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# Promoting Open Access to Research in Academic Libraries

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## Introduction

"A commitment to scholarly work carries with it a responsibility to circulate that work as widely as possible: this is the access principle. In the digital age, that responsibility includes exploring new publishing technologies and economic models to improve access to scholarly work. Wide circulation adds value to published work; it is a significant aspect of its claim to be knowledge. The right to know and the right to be known are inextricably mixed. Open Access can benefit both" (Willinsky, 2010). Increasingly, this capacity to close the gap between developed and less developed countries through access to information becomes more important for educational, cultural, and scientific development. OA can foster information and knowledge sharing within research, educational, and scientific communities in traditionally economically disadvantaged regions (Canada, 2009). Based on the latest literature, this paper examines academic libraries' initiatives in promoting open access. It will also look at the obstacles and challenges faced in open access with specific reference to developing countries. First of all it would be suitable to appreciate the concept of open access.

## What is Open Access (OA)?

According to BOAIthe concept of Open Access refers to "[the] free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself" (BOAI, 2002).

The Bethesda Statement (2003) defines open access, where "The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship as well as the right to make small numbers of printed copies for their personal use".

The Guru of Open Access Harnad (2008) has described the characteristics of Open Access. "Information, which is Free, immediate, permanent, full-text, on-Line and accessible". Harnad suggests three main justifications of OA: "to maximise the uptake, usage, applications and impact of the research output of your university; to measure and reward the uptake, usage, applications and impact of the research output of your university (research metrics) and, to collect, manage and showcase a permanent record of the research output and impact of your university".

Peter Suber (2010) describes, "Open-access (OA) literature is digital, online, free of charge, and free

of most copyright and licensing restrictions". Suber also states that open access contents are not restricted only to peer-reviewed research articles, they can be in any formats from texts and data to software, audio, video, and multi-media. Although the OA movement focuses on peer-reviewed research articles and their preprints, OA can also apply to non-scholarly content, like music, movies, and novels, even if these are not the focus of most OA activists (Suber, 2010). Suber's definition is broad, it goes beyond scholarly publications.

Thus, Open Access has the following characteristics:

- It is free availability of scholarly publication.
- It is free of copyright and licensing restrictions
- Materials are available online or on the internet.
- Material is full text.
- Material can be accessed by anybody from anywhere without any discrimination.
- Material can be freely used by anyone.
- Open Access contents can be in any format from texts and data to software, audio, video, and multi-media, scholarly articles and their preprints.

However, it has to be taken into account that OA publications are not free of cost or cheaper than traditional scholarly communication. The costs of publication are shifted to other sources, like universities and colleges. For instance, some open access journals such as BioMed Central, operate on a model where a university or college pays a membership fee to subsidize the cost of publication. This model is particularly useful for institutions with prolific faculties (Giarlo, 2005).

So, it is free to readers, not to producers. Also it is not free of rights. The author grants permission for a broad scale use and reuse of information. The author is assigned the right to be properly and fully acknowledged and no permission is granted to change a publication or to distribute it for commercial purposes (Giarlo, 2005, Tilburg University, 2010).

There are two main approaches to open access: open access publishing, and self-archiving of articles in open access archives. There are different forms of open access archives, including institutional repositories and subject or disciplinary repositories (Morrison, 2006). After understanding the concept of open access it would be interesting to note how this movement came into existence.

## Emergence and Development of Open Access

Open access emerged in response to address the problem of escalating cost of scholarly and scientific journals, which had made their access restrictive. Three groups took initiatives towards open access: the Budapest Open Access Initiative (BOAI), Bethesda statement and Berlin Declaration. The Budapest Open Access Initiative (BOAI) took place in 2001, where the term "open access" was coined and the two strategies of Green OA (self-archiving) and Gold OA (open access publishing) were devised (Poynder, 2010).The "golden road" of OA journal publishing is where journals provide OA to their articles (either by charging the author-institution for refereeing/publishing outgoing articles instead of charging the user-institution for accessing incoming articles, or by simply making their online edition free for all). The "green road" of OA self-archiving is where authors provide OA to their own published articles, by making their own e-prints free for all (Harnad, n.d.).

Thus, the main motivations behind OA initiatives were: high subscriptions rates, which were difficult to afford, and the large price discrepancy between individual and institutional subscription rates. Consequently libraries ended up paying huge subscriptions for journals and they were becoming more restrictive. OA provides free, immediate, permanent online access to the full text of research articles for anyone, web-wide. The Open Access (OA) movement gained momentum in 1994 when Stevan Harnad set fire in the academic and publishing world through The Subversive Proposal, which called authors to deposit their work on internet Fire Transfer Protocol (FTP) servers (Cho, 2008, Gideon, 2008). In 1998 Dr John Willinsky founded the Public Knowledge Project (Public Knowledge Project, 2008), which was an international research initiative promoting publishing alternatives for scholarly journals, conferences, and monographs.

Another initiative was the Bethesda Statement on Open Access Publishing in 2003, which continued to promote a gradual transition to open access publishing within the biochemical community. It stated that "open access will be an essential component of scientific publishing in the future and that works

reporting the results of current scientific research should be as openly accessible and freely useable as possible. Libraries and publishers should make every effort to hasten this transition in a fashion that does not disrupt the orderly dissemination of scientific information" (Bethesda Statement on Open Access Publishing, 2003).

In 2003, the Berlin Declaration further emphasised on the Open Access to Knowledge and stated, "Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society. New possibilities of knowledge dissemination not only through the classical form but also increasingly through the open access paradigm via the Internet have to be supported" (Berlin Declaration on OpenAccess, 2003).

Other endeavours shaping the open access initiative are Organisation for Economic Co-operation and Development's (OECD) Declaration on Access to Research Data From Public Funding, 2004, as well as the International Federation of Library Associations and Institutions' (IFLA) Statement on Open Access to Scholarly Literature and Research Documentation, 2004 (Christian, 2006).

In 2005, Brazil proclaimed the Salvador Declaration on Open Access at the Ninth World Congress on Health and Information Libraries and urged governments to make Open Access its high priority and appealed to all stakeholders internationally to work together to avail scientific information openly and freely accessible to everyone (Declaration of Salvador, 2005). Thus open access that we see today has impetus from diverse international organisations.

According to the recent Directory of Open Access Repositories' statistics there are a total of 1943 open access repositories, of which 321 belong to Asia and 48 to Africa. Among these the most active is Japan with 133 open access repositories, followed by India (46), Taiwan (56) and Malaysia (12). Africa South Africa leads with 24 followed by Egypt (6) and Kenya (4). (OpenDOAR, 2011). Currently, there are 6463 journals in the directory (DOAJ a 2011).

The total number of Open Access journals continues to rise. As noted earlier there are now total 6463 journals in the Directory of Open Access Journals of which 2836 journals are searchable at article level and there are almost 600,000 articles. In developing countries, Brazil is on lead with 587 e-journals, followed by India (312), Japan (105), and South Africa (36) (DOAJ b, 2011).

## Open Access Benefits

Open Access provides numerous benefits including:

*Research and publication:* Through open access researchers have wider visibility and usage of their research findings. They have a significantly larger and more diverse audience. Increased exposure to research also increases citation rate. Open Access provides an avenue to connect with a global society more easily and researchers can publish without printing costs.

*Teaching staff and students:* By puttingrich and poor on an equal footing, Open Access provides free articles for teaching and learning.

*Benefits to author:* OA gives authors a worldwide audience larger than that of any subscription-based journal, no matter how prestigious or popular, and demonstrably increases the visibility and impact of their work (Willinsky, 2010, Suber, 2010).

*Benefit to readers:* Readers around the globe can have barrier free access to the latest literature and research findings.

*Benefit to Society:* Society as a whole benefits from an expanded and accelerated research cycle in which research can advance more effectively because researchers have immediate access to all the findings they need.

*Journals and publishers*: OA makes their articles more visible, discoverable, retrievable, and useful. If a journal is OA, then it can use this superior visibility to attract submissions and advertising, not to mention readers and citations (Suber, 2010).

*Funding agencies*: OA increases the return on their investment in research, making the results of the funded research more widely available, more discoverable, more retrievable, and more useful. Thus OA provides fairness to taxpayers by providing open access to the results of publicly-funded research

(Suber, 2010).

*Governments*: Government benefit from OA as funders of research and OA also promotes democracy by sharing non-classified government information as widely as possible (Suber, 2010).

*Citizens*: OA gives them access to peer-reviewed research, which is unavailable in public libraries, and gives them access to the research for which they pay taxes. OA accelerates not only research but the translation of research into new medicines, useful technologies, solved problems, and informed decisions that benefit everyone (Suber, 2010).

*Libraries*: OA solves the pricing and permission crisis for scholarly journals. OA also serves library interests in other indirect ways. Librarians want to help users find the information they need, regardless of the budget-enforced limits on the library's own collection. Academic librarians want to help faculties increase their audience and impact, and help the university raise its research profile (Suber, 2010).

*Universities*: Universities benefit from their researchers' increased impact and increase their visibility. OA reduces their journal expenses and advances their mission to share knowledge.

*Benefits to nations:* Open access incorporates local research into all interoperable network of global knowledge; increases impact of local research, providing new contacts and research partnerships for authors; removes professional isolation and strengthens economies through developing a strong and independent national science base ((Antelman, 2004, Nicholas & Rowlands, 2005, Giarlo, 2005, Canada, 2009, Willinsky, 2010, Suber, 2010).

Abukutsa-Onyango, 2010). In Japan the Ministry of Education, Culture, Sports, Science and Technology has encouraged Japanese university libraries to develop institutional repositories to promote sharing of knowledge throughout Japan and internationally (Cullen, 2009).

Thus, open access provides several benefits to researchers, educators, Journals, publishers, funding agencies, government and academic institutions around the world. It is an effective vehicle to information exchange between all countries. Let us now look at these benefits from developing countries' perspective.

## OA in Developing Countries

When we look at these benefits in the context of developing countries' resource implications, OA has immense prospective to impact and empower developing countries. With the availability of insufficient funding to libraries and institutions, this type of unrestricted access to information helps researchers in the developing world (Christian, 2008). Canada (2009) further stresses that considering the limited financial resources available; the potential for researchers, educators, and institutions in developing countries to benefit from open access is great. OA is important for future technological and economic development in these countries. Having better access in their own countries also provides the impetus to remain in their countries and contribute to further developing them rather than migrating to more developed countries. So, Open Access not only provides access to knowledge but could help to support development in developing countries (Canada, 2009).

Developing countries are taking several initiatives towards OA. This is evident from the increasing number of open access repositories. Scientists from Brazil, China, Ethiopia, India and South Africa have set guidelines for developing countries to freely access publicly funded research (Noronha, 2006). BioMed Central had hosted a conference on open access publishing at Kenyatta University in Nairobi, Kenya in November 2010 to discuss the benefits of open access publishing in an African context. The conference discussed several pertinent issues including, how open access to research can strategically benefit African universities?, the international open access landscape, expanding access to information technology in Africa, Case study of an open access journal, Kenyatta University and AJFAND journal, Why, how and by whom? A proactive approach to open access in Africa(BioMed Central, 2011).

All of these benefits associated with open access have led academic libraries actively in the open access movement.

## Academic Library Open Access Initiatives

Academic libraries are positioned to be at the forefront of the open access revolution. Numerous trends towards open access publication have emerged over the course of the past few years, confronting academic libraries with new challenges and presenting promising opportunities (Giarlo, 2005). The open access movement has turned to libraries as a haven for solutions. As published content grew more expensive and restricted, and the internet made the distribution of ideas relatively cheap and easy, avoiding the publisher as a "middle man", open access became an obvious option for libraries. Today libraries are becoming alternative publishers through institutional repositories (Cho, 2008).

Open access is especially important for research and academic libraries since all academic institutions are research-intensive and a library's main mandate is to support the teaching, learning and research activities of their parent institutions. All three activities are research-based. Due to yearly budget cuts, inflation, and the high cost of journals and books, libraries failed to fulfil their parent organisations' information needs fully and they keep on evolving to provide customer-focused services. Open access is the most recent undertaking to support institutional research activities by providing information cost and time effectively at the right time in the right format. Open Access has numerous impacts on academic libraries: economic, technological, collection development and management, reference services, information literacy, and peer evaluation. Open access is a prerequisite to survive and thrive for academic libraries (Giarlo, 2005).

In Malaysia, academic libraries, especially university libraries are the pioneers of open access initiatives. These libraries have initiated innovative services to their researchers by creating open access institutional repositories (IRs) for a wider dissemination of scholarly literature by their own community members (Kiran & Yip Ping, 2009).

OA is a paradigm shift from the traditional model of scholarly communication to open access. It has a great impact on academic libraries. Due to a strong connection between open access and the mission of libraries, it is not surprising that libraries are involved in a wide range of Open Access-related activities (Swan & Chan, 2009, C). As a lead in the open access campaign, on September 1, 2009, the Digital Access to Scholarship at Harvard (DASH) was launched as a University-wide, open-access repository. More than 350 members of the Harvard research community, including over a third of the Faculty of Arts and Sciences, have jointly deposited hundreds of scholarly works in DASH (Harvard University Library, 2009). Since then open access is growing in leaps and bonds in academic libraries.

A recently released guide from the Research Information Network acknowledges that in the very long term, open access may help to reduce the pressure on library budgets, but for the next three to five years at least, open access initiatives will continue to represent additional burdens on libraries, while the costs of running repositories, or paying publication fees, are not being offset by any significant reductions in subscription costs for scholarly journals (Information Today Europe eNews, 2010). Academic libraries have come up with three major open access initiatives: Online public access catalogue, Institutional repositories, and Open Access Journal Systems.

## Open Source OPACs

With an open source OPAC libraries can now take control of the look, functionality, and design of their public interface. With the advent of Web 2.0 library staff can now make timely changes in OPAC to accommodate specific needs unlike the previous version of OPAC (Wallis, 2009). Online Public Access catalogues are now part of almost each academic library today.

However, the most popular initiatives are institutional repositories and Open Access Journal Systems, which will now be discussed in detail.

## Institutional Repositories

Institutional repositories (IRs) are also known as digital repositories, or open access repositories. There are four types of repository publications: the subject-based repository, the research repository, the national repository system and the institutional repository. IRs are widely seen as the fastest route to open access for the widest range of scholarly and research literature, since they allow authors to

publish in their choice of journals while providing the broadened access without pay barriers, the hallmark of open access publishing. It seems to be the best of both worlds scholars retain their ability to publish in the most prestigious journals in their field while simultaneously breaking down barriers to the wide dissemination of their research (Grundmann, 2009). Open Access repositories (or archives) are digital collections that make their contents freely available over the Internet. These digital repositories collect the research output of the members of a university's research community and support the archiving and long-term preservation of the institution's intellectual output (Swan & Chan 2009, C). Mostly institutional repositories are hosted within academic libraries around the world to digitally collect and preserve academic papers and documents in order to make them freely accessible to the students, faculty and the public.

An IR provides numerous benefits to the academic institution, individual authors and libraries. An academic institution benefits by increasing its visibility and prestige; it is a tool to market the institution to attract high quality staff, students and funding; a venue for the centralisation, storage and long term curation of all types of institutional output, it supports learning, teaching; and research to attract a global audience; it is a way of maximising availability, accessibility, discoverability and functionality of scholarly research outputs at no cost to the user (Johnson, 2002, Pickton & Barwick, 2006, Lyte et al, 2009, Jain, 2010).

An IR offers several benefits to authors, such as: increased dissemination and impact of scholarship; enhanced professional visibility due to broader dissemination and increased use of publications; greater security and longer term accessibility of material compared to a personal web site; a central archive of a researcher's work; and possibility of large scale collaborations (Johnson, 2002, Bankier and Perciali, 2008, White, 2009, Lyte et al, 2009, Jain, 2011). An IR provides increased visibility and institutional presence to librarians. Through IR librarians have the opportunity to work hand-in-hand with academia. By virtue of being subject specialists, librarians are ideal to work more closely with faculties to promote the repository. Libraries can benefit by leading the way and providing the skills required to develop and run an effective IR. For example, they can lead in copyright checking, metadata creation, authority control etc, if not championing the entire project (Walters, 2007, Daly & Organ, 2009, Bankier, Foster, & Wiley, 2009, Jain, 2010). IRs are helping libraries reinvent themselves and subject librarians can act as change agents in support of the adoption of IRs. An IR can be beneficial to libraries in numerous ways such as providing opportunities for increased visibility and institutional presence, and working hand-in-hand with academia.

The following figure displays the current repositories around the world.

Figure 1: Proportion of Repositories by Continent - Worldwide (Source: OpenDOAR, 2011).
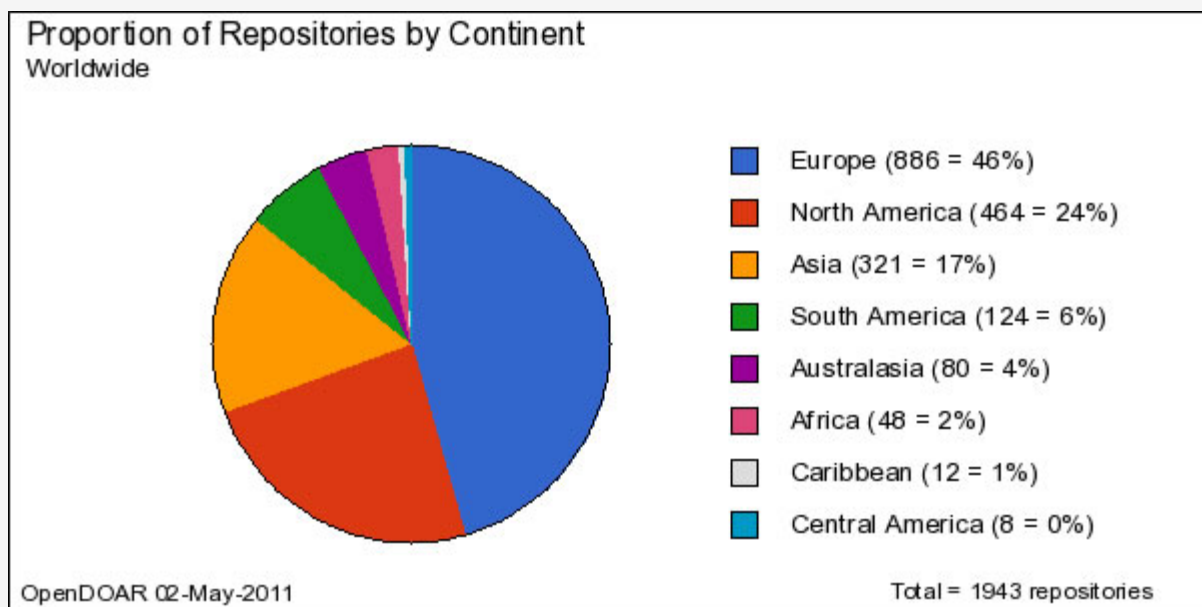


In spite of the increasing interest in institutional repositories by academic institutions and recognition that publisher policies make widespread green open access currently achievable, faculty deposits in institutional repositories remain low (Grundmann, 2009). This reluctance can be attributed to various factors such as misconceptions and a lack of understanding of institutional repositories, copyright

issues, publisher policies, lack of incentives, lack of respectability for IR articles, working culture and self-archiving which is a time-consuming and labour-intensive activity.

These obstacles bring in potential challenges and obstacles in setting up the IRs: the cost of setting up and maintenance, generating IR contents, commitment from senior management, copyright management, working culture and policy issues, labour-intensive, benefits not marketed and appreciated adequately and promotional challenges. Despite negativity towards IRs, it remains clear that organisations are more and more realising both the importance and added value benefits of the central concept behind Institutional Repositories (MIRE, 2009).

To make IRs more wide-spread and successful the roles and responsibilities need to be assumed by different categories of people in different institutions. Librarians need to play a critical role in developing IRs, by understanding faculty needs, simplifying the deposit process and promote IR benefits to faculty, students and other stakeholders and train them. An author's key role is to submit knowledge in the form of research outputs in their institutional repositories. Institutional roles include introducing mandatory policy for submitting research work and formulating other policies for the operational management of IRs.

## Open Access Journal Systems/Journal Repositories

Open access journals are another major initiative towards open access.: open access can be achieved by launching open access journals or converting existing journals to open access. The best-known open Access software is the Open Journal System. Some open access journals charge a document management fee from authors (Abukutsa-Onyango, 2010). Open Access journals allow access to freely read, download, copy, distribute and print articles and other informational material. They are peer reviewed. Open Access to research journals and literature accelerates research and enriches education and knowledge sharing between more developed countries and less developed countries. Because of constantly rising costs, Open Access journals are more sustainable than non-open access journals. On Open Access, journal costs are likely to drop. Several libraries have launched Open Access journals, for example the University of Toronto's Journal Hosting Service, the Canadian Online Journal of Queer Studies in Education; Clinical & Investigative Medicine is the official journal of the Canadian Society for Clinical Investigation, the University of Toronto Journal of Undergraduate Life Sciences (JULS) (Stranack, Bird, Devakos, 2008).

Increasingly Open Access is being embraced in developing countries, such as in Latin America, and in particular Brazil, where much of the national research literature is distributed through Open Access journal services. Two such resources are Bioline International, a Brazil-Canada initiative that assists publishers in developing countries, and SciELO (Scientific Electronic Library Online) that is a collaboration of publishers in Latin countries (Abdulrasak, 2009).

Open Access Journal Systems are now well established in developing countries. For example, Bioline International is a collection of over 70 OA journals published in 17 different countries; a Brazil/Canada non-profit initiative, established 1993. MedKnow Publications – a collection of 59 medical journals published on behalf of societies and associations, mainly in India (Abukutsa-Onyango, 2010).

In Africa South Africa, Kenya and Nigeria are taking a lead and action in its efforts to promote Open Access. The African Journal Archive is an integrated full-text electronic journal retrospective repository published in Africa, in the Sciences, Social Sciences and Humanities. It has currently 46 South African journals, which are searchable individually and provides immediate access to the PDF versions of 6 000+ full-text articles (Sabinet, 2011). The total number of Open Access journals continues to rise. As noted earlier there are now total 6463 journals in the Directory of Open Access Journals of which 2836 journals are searchable at article level and there are almost 600,000 articles. In developing countries, Brazil is on lead with 587 e-journals, followed by India (312), Japan (105), and South Africa (36) (DOAJ b, 2011).

## Barriers to Open Access in Developing Countries

In spite of various benefits, developing countries' road to OA has not been smooth. OA confronts developing countries with a variety of challenges and barriers, such as:

*Internet and information and communication technologies (ICTs):* In developing countries, due to the high cost of availability of ICTs and connectivity and poor telecommunication infrastructure open access is often problematic. This makes the actual use of any open access journals, repositories, and implementation of software more difficult (Giarlo, 2005, Canada, 2009). It has been recently observed by Dicovitsky (2010). Although developing countries have made significant gains in access to mobile technology and infrastructure for information and communication technology (ICT) in the last few years, they are still struggling to achieve wide access to high speed broadband services. At the same time, price drops for such technologies are not benefitting the world's poorest. This creates a digital divide between the developing and developed world.

*Funding to build and upgrade the internet infrastructure:* Adequate funding to build, upgrade and maintain ICT infrastructure is a problem in many developing countries. For example, because of the poor ICT infrastructure in academic and research institutions in developing countries like Nigeria it is difficult to sustain the development of institutional repositories. Upgrading ICT facilities require enough financial support (Christian, 2006, Christian, 2008, Canada, 2009).

*Inadequate advocacy and misconceptions:* This is another setback in developing countries. There is a lack of awareness and misconception of the existence and benefits of open access publishing. At the University of West Indies (UWI) in Trinidad only 23% staff were aware of open access journals and 8% were aware of digital archives and repositories. As an example of misconceptions of open access sources, one lecturer's publication in an open access journal was refused to be considered for his promotion by the University's promotion committee, since he had paid money to publish in open access journals, which is the usual way to publish in an open access journal (Papin–Ramcharan and Dawe, 2006). There is empirical evidence that knowledge of open access institutional repositories is very low among the major stakeholders including lecturers, researchers, librarian and students in Nigeria (Christian, 2008). Effective advocacy and promotion is critical for the successful implementation of the open access movement. Especially, academics accustomed to the well established routines of publication in academic journals of known prestige, with effective systems of peer review and dissemination, see little benefit in alternative methods of access to the same material (Cullen, 2009). In India both the top-down and bottom-up approaches are used to create awareness of open access. For instance, Indian Medlars Centre promotes its e-journals, database and e-print archive through talks at local and international fora, local workshops, internationally through its association with Bioline International and advertises its services on its website and in the print version of the journal (Fernandez, 2006). In Lithuania awareness raising events are organized in close collaboration with the Lithuanian Academic Libraries Network, the Ministry of Education and Science, the academic community, and the Lithuanian Academic Publishers Association. All the journals published by the Academy of Sciences in Lithuania put their full text articles on the web (EIFL, 2010). There are also instances where subject librarians were reluctant to promote IRs because they perceive them currently to be less useful than other information sources and do not perceive them as being fully developed (Revell & Dorner, 2009). Subject Librarians in academic libraries should play a key role in the promotion of IRs and direct students and academics towards OA resources. If a library does not subscribe to a particular journal, often it does not occur to the librarian to refer to institutional repositories databases.

*Managing intellectual property rights through alternative publishing agreements*: This is another issue that developing countries are confronted with. For instance, in 2008, the International Institute of Tropical Agriculture (IITA) in Nigeria developed an institutional repository, but the repository could not go public due to some copyright issues. Copyright in research works conducted by the researchers at the Institute was signed away to the commercial journal publishers for the publication. Curiously, the Institute lost the right to make public research works it has funded and now had to negotiate the right from the journal publishers (Christian, 2008). This has been a debatable issue for a long time; there is a need standardisation and proper adherence of an alternative publishing agreement.

However, in spite of all these challenges and obstacles developing countries are still confronted with, there are positive indications to open access initiatives. Reflecting back on the research information related problems faced by developing countries Prof Abukutsa-Onyango (2010) from Jomo Kenyatta University of Agriculture & Technology said there had been two-fold problems in the past: inability to afford subscriptions to journals and inability to integrate national research into the global knowledge pool. Two routes to open access: Institutional Repositories and Open Access journals are both proven mechanisms for closing the information gaps in ways that are appropriate for low income countries.

Developed countries are taking initiatives to solve some of the problems. For example, the One

Laptop per Child (OLPC) initiative is to provide school-age children of developing countries one connected laptop to assist in learning for those children who have limited or no access to education (Christian, 2006, OLPC, 2009). Another positive initiative took place in June 2010 when a panel of experts met at Congress to discuss "Open Access: Transforming research in the developing world". They explored the potential impact of Open Access on the developing countries. Access to knowledge is fundamental to all aspects of human development, yet access to academic publications is severely restricted for many developing countries. As well, the prohibitive cost of publishing and distributing journals in the developing world means much of the research done there remains 'invisible' to the rest of the world (Harnad, 2010).

## Conclusion

From the ongoing debate it is apparent that academic libraries are ceaselessly striving to be involved in scholarly publishing to bring scholars together around the world through open access. There are many benefits of open access. However, in spite of many positive indications, developing countries are still lagging behind in achieving its full objectives. The noble objective of open access will not be realised if scholars in developing countries merely constitute "active consumers" and "passive contributors" under this initiative - reading only research works and publications by scholars and academics from developed countries published in the open access journals and archives (Christian, 2006). There are numerous problems in the realization of the full objective of open access in the developing world. These need to be addressed to make knowledge and information readily and widely available to people irrespective of where they live.

## Recommendations

The paper makes the following recommendations:

- *Librarians in academic libraries* need to direct students and academia towards open access resources;

· Academic Librarians have a critical role in the comprehensive promotion and publicity of the benefits of open access to the faculty and all other stakeholders;

- *Governments in developing countries* should fund more research projects in order to enable researchers to participate actively in the open access movement by contributing through their research work;
- Governments in developing countries should reduce the cost of ICTs to make open access more approachable;
- Governments should improve internet connectivity, the backbone of the open access and the telecommunication infrastructure to realize the real purpose of open access.
- *Organisations in developed countries* should sponsor more research projects in developing countries to encourage more scholarly research and make a positive impact on open access publishing.
- *Academic institutions in developing countries* should assist in payment of author's fees to publish in open access journals.
- All academic institutions should use both top-down and bottom-up approaches to advocate open access and eliminate the misconceptions associated with open access.
- There should be a policy to recognise open access publications in promotion and tenure evaluation.
- There should be a provision of clear policies on ownership, IR contents, quality standards, copyright issues and related matters.

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