In January 1998, the four founding co-editors of what would become the *EJISDC* met at the Hawaii International Conference on System Sciences in preparation for a session of the conference that would be devoted to IS in developing countries. In thinking about how excellent papers might move beyond the conference, we realised that there was little in the way of choice. At that time, no journal was issuing papers on IS in developing countries with any regularity. Moreover, most mainstream journals displayed little interest in such papers, given that their readers almost exclusively came from the developed countries of the world. We recognised the niche for a journal devoted exclusively to this domain. In particular we envisioned the potential for an electronic journal, which would be available to readers for free. This would allow researchers in developing countries to access and publish relevant research findings, in a timely and cheap fashion. The journal would set itself the target of disseminating best practice in the field of IS in Developing Countries to a global audience.

The *EJISDC* was formally created in 1999 and the first papers were issued in January 2000 (see http://www.ejisdc.org). Since 2000, we have published over 120 articles with 219 authors (42% from developing countries) from 37 countries; meanwhile 43 countries, territories and regions are described in papers. To attempt a summary of all 122 papers here is not advisable, but papers range from single country studies involving the implementation of specific information systems to multi-country studies that compare different aspects of the environment with a number of indicators. Special issues are published on a regular basis. Recent special issues include those focused on: software outsourcing (with articles describing this phenomenon in: Bangladesh, Indonesia, Iran, Ukraine, Vietnam); IS in Latin America; and a set of critiques of the UNCTAD's (2002) annual E-Commerce and Development report. The authors of published articles consist of a mix of academics, practitioners and independent consultants. These articles are regularly included in teaching portfolios, as well as cited in UN and World Bank reports. By March 21st, 2005, 26,517 unique hits had been recorded on the ejisdc.org website since April 2001, with a current average of 18 per day. While 33% of hits cannot be traced to a specific top level domain (TLD) and a further 21% can only be traced to .com, .net and .org TLDs, which are not country specific, the remaining 46% can be traced to 124 countries and territories. Twenty six countries/territories are represented by more than 100 hits each. Many countries/territories are represented by less than twenty hits, but these include countries where Internet access is very limited, e.g. Sri Lanka (22), Fiji (20), Costa Rica (17), Vietnam (14), Cuba (7), Bhutan (5), East Timor (4), Rwanda (3), Guyana (3), New Caledonia (2), Burkina Faso (1) and Moldova (1). The journal receives a healthy number of high-quality submissions, indicating that it is becoming established as a

journal of some repute in its chosen domain. Currently, around 40% of submissions are eventually published in the journal.

The *EJISDC* focuses on the digital divide. Our aim is to situate contemporary trends in ICTs within a fully global context. Outside of North America, Western Europe, Australasia and Japan, diverse societies are making sense of technological advances in ways unique to their cultures and histories. ICT investments can and do contribute to improved quality of life, even where priorities for investments in information systems compete with the provision of the basic necessities of life such as decent housing, clean water and primary healthcare. ICT investments are able to leverage the values of third-world assets in much the same way as they do in the first world, sometimes to a far greater extent because of the lower starting point and lower costs. Good examples of such leveraging have been published in the *EJISDC* in countries as diverse as Fiji, Malaysia and Nepal.

The *EJISDC* operates on minimal budgetary principles. The editor-in-chief pays for the domain name registration (US$9.95/year) and a page counter service (US$7.95/year), while the City University of Hong Kong, which hosts the journal, pays for the web server and the cost of Internet access, as well as software such as Adobe Acrobat Writer which is used to generate pdf files. The institutions where the editors and reviewers work pay for their time, essentially as part of their service to the IS profession. The *EJISDC* has received two small donations (totalling a little over US$2,000) which have helped to pay a programmer to maintain the website.

Editorially, the *EJISDC* always attempts to be developmental with aspiring authors. Many authors in the developing world are relatively unfamiliar with academic standards propagated in developed countries. While we do not wish to over-emphasise the importance of these standards, nor indeed to ascribe normative status to them, we do wish to improve the research and presentation skills of *EJISDC* authors. To do this, it is not always appropriate to review manuscripts purely in the style used by 'mainstream' journals, since the assumptions these journals make about their authors are often inappropriate for developing country authors. Rather, we need to adopt a more hands-on, developmental approach so as to help authors to increase the quality of their work. To illustrate this difference, as editors we note that reviewers from developed countries tend to take an overly academic line of critique in their review comments, with a tendency to reject if in doubt, whereas reviewers from developing countries are often more sensitive to and appreciative of practical aspects of papers, with a tendency to encourage authors to develop their ideas further. As editors, we both select the reviewers and make the editorial decision: we deliberately instruct reviewers not to reject promising research just because it does not conform to established standards.

It is a matter of both pride and policy that the *EJISDC* is an open access journal. Considering the nature of our intended market – developing countries, and in consequence the financial vicissitudes that beset developing countries in general – it would be egregious to charge our readers for access to journal articles. We firmly believe that if we are to exert a positive impact on the way ICTs are used in developing countries, then it is essential that we provide information to whoever wants to read it with the absolute minimum of restrictions. Access is the key to knowledge. We can't provide Internet access to everyone, but then we can't pay to deliver hard copies of the *EJISDC* to anyone. Our peer-review system is designed to both weed out poor quality papers and work with promising authors. It is thus a sensitive system tuned to the specific environment that we are addressing. For those who have Internet access, and the numbers are growing, we will provide open access to quality research that is relevant to the developing country domain.

6. Discussion

We concluded our case about the *EJISDC* above with some comments about the importance of open access to information. These comments are by no means new – the inability of people in developing countries to access relevant information in a timely fashion has been known for a long time, and indeed it was with this problem in mind that the HINARI initiative, described earlier, was launched. The success of this initiative is testament to the principles of open access. The problem is even more acute with respect to materials published in developing countries, given the lack of appropriate tools and indices that can be used in order to search for materials (Omekwu, 2003). Nevertheless, initiatives such as HINARI and journals such as the *EJISDC* are at least providing the content – so long as the physical access to the Internet is available. The fact that the *EJISDC* has readers from 124 countries, the majority of them in the developing world, is indicative of the potential. The challenge that the journal faces is primarily one of developing reader and author awareness of the journal.

It is important to recognise the revolutionary nature of e-publication. Revolutions are by no means universally popular events, especially for those who currently wield authority and control resources given the potential for economic and social disruption. In the case of e-publishing, it is the academic publishers who have traditionally held the reins of power and who, even today, control the vast majority of journal titles. Open access journals that operate on principles of altruism face a struggle for credibility in this capitalist marketplace, though arguably this struggle should not be measured solely in capitalist (i.e. profit/loss) terms: indeed, the very rationale for an open access e-journal is to provide zero-cost access to as many people as possible. It is thus a deliberately not-for-profit organisational model. At this juncture, it is appropriate to consider the revolutionary nature of the changes that e-journals are stimulating in the context of Gersick's (1991) punctuated equilibrium theory.

PET is derived from work in evolutionary biology. We will not explore the literature here, but interested readers are pointed to the work of Eldredge and Gould (1972), as well as to Gersick's own writings on the topic. Gersick (1991) suggests that in the evolution of systems (not specifically information systems), there are three fundamental components: deep structure, equilibrium periods and revolutionary periods. Deep structure refers to the basic rules that govern how systems function. Deep structures are, as such, extremely stable, with the various rules providing mutual reinforcement (Gersick, 1991). Equilibrium periods can be described as the normal state of play, where the rules are followed and there are no significant threats to the paradigm. Incremental changes may take place, but nevertheless these can be accommodated within the general rules of the deep structure. Revolutionary periods, on the other hand, involve a substantial upheaval of processes, a shift in paradigms (cf. Kuhn, 1970), a rewriting of the general rules of the deep structure, in short a radical change, not a gradual or incremental one (Gersick, 1991).

Applied to the publishing field, the deep structure refers to the rules of publishing, the purpose of publishing, and the types of material that are published. Equilibrium can be said to refer to the way the publishing 'game' has traditionally operated – with print journals, a predominantly capitalist market system controlled by a small number of publishers, and even a review process that has at times favoured rigour over relevance, as well as the experiences of a relatively small number of countries which are designed to be more or less taken as gospel by everyone else. By punctuating the equilibrium created and maintained by the academic publishers, we assert that open access e-journals are inciting a revolutionary change in the information and knowledge dissemination game, rewriting the rules (deep structure) and challenging the pre-eminent position of the academic publishers (the equilibrium). A specific example of the ramifications of this revolutionary change involves virtual communities. Just as dot coms like Amazon have built up communities around reader-reviewers, creating credibility in the process, so too e-journals can put readers in touch with one another, as well as with authors, in ways that print journals simply cannot. While there is

still good reason to fear unreviewed material on the web, reviewed material becomes far more valuable simply because the potential readership is so much larger. Virtual communities of reader-reviewers have considerable potential to sustain the value that e-journals can create. Indeed, involvement of developing country readers and authors in virtual communities of this nature is likely to have significant knock-on effects in terms of raising awareness of the importance of the research and so encouraging more people to get involved, to pay attention and not to accept the hegemony of the developed countries nor their exclusive right to purvey knowledge.

7. Conclusions

E-Journals offer a very special opportunity for authors (many of whom may themselves be located in developing countries) to reach out to a truly globally distributed audience. Much of the potential lies in the very nature of the Internet, and in the fact that e-journals can be read by anyone with an Internet connection, even a temporary one in an Internet café. Furthermore, authors of articles in e-journals may be able to engage with their distributed audience in an online debate via a webboard. E-journals certainly pose a revolutionary threat to the established order of academic publishing by virtue of the significant value that they bring to the field, a value that, in the case of developing countries, would simply be beyond people's and institutions' financial means. E-journals need to maintain their professional standards and quality, at the same time promoting reader and author awareness and creating innovative online features that both attract and retain readers, while building up a virtual community. Open access e-journals such as the *EJISDC* are founded on a predominantly altruistic model, a model that is successful because of, not in spite of, its independence from the editorial and budgetary constraints of academic publishers. The model cannot claim independence from its readership, but why should it? On the contrary, open access e-journals are entirely dependent on their readers, who will vote with their fingers by choosing to access a journal online (or not as the case may be), and will, in a parallel to the word-of-mouth system of approval, inform their friends and colleagues of online resources that merit attention or disdain. Apart from the readers, the altruistic values that inspire our authors, editors, reviewers and institutional sponsors are the real guarantee of a sustainable model for open access e-journals in developing countries. Consequently, to all aspiring e-journal editors or organisers, we urge you to adopt an open access policy, an editorially and financially independent control structure, and a synergistic approach to your readers.

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