

Transforming Open Access Scholarly Publishing and Scientific Delivery: Challenges and Opportunities in Asian Regions

Gajendra Sharma

Department of Computer Science and Engineering, School of Engineering, Kathmandu University
Dhulikhel, Kavre, Nepal

ABSTRACT

A free flow of ideas and information is important to the process of scientific inquiry and in turn to the ability to address economic, environmental and social development issues in Asian region. Scholarly publishing facilitates research findings of scholars to cross international boundaries to offer strong and positive connections between individual scholars, institutions and nations. Such exchanges contribute to the expansion of the global knowledge base to which the Asia is linked. This study focuses how to increase awareness of open access in Asia and provide more information to maintain publication standard for researchers. The study also explores the challenges and opportunities of scholarly publishing in Asia. The challenges involve technological, socio-political, economic and environmental issues. The modern era brings with it opportunities that may enhance Asia's visibility of scholarly publishing. Findings of this study specify that the majority of researchers in public universities in Asia used open access more to access scholarly content. Most of these researchers would support open access publishing more if issues of recognition, quality and ownership were resolved. The study recommends that public universities and other research institutions in the country should consider establishing institutional repositories, with appropriate quality assurance measures, to improve the dissemination of research output emanating from these institutions.

Key words: Open access, scholarly articles, research, scientific delivery, Asia

INTRODUCTION

Open Access (OA) deals with free access to and reuse of scholarly works. It has mainly been concerned with scholarly journal articles; however, digital books, electronic theses and dissertations and research data have been of growing concern. Interest in digital books has been increased by mass digitization projects. Scholarly publishing is as a result of research and innovation which may improve the quality of knowledge and information produced by scholars. The involvement of librarians in open access society is mainly a through open access repository which is usually referred to as the Green approach to OA. The traditional system of scholarly communication is said to have originated as an exchange of letters and lectures among scattered peers until scholarly print journals came into existence (De Beer, 2005; Swan, 2007). By organizing the information in such a way that OA information is accessible in the same way as other information, the Library makes available to its users, by collaborating with various OA providers, to ensure that the systems library uses are able to facilitate such access and use. Economic growth in the modern era has been grounded on the exploitation of scientific knowledge (Partha and David, 1994). Scholarly publishing is considered the norm for disseminating and validating research results and is also

crucial for career advancement in most academic fields. Data on scholarly publication by country or region provide an indication of the knowledge production and research capacity of Asian as well as other regions.

The best interest of scholarly society publishers is the interest of the scholars themselves. So scholarly societies should be doing what they can to speed that transition (Shieber, 2013). Scholarly publishing is mostly associated with scholars that teach and conduct research in institutions of higher learning and other institutions of research. Castells (2004) observed at the university as being critical for the generation of knowledge, technological innovation and the development of human resources. There has been a rapid increase of scholarly output as the higher education sector has grown worldwide. This increase in scholarly output, coupled with inflated journal prices, has resulted in it becoming difficult even for libraries in rich countries to subscribe to every journal that is required by their clients. Scholars from the Asian as well as developing countries have been relentlessly affected in terms of accessibility to scholarly content and literature because widespread poverty in these countries makes it impossible to keep up with escalating prices (Bjork *et al.*, 2009; Habib, 2009).

Since the development of printing technology and scholarly publishing can be observed as mutually interdependent, each influencing the other (Dewar, 2000). This relationship however has been disrupted by the use of new Information Technologies (IT) and in particular the Internet (Kennan and Cole, 2008). Journal publishing is a big business. A market intelligence service, reported by Van Orsdel and Born (2008), claimed that the top ten publishers pull in 53% of a revenue of \$16.1 billion for the market but in the past few years growth for these players has been relatively low at 0.5-7.6%.

The purpose of this study is to provide awareness of OA in Asian countries and provide more information to maintain publication standard for researchers. The study also explores the challenges and opportunities of scholarly publishing in Asia. Online and new technologies continue to develop at an extraordinary rate, opening up new possibilities but also new risks, especially for small organizations with small resources. Business models, user expectations and their long-term requirements have also changed and this trend looks set to continue, again offering new opportunities but also new threats. The peer-reviewed literature is free online are themselves growing in numbers and will soon hold power in universities, libraries, learned societies, publishers, funding agencies and governments. Generational change is on the side of OA (Suber, 2013). There is a growing trend for universities, funding organizations and governments to mandate in formal policies that articles created with their funding. In some cases, universities may suggest that this can be performed in OA policies.

OPEN ACCESS IN ASIA

Open access is of vital importance to developing countries which often do not have the capital necessary to access scholarly literature. Although schemes like JSTOR, OARE (Online Access to Research in the Environment), EBSCO host and HINARI (Health InterNetwork Access to Research Initiative) sponsored by the World Health Organization do provide access to scholarly literature at little or no cost, they, however, have restrictions because individual researchers may not register as users unless their institutions have access (Okoye and Ejikeme, 2011). The OA scholarly communication is achieved through two main channels: Open Access Journals (OAJs) for electronic refereed journals and self-archiving (Bailey, 2006; Bjork *et al.*, 2009). The OA journals, also referred to as the "Gold road" to open access, are peer reviewed journals made available free of

charge to the public through the Internet. Unlike the business publishing model, in open access publishing, the end-user is not charged to access journal articles. Instead, various funding strategies, such as direct author fees, institutional membership to sponsor all or part of author fees, funding agency payment of author fees and grants to open access publishers and institutional subsidies, are used to cover the costs for publication and distribution of OA content for free access by the end-user (Hirwade and Rajyalakshmi, 2006). Research output in Asia is growing fast. According to National Science Foundation indicators published in February 2014 that the number of articles published by researchers in Asian countries increased from 89,000 in 1997 to 219,000 in 2014.

China: China is likely to overtake both the US and European Union in terms of research output in the very near future. A Royal Society report from 2014 predicted that China would overtake the US sometime around now. Provided this trend, it makes sense that we're also seeing an increase in the number of researchers from Asia choosing to publish their research OA. China isn't the only Asian country where it was seen an increase in researchers publishing open access. China is catching up in many aspects of OA. The OA mandate by CAS and NSFC is expected to be an exciting step to increase OA awareness and boost the development of Green OA in China. OA publications from Chinese authors will continue to grow at a high speed to match the research output growth and the organic growth of OA market share. Increasing attention is being paid to publishing OA journals from China which gives global publishers opportunities for partnership.

Japan: Regarding OA growth in Japan, more and more authors are publishing in OA journals, says Natsu Ishii, from Springer, who is based in Tokyo. "It seems that the number of Open Choice take-ups from Japanese authors is relatively large despite there being no open access mandate or policies in place". According to the MoU concluded in October 2010, two major university library consortia were consolidated into JUSTICE (Japan Alliance of University Library Consortia for E-Resources) which has nearly 500 member libraries. The new comprehensive consortium is expected to increase the strength for price negotiation with publishers. To accelerate the shift to e-journal some new electronic-only journals such as ELEX, JIP and JSME Journals were launched. To support retrospective digitization 37 journals completed the tasks. Japan should contribute about 6-10% according to the share in total publications worldwide. The case of Japan shows that the idea of Open Access is becoming increasingly popular around the world and that the British centrally-determined policy on OA is not an exception. Without a doubt, top-down change, even though it may entail mistakes and errors to begin with, gives a strong boost to the development of OA and accelerates its dissemination. It is also worth noting that the Japanese approach seems to be very well balanced. As a consequence of the requirement to publish one's dissertation on the internet, young scientists will become accustomed to this form of publishing from the very beginning.

India: In India, there is a large opportunity for open-access publishing. There are many noncommercial research and development institutions, both academic and research laboratories. For example, there are approximately 300 universities that offer both graduate and research programs. There are also many R and D laboratories operating within government science agencies which cover domains like industrial research, defense research, agricultural research, medicine, ecology, environment, information technology, space, energy and ocean development. The Indian Academy of Sciences, established in 1934. The Indian Academy of Sciences is one of three science

academies in India. Apart from various other activities it publishes 11 science journals reporting research work both in India and outside. These journals, mainly in print, are freely accessible on the Web. The Indian Academy of Sciences is currently digitizing all the archival issues and expects to post them online very soon. The managing editor of these journals noted that offering these journals on the Web has increased subscriptions to the print journals from foreign countries, because more researchers and libraries outside India are learning about them.

Korea: About 1,437 Korean journals are classified by publisher types and disciplines. The learned societies are the predominant publishers of journals in Korea. More than half of the Korean journals are open access. Korea's academic journals are expected to be consistently switched over to OA. More Korean journals should be published in English for international visibility. Society publishers are the majority in Korea, commercial publishers predominating in most advanced countries. More than half of the Korean journals for Science, Technology and Medicine (STM) are open access.

Nepal: Published by the Department of Archaeology in Kathmandu, Nepal, *Ancient Nepal* is a journal devoted to pre-history and field archaeology in the Himalayas. Special interests include epigraphy, manuscripts, numismatics, archives, art, anthropology, architecture and museum studies. Contributions should be concise and based on hitherto unpublished data and sent to the Director General of the Department of Archaeology. The journal dates from October 1967 and is still soliciting contributions. *Nepal Journal of Obstetrics and Gynaecology (NJOG)* is an open access Journal published by Nepal Society of Obstetricians and Gynaecologists to provide academic platform for its members and to ensure their scientific involvement in establishing scientific culture by promoting sharing newer development in different areas of obstetrics and gynecology. However, author's contributions to the highest quality medical research in women's health worldwide dedicated to the latest advancement of obstetrics and gynecology that report novel findings will be help NJOG attain the academic growth and recognition. *Journal of Nepal Medical Association (JNMA)* is the first and oldest medical journal in Nepal since 1963. It is internationally peer reviewed, PubMed index medical journal, published by Nepal Medical Association. JNMA is serving for more than 50 years since its first publication way back in 1963.

The open-access model has given rise to a great many new online publishers. Each of these publishers has a portfolio that ranges from just a few to hundreds of individual journal titles. The second list includes individual journals that do not publish under the platform of any publisher. They are essentially standalone, questionable journals. In both cases, researchers, scientists and academics avoid doing business with these publishers and journals. Scholars should avoid sending article submissions to them, serving on their editorial boards, reviewing studies for them, or advertising in them. Also, tenure and promotion committees should give extra scrutiny to articles published in these journals, for many of them include instances of research misconduct. As more and more open access content is available, new services can be implemented for the discovery, organizational innovation and management of that content.

There are still many high-quality journals available for scholars to publish in, including many that do not charge author processing fees. An additional option is author self-archiving of article post-prints in discipline-specific and institutional repositories. The Table 1 details the growth of questionable publishers since 2011.

Table 1: Publication information with free of cost in Asia

| Year | No. of predatory publishers |
|------|-----------------------------|
| 2011 | 18 |
| 2012 | 23 |
| 2013 | 225 |
| 2014 | 477 |

(Source: <http://scholarlyoa.com>)

OPEN ACCESS AWARENESS IN ASIA

Several studies acknowledge university/library web sites, contact from institutional repository staff members, publicity through campus news studies, results of a web search engine/Internet, direct publicity from publishers, word of mouth from associates and participation in an initial meetings of institutional repositories as ways through which respondents are exposed to OA (Kim, 2006; Moller, 2006; Pelizzari, 2003; Swan and Brown, 2004). These results imply that advocates of open access can use a combination of methods in promoting this mode of scholarly publishing to researchers. It was found from literature that Asian researchers predominantly used OA to access information as opposed to disseminating their scholarly content. The situation whereby researcher's publish less than they access content in OA outlets is not peculiar to public universities in Asia. Similar findings are reported by other OA studies done elsewhere (Gadd *et al.*, 2003; Schroter and Tite, 2006). OA can:

- Remove access barriers
- Reduce participation barriers
- Create a truly global scholarly communication system
- Reduce the total costs
- Increase the impact of research on research, societies and the people

Researchers' positive attitude towards OA was also noted in individuals who provided general comments about open access. The following are some of the statements given:

- OA is very new to most academicians though it seems to be very good as far as accessibility to information is concerned'
- OA is something new and interesting ? it should be promoted'
- Developing countries should accelerate the pace of establishing OA publishing in order to make their publications widely accessible
- OA publications increase the visibility and impact of scientific findings from researchers to a wide audience especially in developing countries
- Scholars in developing countries should be encouraged to publish in OA so that their findings reach more people

Some individuals accepted open access with caution as revealed in the following statement: 'Open access is good for information sharing but there is a need for a good mechanism to ensure quality control to avoid poor quality materials'. Figure 1 shows significant aspects of OA.

As financial return from publishing services is critical to many of the societies in enabling them to deliver their objectives, it was again not surprising that "Changing journals sales models" was

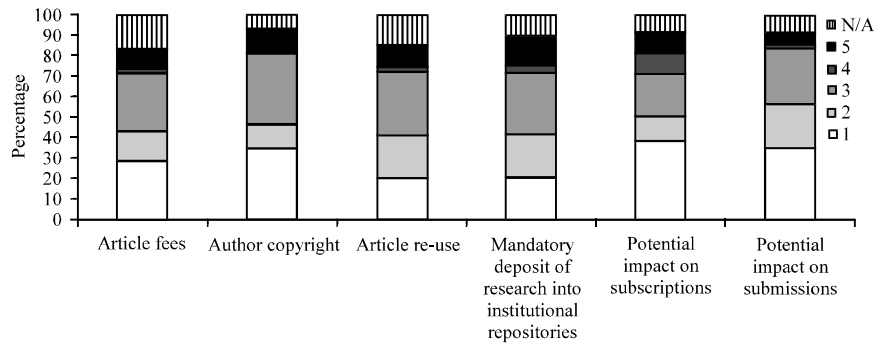


Fig. 1: Important aspects of OA

ranked by 44% as a major challenge and OA as a major challenge by 42%. It was found in the literature that the impact of OA on subscriptions (42%). Also highly ranked was the impact on submissions (35%). Author copyright was also highly ranked (35%). A surprising result was the lower ranking of the depositing of information (ranked as most important by 21%).

Willinsky (2006) developed the case for what he calls principled OA which he defines as a commitment to the value and quality of research which carries with it a responsibility to extend the circulation of such work as far as possible and ideally to all who are interested in it. The OA journals are journals where all the content of the journal is freely available to readers. Costs are recouped in many different ways, for example, by author fees, or by institutional or organisational subsidies, as suggested by Willinsky (2006). Ware (2006) conducted a survey of librarians asking them how they make journal cancellation decisions. Proportionally so few scholarly journal subscriptions are held by individuals, that it is the cancelling of journals by libraries which will have an effect on publishers. Further studies have analysed the users of scholarly research but those found looked at scholarly publishing in general rather specifically at users of OA works. Houghton *et al.* (2003) summarised the literature on user studies and find that many academic researcher utilize the full range of information resources. Xia and Sun (2007) proposed indicators for success including information about the depositor and that information about deposits by discipline, faculty and version (e.g., preprints and post prints), type (journal, conference or working study) might be more appropriate but many of the measures they propose are currently difficult to measure (Carr and Brody, 2007). Williams and Lawton (2005) and Park (2008) proposed examining the current changes occurring in scholarly publishing.

SCHOLARLY PUBLISHING

The scientific knowledge is rapidly expanding. Nevertheless, access to this pool of knowledge is often difficult because of the relatively high cost of scholarly journals, print or electronic (Okoye and Ejikeme, 2011). Housewright *et al.* (2013) opines that the journal's area of coverage and how close it is to faculty's immediate area of research, the journal's high impact factor and the journal's being widely circulated and well read by scholars in the field. Other components deemed important are the journal's policy of allowing publication for free, speed of publication and selectivity in article acceptance. Despite commonly held beliefs to the contrary, researchers abide by the stated ideal in research-intensive institutions of 'quality over quantity' (Harley *et al.*, 2010). Thus, quantity is not seen as more important than quality; that is, researchers proclaim that they prefer to publish higher quality studies, even if it means publishing less (Mulligan and Mabe, 2011).

Researchers who wish to communicate their work quickly to a wide range of audiences do so via working studys, reports and conference proceedings but these are often thought to have low status and prestige in the academic world. However, nearly two-thirds of the researchers as in Mulligan and Mabe (2011) study, verified to the importance of informal exchanges via bulletin boards and conferences, although in areas where researchers want their findings to remain confidential such as in Earth sciences and Chemistry.

Scholarly publishing normally refers to published research output of the higher education sub-sector as well as that of government and science councils (De Beer, 2005). Some corporations in the private sector are also involved in research and publication. Maher (2006) argued that when a research university decides to hire or promote a faculty member, the university has to make sure it is hiring or promoting a very good scholar and a person who will do a very good job in both research and instruction of students. The four main parties usually involved in scholarly publishing are scholars, editors, publishers and subscribers. Large academic research institutions are the major subscribers of scholarly publications. Scholarly publishing is an important manifestation of knowledge generation and diffusion (De Beer, 2005). The Internet has been credited not only for distributing information power and generation of knowledge but also for storing large amounts of information and knowledge. However, this is only possible where there is omnipresent computing, embedded networking and pervasive Internet. Figure 2 presents online access of journals by different publishers. Societies that self publish rely heavily on full-text databases as the mechanism for providing online access, an inefficient and expensive system that involves considerable duplication of content.

In the meantime, developments in Information and Communication Technology (ICT) have also contributed to the evolution of scholarly communication by greatly changing the documentation format and dissemination of scholarly content, among other aspects. As ICT developments have considerably changed research practices in terms of scholarly communication by increasing communication among scientists and access to information of all kinds and by provision of a greater

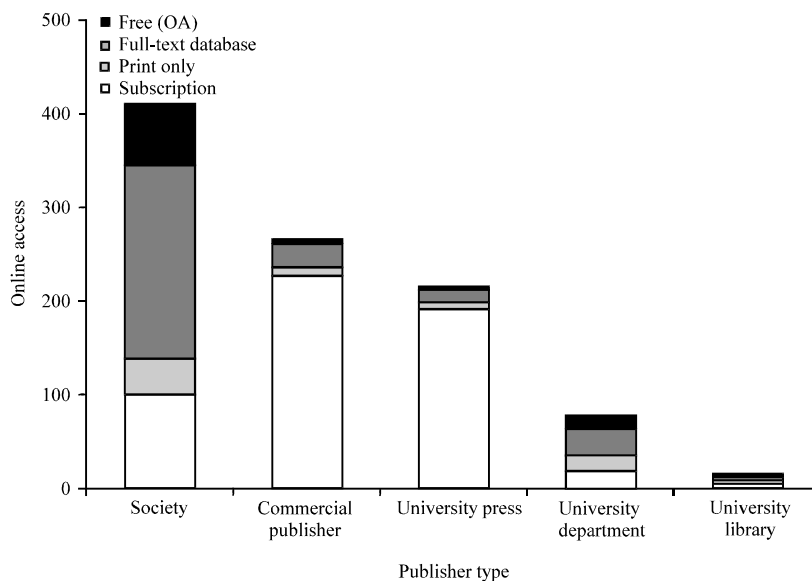


Fig. 2: Online access by publisher type

variety of publication and distribution platforms (Moller, 2006). Another dimension to the issue of scholarly communication is the fact that the scholarly community is often exploited by the traditional publishing industry in the sense that research institutions pay three times to access scholarly information generated by them. In the first instance, the research institutions provide fund the research projects, secondly the same institutions pay salaries to academics or researchers who conduct research and carry out the peer review of the research outputs, all at no cost to the publishing industry. Thirdly, the research institutions then purchase the scientific publications containing the same research outputs that they handed over to publishers free of cost (Comba and Vignocchi, 2005). Another drawback of traditional scholarly publishing is the fact that a substantial amount of research output, especially literature that does not follow the normal publishing protocols, remains invisible to most of the scholarly community. The consumption of scientific literature by Asian country researchers is likely to be significantly enhanced through such programs, promoting the production of research in the developing world requires additional measures. These could include the introduction of better journal indexing systems that identify high-quality journals published in the developing world, coupled with the adjustment of academic norms to reward publication in such journals.

It is identified that academic world is not one culture but many and what is common practice for one discipline or individual, is not necessarily common practice for another (Guedon, 2008). In some disciplines, the popularity of the monograph declined and in many the journal emerged as a key part of the scholarly communication process. In the second half of the twentieth century there was a huge increase in scholarly publishing. Today's academic journal performs a number of functions. In general, publishing means to "Make public" so it can be read by others (Borgman, 2007). Impact factors are calculated each year by Thomson ISI for those journals which it tracks and are published in the Journal Citation Reports (JCR). The journal impact factor is generally calculated over a three year period. In addition to these first order functions of scholarly publishing, Prosser (2005) also finds second category functions for scholarly publishing. For instance, access to wider readership or access for funding bodies and institutions to assess research and make decisions about future research funding. Copies are also archived in libraries and sometimes by publishers for future reference, so it may at a later time, be called back into the cycle. Other activities emerge from the central cycle:

- Access is available for a wider readership, such as practitioners, patients, future research funders
- Published work is a part of the academic reward structure (which can influence whose work and what work may be funded in the future)
- And publishers make a profit

In the new pattern libraries provide an electronic web based interface with an invisible infrastructure to enable the provision of information to inform research (Borgman, 2003; Brophy, 2008). No one claims that journals should be published free of cost, unless they are subsidized by an institution or other body (King *et al.*, 2008).

Changes: Researchers have moved from a print-based system to a digital system but it has not significantly changed the way they decide what to trust. The digital transition has not led to a

digital transformation. Traditional peer review and the journal still hold way. Measures of establishing trust and authority do not seem to have changed. Researchers have become more sceptical about a source's trustworthiness and have developed an increased confidence in their own judgement. The biggest change was an increased pressure to publish which was blamed for another change-the increase in poor and mediocre publications. Another major change is the way that libraries have become marginalized. The biggest surprise, possibly, was that nobody talked about information overload. The explanation lies in the fact that researchers cope with the increase in information by utilizing and maximizing their personal networks.

OPPORTUNITIES AND CHALLENGES

There is sufficient basis to suggest that part of the reasons for the low profile of scientists in Asia is the poor access to scientific publications from the developed countries, exacerbated by the institution of copyright (Tagler, 1996). What developing countries needs is an initiative or arrangement that will provide scientists with free access to scientific publications irrespective of where the sources are developed (Nwagwu and Ahmed, 2009). Open access provides a great opportunity, as well as challenges for librarian. When everything is free and accessible, the question is about providing the access but how to filter the content. Previously, the quality of publications can be quantified by money/price. When all comes for free, user needs help to shift, filter and identify the quality articles from the huge amount of free resources. The less established researchers will probably have to go for OA publications. But that does not mean that their work has lesser quality. It is one of the great challenges for librarians to spot, pin-point and show users these alternatives. Scholarly publishing in Asia has faced a number of challenges. It is early in the twenty-first century and the challenges that have always confronted scholarly publishing and knowledge production Technology, socio-political factors, environmental and economic factors and changing trends lead in imposing challenges on scholarly publishing and knowledge production in the region. Despite the broad range of organizations, in terms of disciplines, locations and size, there were some marked trends in responses. Societies cited the major challenges facing their organizations as:

- International presence for their organization
- Membership retention and growth
- Editorial quality
- Provision of online services
- Resources (funding and income)
- Open access

Economic challenges: A majority of the challenges facing scholarly publishing in Asia is the economic factor. Many scholars work in institutions are not financially well endowed. In such institutions, research facilities are inadequate and outdated by international standards. Libraries of institutions of higher learning and other research institutes are poorly funded and continue to experience budgetary cuts every year. A well-stocked library is an important resource for scholarly publishing. Scholarly journals, books and the Internet may be seen as major sources for research. The complete lack of scholarly journals and books as well as nominally equipped science laboratories and a lack of access to the Internet makes it hard for researchers to make scientific and scholarly

progress by building on the contributions of others. Scholarly journals are expected to fulfill a number of minimum requirements as criteria in order to be eligible for inclusion in the list of approved journals (Tijssen, 2007). The major requirements are:

- Purpose of the journal must be to disseminate research results
- Content must support high level learning, teaching and research in the relevant subject area
- Journal must have an editorial board that includes members beyond a single institution and
- Journal must be reflective of expertise in the relevant subject area

Some other challenges are:

- Non-participation in scholarly conferences
- Brain drain
- Language challenges
- Researchers' self-efficacy, fears and misconceptions
- ICT infrastructure
- Inadequate researchers' information search and publishing skills
- Lack of open access supportive policies
- Limited recognition of e-publications by institutions
- Quality control
- Attitude (Hard copies preferred by conservative readers)
- Inadequate bandwidth and unreliable power supply
- Lack of capacity to acquire and use e-resources (softwares)

Technological challenges: Electronic journals have now become important avenues for knowledge transfer and scholarly communication. Scholarly publishing in Asia could benefit from electronic publishing but the countries in the region lack the technological capability to support electronic knowledge transfer and scholarly publishing. The ICTs in Asian countries are still under developed and may not be relied on to support access to electronic journals and electronic publishing. The Internet should be made available widely in institutions of higher learning and other research institutions. Knowledge production and consumption in institutions of higher learning and other research institutions in Asia will remain low even in this century if there are not improvements in ICTs.

Electronic journals: A number of journals in Asia are now electronically available. Such journals accept manuscripts electronically as well as allow for manuscripts to be peer reviewed online. This may feel like it is now easier for scholars from Asia to submit their manuscripts electronically, read other scholars' manuscripts electronically and even act as peer reviewers. However, many scholars in Asian regions do not have access to personal computers, e-mail and the Internet and may not be able to submit their manuscripts, nor read them or act as peer reviewers online. Arunachalam (2003) thought that the ICTs, rather than bridging the digital divide, will widen the knowledge divide or the disparities in people's capacities to do research and their ability to use the technologies to their advantage. The electronic information environment has posed challenges to researchers

with regard to their ability in accessing and disseminating scholarly content. This is due to the fact that the developing web technologies relating to information access and publishing is becoming more complicated (Harle, 2009), as such there is a need to upgrade the technical skills of the existing staff if they are to cope with the new and dynamic technological developments.

Environmental challenges: A number of environmental challenges deal with scholarly publishing and knowledge production in Asia. Knowledge production requires an environment that favors free flow of information, limited censorship and free exchange of sharing of ideas. Interactions with the environment and free exchange of ideas with knowledge carriers promote creation of knowledge. In Asia, there are many environmental inhibitors which are responsible for constraining the free flow of information and promotion of knowledge production. Scholars are compromised and made to produce publications which do not contribute to knowledge. Most scholars in Asia are affiliated to or employed by universities. The universities in the region do not enjoy autonomy and freedom of expression is either very limited or non-existent. The high ranking officers in the universities are government appointees who are mostly appointed based on political considerations. Because of the political environment in which universities operate, scholarly publications which are critical of the government of the day are highly censored and discouraged. The major benefit derived from using OA journals is that it provides free online access to the literature necessary for research. This finding is in conformity with what Okoye and Ejikeme (2011) indicated that OA journals provide free online access to the literature necessary for one's research. It was also found that unavailability of Internet facilities is a major constraint to the use of open access scholarly publications. This finding is in conformity with what Suber (2013) stated that connectivity barriers keep billions of people, including millions of serious scholars, offline.

CONCLUSION

The main areas that an increase in OA content would influence, were discovery services and their improvement, Intra-institutional education and communication with research staff about OA and building and maintaining repositories. There does seem to be an influence towards the green route for OA which is the development and management of an active institutional repository and work is clearly underway in many institutions in the Asian region to develop and promote these within their own institutions. Scholarly publishing is a fundamental aspect of research dissemination and knowledge sharing process. Authors of scholarly publications come from diverse backgrounds of scholarly traditions and writing dispositions. It is the aspiration of every scholar to publish in top peer-refereed scholarly journals, normally of international standing. Information technology may make it possible for scholars from the region to more easily access scholarly publications and publish online. Considering that knowledge production requires collaboration, scholars from Asia should consider a collaborative approach to publishing. They can co-publish with scholars from other regions and with colleagues from within the region. The OA offers limitless possibilities for disseminating scholarly research to the international community. The wider internet connectivity is likely to improve e-publishing through collaboration in authorship on an international scale and sharing of equipment among scholars. In addition, with mounting pressure from users demanding access to electronic resources, this is bound to catalyze OA.

REFERENCES

- Arunachalam, S., 2003. Information for research in developing countries-Information technology, a friend or foe? *Int. Inform. Library Rev.*, 35: 133-147.

- Bailey, Jr. C.W., 2006. What is open access? <http://www.digital-scholarship.org/cwb/WhatIsOA.htm>.
- Bjork, B.C., A. Roos and M. Lauri, 2009. Scientific journal publishing: Yearly volume and open access availability. *Inform. Res.* Vol., 14, No. 1.
- Borgman, C.L., 2003. The invisible library: Paradox of the global information infrastructure. *Library Trends*, 51: 652-674.
- Borgman, C.L., 2007. *Scholarship in the Digital Age: Information, Infrastructure and the Internet*. MIT Press, Cambridge, Massachusetts, ISBN-13: 9780262026192, Pages: 366.
- Brophy, P., 2008. Telling the story: Qualitative approaches to measuring the performance of emerging library services. *Perform. Meas. Metrics*, 9: 7-17.
- Carr, L. and T. Brody, 2007. Size isn't everything sustainable repositories as evidenced by sustainable deposit profiles. *D-Lib Magaz.* Vol., 13, No. 7-8.
- Castells, M., 2004. Universities and cities in a world of global networks. Eighteenth Sir Robert Birley Lecture, City University, London, UK., March 17, 2004.
- Comba, V. and M. Vignocchi, 2005. New trends in scholarly communication: How do Authors of different research communities consider OA? Satellite Meeting No. 17, August 13, 2005, Oslo (Norway).
- De Beer, J.A., 2005. Open access scholarly communication in South Africa: A role for National Information Policy in the national system of innovation. M.Phil. Thesis, Stellenbosch University, South Africa.
- Dewar, J.A., 2000. The information age and the printing press: Looking backward to see ahead. *Ubiquity*, 10.1145/347634.348784
- Gadd, E., C. Oppenheim and S. Proberts, 2003. Romeo studies 3 how academics expect to use openaccess research papers. *J. Librarianship Inform. Sci.*, 35: 171-187.
- Guedon, J.C., 2008. Open access and the divide between mainstream and peripheral science. In: *Como Gerir e Qualificar Revistas Cientificas*, (In Portuguese).<http://eprints.rclis.org/0778/1/Brazil-final.pdf>
- Habib, A., 2009. South Africa: Huge journal profits hit universities. <http://www.universityworldnews.com/article.php?story=20091127122727576>.
- Harle, J., 2009. Digital resources for research: A review of access and use in African universities. <http://www.oerafrica.org/resource/digital-resources-research-review-access-and-use-african-universities>.
- Harley, D., S.K. Acord, S. Earl-Novell, S. Lawrence and C.J. King, 2010. Assessing the future landscape of scholarly communication: An exploration of faculty values and needs in seven disciplines. Center for Studies in Higher Education, UC Berkeley.
- Hirwade, M.A. and D. Rajyalakshmi, 2006. Open access: India is moving towards third world superpower. Proceedings of the 4th International Convention CALIBER-2006 on Dynamic Interoperable Web based Information Systems, February 2-4, 2006, INFLIBNET Centre and Gulbarga University, Ahmedabad, pp: 72-82.
- Houghton, J.W., M. Henty and C. Steel, 2003. Changing research practices in the digital information and communication environment. Department of Education, Science and Training, Canberra, Australia. http://vuir.vu.edu.au/456/1/c_res_pract.pdf
- Housewright, R., R.C. Schonfeld and K. Wulfson, 2013. Ithaka S+ R US faculty survey 2012. April 8, 2013, http://www.sr.ithaka.org/sites/default/files/reports/Ithaka_SR_US_Faculty_Survey_2012_FINAL.pdf

- Kennan, M.A. and F.T.H. Cole, 2008. Institutional repositories as portents of change: Disruption or reassembly? Conjectures and reconfigurations. *People Transforming Information-Information Transforming People*, Vol. 45, UNSW Australian School of Business Research Paper No. 1326812.
- Kim, J., 2006. Motivating and impeding factors affecting faculty contribution to institutional repositories. *Proceedings of the Workshop on Digital Curation and Trusted Repositories: Seeking Success*, June 11-15, 2006, Chapel Hill, NC.
- King, D.W. and F.M. Alvarado-Albertorio, 2008. Pricing and other means of charging for scholarly journals: A literature review and commentary. *Learned Publish.*, 21: 248-272.
- Maher, J.V., 2006. The Research University and scholarly publishing: The view from a provost's office. *Association of Research Libraries Number 249*, December 2006, pp: 1-11.
- Moller, A.M., 2006. The case of open access publishing, with special reference to open access journals and their prospects in South Africa. M.A. Thesis, University of the Western Cape.
- Mulligan, A. and M. Mabe, 2011. The effect of the internet on researcher motivations, behaviour and attitudes. *J. Doc.*, 67: 290-311.
- Nwagwu, W.E. and A. Ahmed, 2009. Building open access in Africa. *Int. J. Technol. Manage.*, 45: 82-101.
- Okoye, M.O. and A.N. Ejikeme, 2011. Open access, institutional repositories and scholarly publishing: The role of librarians in South Eastern Nigeria. *Library Philos. Pract.*
- Park, J.H., 2008. The relationship between scholarly communication and Science and Technology Studies (STS). *J. Scholarly Publishing*, 39: 257-273.
- Partha, D. and P.A. David, 1994. Toward a new economics of science. *Res. Policy*, 23: 487-521.
- Pelizzari, E., 2003. Academic staff use, perception and expectations about open-access archives: A survey of social science sector at Brescia University. <http://eprints.rclis.org/4408/>.
- Prosser, D.C., 2005. Fulfilling the Promise of Scholarly Communication: A Comparison between Old and New Access Models. In: *Die Innovative Bibliothek: Elmar Mittler Zum 65. Geburtstag*, Nielsen, E.K., K.G. Saur and K. Ceynowa (Eds.). Walter de Gruyter, German, ISBN: 9783110948769, pp: 95-106.
- Schroter, S. and L. Tite, 2006. Open access publishing and author-pays business models: A survey of authors' knowledge and perceptions. *J. R. Soc. Med.*, 99: 141-148.
- Shieber, S.M., 2013. Why open access is better for scholarly societies. *Proceedings of the 87th Annual Meeting of the Linguistic Society of America*, January 3, 2013, Boston, MA., USA.
- Suber, P., 2013. *Open Access*. MIT Press, Cambridge, ISBN-13: 9780262517638, Pages: 230.
- Swan, A. and S. Brown, 2004. JISC/OSI Journal authors survey report. Key Perspectives Ltd., Truro. http://www.jisc.ac.uk/uploaded_documents/JISCOAreport1.pdf.
- Swan, A., 2007. Open access and the progress of science. *Am. Scient.*, 95: 198-200.
- Tagler, J., 1996. Recent steps toward full-text electronic delivery at Elsevier science. *Serials Librarian: From Printed Page Digital Age*, 28: 171-179.
- Tijssen, R.J.W., 2007. Africa's contribution to the worldwide research literature: New analytical perspectives, trends and performance indicators. *Scientometrics*, 71: 303-327.
- Van Orsdel, L.C. and K. Born, 2008. Periodicals price survey 2008: Embracing openness. *Lib. J.*, 134: 53-58.

- Ware, M., 2006. Open archives and their impact on journal cancellations. *Learned Publishing*, 19: 226-229.
- Williams, S.P. and F.D. Lawton, 2005. Scholarship as socio-technical change: Theory, practice and praxis. *Proceedings of the 3rd International Evidence Based Librarianship Conference-Evolution of Evidence: Global Perspectives on Linking Research with Practice*, October 16-19, 2005, Brisbane, Australia, pp: 122-135.
- Willinsky, J., 2006. *The Access Principle: The Case for Open Access to Research and Scholarship*. MIT Press, Cambridge, Massachusetts.
- Xia, J. and L. Sun, 2007. Factors to assess self-archiving in institutional repositories. *Ser. Rev.*, 33: 73-80.