

Open Access Technology in India: Opportunities and Challenges

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“The time has come to create a second wave of institution building and excellence in field of education, research and capability building so that we are better prepared for the 21st Century”

Dr Man Mohan Singh,
Prime Minister, Government of Indian Republic
(National Knowledge Commission, 2007,1”

Abstract

Emerging the concept of Open access the traditional libraries have been transformed into digital libraries based on web technology and net working system, providing free access to scholarly literature and research material over the internet. Due to this development only its role has expended and format has changed. Libraries are supposed to be a local gate way to world’s knowledge. This consideration has created many challenges and problems before the libraries and it become difficult to manage and coordinate the system in changed technical pattern of working and system so that its mandate is intact. Such transformed libraries are having and facing crucial problems related to quantitative and qualitative aspects. Though problems have been solved at considerable extent and challenges have also been met out at some extent even then it is presumed that the further is uncertain but bright.

Key Words: Open Access Archives, Scholarly Communication, Digital library, Web based, Internet connectivity, free access, Peer review, Complex process, Net work information economy, India.

Introduction

The Internet, the Web, and related digital publishing technological developments have changed the traditional pattern and system of library management & functions into digital form of library, the centre of resourceful study, learning, preserving and disseminating of updated knowledge. Through the internet based communication technology a new concept of “Open Access” emerged which aims at providing free access to scholarly literature and has gained enormous momentum in the recent years. The Open access literature is “Online” and is scholarly and royalty free, which means that scholars are not paid to write journal articles but for publishing text books monographs or other publications they are paid for. Suber called it “royalty producing literature. Banker also endorsed it “net worked information economy.”¹ This concept is generally accepted due to easy availability, readability, affordability and accessibility. Through this electronic web based system readers can reach the any part of global world easily at very low cost and linking. In this way it is widely considered boon to library users and for higher education system with minimal restrictions. But it is a very complex process having many of challenges and practical problems like availability of trained man power, IT experts, collection management, paucity of funds for acquiring necessary tools, kits and facilities. The main problem in lack of coordination among library managers or so called librarians and technical experts etc. Despite of all challenges and problems librarians in the world are taking a central role in acquiring of knowledge through this notable movement.

Meaning and Definition of Open Access

Open Access is a concept where the results of research are freely available to public. In fact it is electronic form of scholarly communication through web and internet technology. It involves quality knowledge through the peer review process and disseminating. It freely and economically provide all required updated study materials at any time and at any place in the world without any restrictions and barriers, so imposed by publishers. In this regard Charles W. Bailey² explained that “Conventional free-based publishing models fragment world wide scholarly journal literature into numerous digital enclaves protected by various security systems that limit access to licensed users. Needless to say, there are many challenges involved in trying to achieve this bold vision. Without question, Open Access has significant implications for libraries, especially academic libraries.” Peter Suber³ defined it movement in his “Timeline of Open Access Moment”. According to him, “Open access literature is simple digital, on line, free of charge and free of most copyright and licensing restrictions. We could call it “barrier Free access “The term Open Access was first properly defined at Budapest Open Access Initiative⁴ meeting hold in early December 2001 and was made public in February 2002. The key theme of this meeting is “The literature that should be freed accessible on line. Primarily, this category encompasses their peer reviewed journal articles. There are many degrees and kinds of wider and easier access to this literature on the public internet without financial, legal or technical barriers.” In April 2003 refined definition of Open Access declared in Bethesda Statement on Open Access publishing. In this statement it is

stated that an Open Access work meet two criteria – (i) The authors and copy right holders grant to all users a free irrevocable world wide right of access as well as the right to make small numbers of printed copies for their personal use (ii) A Complete version of the work and all supplemental materials to enable open access unrestricted distribution and long term archiving”.⁵ According to this definition open access is a property of individual work of community standards for responsible use. The Berlin Declaration 2003.⁶ is very similar to the Bethesda statement with only minor additions and word changes. In Its definition the authors and right holders grant to all users a free, irrevocable, worldwide, right of access. Suber refers these definitions of open access as the BBB definition of open access⁽⁷⁾

Now the concept of Open Access, as defined in above declarations, is clear that open access literature is freely available on line with unpaid and scholarly royalty free. The BBB definition excludes text books, monographs or other works that scholars paid for and bear affordable minimum restrictions. Suber has considered such open access as “royalty-producing literature.”To a large degree, open access is a reaction to multifunction communication system. In consideration of effective globalised knowledge and universal expansion many of its leaders strongly reflected their concerns and perceptions.

Objectives

As modern Indian higher education is passing through the phase of information revolution and library functions and management in India are ruttred and regulated through new technology of open access system based on information technology now a days. Each and every library whether central library, university library or college library, it become necessary to know what problems and challenges are faced by Indian libraries after adopting new technology. Keeping this view for the betterment of smooth library working this project was undertaken. More over to compare the difference between paid on line journals and free on line journals on specific field of knowledge especially technical education it is felt necessary to assess the position at its primary level so that the same may be rectified at early stage and this new technological system of working may be fruitful, as the library and information network are playing a vital role through resource sharing.

Methodology

The study examined the extent of researchers’ appreciation of open access scholarly publishing. It discussed the opportunities and the benefits of open access to scholar’s countryside. Challenges of OA were discussed and solutions suggested. For this purpose of research a descriptive and comparative method was adopted. A survey was conducted and metropolitan city networks like Calcutta library network (CALIB), New Delhi library network (DELNET) etc. The relevant information and data were collected from the related institutions, and classified them in different mode of study and research like diagrams and tables etc; were set to analysis the real situation.

The data gathered from the different source, where open access system has been adopted, was analyzed to understand the information scenario with respect to the open access.

With the development of OA movement in India, OA resources, mainly OA journals and OA repositories, have been an unprecedented development. These resources not only affected the academic system of libraries but also brought new issues to the management of libraries. Libraries are facing challenges on bibliographic control and long term preservation of OA resources. This study describes a delivery, management and access model for e-print and open access journal. Open access scholarly research material takes two forms- e-prints and open access journal articles.

Opportunities of Open Access

Open access has many opportunities for all stakeholders. According to Suber (2004) OA provides worldwide audience. It gives barrier free access to the literature to the readers according to their need. It increases their convenience, reach, and retrieval power. OA is very helpful to the librarians who want to help users. Open access solves the pricing crisis for scholarly journals. It helps the University in raising its researches profile. OA provide opportunities to the Universities in reducing their expenses for journals and advances their mission to share knowledge. It increases the visibility of their faculty and institution. OA increases the return on their investment in research, making the results of the funded research more widely available, discoverable, retrievable and more useful. It helps the citizen to access to peer-review research. A growing number of studies have conformed that an OA article more likely to be uses and cited then one behind subscription barrier. According to Cetto (2001) OA goes beyond the academic circle and spreads the wings to other areas. He stated that librarian believe that OA promises to remove both the price barriers and the permission barriers that undermine library efforts to provide access journal article.

The Difficulty of Assessing Open Access Impact

After analyzing the definitions of open access it is clear that open access is a result of the internet and through “gold road and green road” it could become universal but simultaneously this fact came out that there is disagreement over the removal or imposition of price barriers and permission barriers to achieve open access. This contention made this system more complex and challenged concept with practical problems.

Though there are so many advantages of this simple web based model of scholarly communication even then it can not be accepted as problem less system facing no challenge. In 2006 Harnad raised one question about the limited progress of open access. According to Harnad” why do we get the impression that it is taking a long time to achieve a 100% Open access while it is well known by authors, readers, research scholars and IT managers.” It is struggling to over come the predominance of commercial publishing houses. Due to this problem many research proposals and projects could not get chance to come over publishing platform, as it is reviewed by

very few people for approval, while they might be very helpful for promoting the research, development and production. This is big problem and grand challenge before open access, so provided by research institutes or leading publishing houses. It is due to the non formulation of uniform policy around the countries. Regarding the typology of open access it can be marked difference among those who are free to consult and free of charge for readers and authors and those who are demanding payment for publishing. This can be seen in the following table showing the countries publishing Open access journals, in absolute numbers (2013)

S.No	Country	Titles
1	United States	1235
2	Brazil	922
3	United Kingdom	627
4	India	597
5	Spain	512
66	Egypt	456
7	Germany	348
8	Romania	302
9	Italy	288
10	Canada	273

Source: DOAJ

The reason behind all this odd is the situation of developed and undeveloped technology and the financial position in the respective country. The United States of America is far ahead from the others because of its sound financial footings and having well developed technology, while others are far behind and are looking forwarded to United States even developed United Kingdom and Germany are far behind. Here it is worth while to mention that creation of journal is not so difficult but it is very hard cord task to keep them preserved and intact for so many years. In this way achieving economic sustainability is another fundamental challenge for open access journal.

In brief it can be considered that these challenges relate to collection management, knowledge organization, digital preservation, online searching, content and knowledge management. These challenges can be handled effectively by competent library personal. The information professionals can also play a prominent role in solving the problems and over coming the challenges by activating their positive mind set and pertinent skill.

Open Access Initiatives in India

Importance of open access achieves and system of scholarly communication has been realized by library professionals in India. By the late ninety this movement knocked the door of Indian libraries and Indian research organizations. By 2003 it was advocating by both government and private sector for switching the system and

mechanism of open access, resultant that many institutions like Indian Institute of Science (IISc) Bangalore, INFLIBNET Centre Ahmedabad, Documentation Research and Training Centre (DRTC) Bangalore have come forward in this field. Besides of these a number of other national net works and various library networks have also been developed including National Information Centers Network (NICNET), ERNET (Education and Research Net Work) Developing Library Net work ((DELNET) etc. The INFLIBNET and DELNET are engaged in compiling Union Catalogs, creating various databases of experts, providing training to library staff etc.

Specialized Network in Metropolitan Area in India

Name of the Network	Year of Establishment	Sponsored by	Services
ADINET	1984	NISSAT, DSIR till 2003 (100 Lib) Ahmadabad	<ul style="list-style-type: none"> • Database of current periodicals • Current Contents for Library and Information Science (CUCOLIS) • Training Programmes • Free Listing of qualified Librarians in ADINET website (Register Online) <p style="text-align: right;">(Saturday, April 19, 2014)</p>
BONET	1994	NISSAT & NCST, Bombay	
BTISNET	1986-87	DBT, Delhi	<ul style="list-style-type: none"> • Communication among people, projects and institutions engaged in the biological research and applications. • Organization, access, search and retrieval of biological • Analysis and interpretation of the biological data through the computational approaches including visualization, mathematical modeling and development • Training of users / developers etc
CALIBNET	1992	NISSAT, DSIR, Calcutta	
CSIRNET	-	CSIR(Commission Agency- NSCT, Bombay DST, Delhi	
DELNET	1988	Initially by NISSAT, DSIR now NIC Delhi	<p>DELNET Databases</p> <ul style="list-style-type: none"> ▪ Retro-Conversion ▪ Reference Services ▪ Professional Training etc.
DESINET	-	DRDO, Delhi	
ERNET	1986	DOE, Govt. of India and UNDP Delhi	<p>In tune with the mandate ERNET is providing four types of services, namely, Access Services, Application Services, Hosting Services and Operations Support Services to all Educational and Research Community of India.</p> <p>ERNET provides access to its network through various connectivity options. Application services include E-mail hosting, domain registration, MPLS VPN. It also provides Web Services having state of art of Data Centre.</p>

INFLIBNET**Information Networks (Sect oral): ERNET, VIDYANET, OPNET, BTISNET, DESINET**

The IISc Bangalore is one of the oldest Open access channels in India having full text research literature in bulk among Indian Institutional repositories. Institute and laboratories of CSIR and Indian council of Medical Research earned the name in providing world wide access to their research literature. Indian researchers have published more than 43,400 papers in over 4,600 journals in 2009 as shown in following table –Science citation Index Expanded access on 1st September 2011

Journal Category	No. of Journals With %	No. of Papers With %	Sum of citations with %	Citation Per paper (CPP)
Non OA Journal	4158 (90.33%)	36577(84.12%)	105314 (92.29%)	288
OA Journal	445 (9.67%)	6904 (15.88%)	8794 (7.71%)	127
Total	4603 (100%)	43481(100%)	1, 14,108 (100%)	262

The proportion of papers published by Indian researchers in OA Journals is considerably higher than the world average. Among the top 25 publishing countries, India ranks 12th for the overall number of journals. At present there are more than 150 Open access journals in India which are mainly initiated by six journal publishers namely, Indian Academy of Sciences, Indian National Science Academy, Indian Medlars Centre of National Informatics Centre, Medknow Publications, Indian journal.com and Kamla-Roy Enterprises,(10) presently there are 25 institutional archives in India which are registered in the Registry of Open Access Repositories (ROAR)(11) the acceleration of OA movement is in progress and at the fast pace of progress with encouragement results to transform the unequal society into progressive knowledge-based society.

\Problems and challenges coming in the way of Open access :

In India most of the libraries are governed and functioning in government sector being a state subject and coming under the preview of different apex agencies. Due to this there might be administrative, bureaucratic, financial and budgetary constraints. Managerial problems may also be faced by library & IT professional due to delayed procedure. Lack of coordination and cooperation among library managers, government officials and IT professional is also a very big problem one of the major problems faced by library and information services (LIS) sector in India is lack of bibliographic control at national level which causes duplication in research. Apart from these there are many more problems which can be summarized as-

- Lack of adequate trained man power for library management and for implementing & maintaining IT system.
- Poor resource allocation for infrastructure improvement.

- Financial constrain due to lack of funds and its timely allocation in sufficient requirement.
- Lack of national policies promoting IT & library system and services.
- Monopoly of publishers quoting exorbitant rates to grant electronic resources for research.

Though there are other more problems and challenges in Indian System of OA even then LIS sector in India got remarkable achievement efforts have been made to set up the electronic information sources. INFLIBNET, Ahmadabad, ERNET, CALIBNET, Kolkata, DELNET New Delhi etc. have developed net work National Level regional level to deploy information and communication technology. These networks especially INFLIBNET and DELNET are engaged in over coming these challenges. They are not only compiling union catalogs, creating various data based of experts but also providing training to library staff. In this context Rajshekhar (2003) told that to meet these challenges and to generate a national R&D resource base, on open access approach in line with the Budapest open Access Initiative is being promoting⁽¹²⁾

To over come the problem of financial crunch and the rising costs of journals, librarians have formed consortia to subscribe all the required journals and databases. FORSA (Forum for Resource Sharing in Astronomy) & NISCAIR (National Institute of Science Communication & Information Resources) are well known consortia. Recently libraries and research organizations have come up with their initiatives and programs for digitalization and preservation of India heritage present in the form of books, manuscripts, art and music. In this regard the National Mission for manuscripts has taken a step to save the most valuable, intellectual property of cultural inheritance. In this way steps have taken not only to overcome the problems but to save the valuable literature and property of cultural heritage. To break the monopoly of publishers the Council of Scientific and Industrial Research (CSIR) has created an “Open access repository” of its own. In this regard R.R. Hirwani head of CSIR unit spoken at National Conference. “For granting electronic access to research resources, the plan is to creat an Open access repositories of CSIR’S Own papers and help other laboratories with copies of papers from journals subscribed by them⁽¹³⁾ This is suppose to be a big initiative in overcoming this serious problem.

Conclusion

The development in information technology has brought radical drastic and very creative changes in the scholarly communication. It has given a concept of “Open Access” which is considered, as a boon for accessing the study and research material. Last three decades can be named as the decades of open access and last ten years this movement has gained considerable attention and provides traction to move further. It has become the most successful scholarly publishing reform movement in modern time. Despite of many up and down it has faced many problems and challenges due to some miss conceptions and perceptions. Open access has struck a sympathetic cord in the library community. The serials of crises have come in its way but cautions attitude

of scholars and researchers have not only retain attract the attention of scholars and library users but created a positive environment due to these efforts it has been taken in to consideration that open access movement is not to support the only solution to the serious problems that librarians face in its working and system as it is very Important one and need a strong support for its success. As open access has overcome its initial break and is running in a consolidation stage it will improve and simply by the system of scholarly communication in coming period and will be more useful and fruitful. In this regard the cements of Iryan Kuchma⁹ gives energetic boost to library lovers, research scholars- “OA not only plays a crucial role in disseminating scientific knowledge at a low cost making its more accessible and more visible locally and globally, but also plays on important role in preserving indigenous knowledge to enrich the new generations. “Open access to research findings can be provided by two ways: by publishing the papers in OA journals (the gold rute) and by placing the full text of the papers along with metadata in interoperable OA archives (the green rute). Generally it is believed that the OA archives rute is the deal, especially for developing countries. Indian researchers and scholars are also using OA achieves in getting their full text papers published. It appears that interoperable institutional repositories become very famous preferable archives among Indian Institutes like IISC, NCSI, etc; as it is considered as problem free model. The Indian Academy of sciences has recently set up a repository for papers by all its fellows. As of to-day i.e. by 2012-13 more then papers/ documents were deposited. CSIR has decided to setup repositories in each one of its more than 35 laboratories. India has set up OA operational examples and methodologies for the developing countries.

We must accept the computer. We must derive all the benefits it is capable of giving us.

Dr. S.R. Ranganathan'

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