

Open Access and its Impact on Library Resources and Service

Amit Anand

UGC NET (Lib. Science) Part time Teacher, P.G. Department of Library & Information Science, T.M.B.U Bhagalpur, Bihar

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ABSTRACT

The concept of open access evolved during 1991 due to the realization of the need to facilitate scholarly communication. Open access (OA) is a set of principles and a range of practices through which research outputs are distributed online, free of cost or other access barriers. 'Open Access' to scholarly communication is viewed as a mechanism to address escalating journal prices, and as a means of circumventing growing limited access to the increasing volume of research literature. Other reasons for a move to 'Open Access' is the conviction that publicly funded research by rights should be more accessible to the taxpaying public; digital divide between developing and developed world should diminish, that access to research by and in the developing world should be greatly improved; and that researchers at poorly funded institutional libraries will have increased access to the research literature. The main focus of the open access movement is "peer reviewed research literature." Historically, this has centered mainly on print-based academic journals. Whereas conventional (non-open access) journals cover publishing costs through access tolls such as subscriptions, site licenses or pay-per-view charges, open-access journals are characterized by funding models which do not require the reader to pay to read the journal's contents or they rely on public funding. Open access can be applied to all forms of published research output, including peer-reviewed and non peer-reviewed academic journal articles, conference papers, theses, book chapters, monographs, research reports and images. Since the revenue of open access journals is earned from publication fees charged from the authors, there are concerns about the quality of articles published in OA journals.

Introduction:

Libraries are places of learning and knowledge creation. While this mission has been the same for centuries, the way it is delivered is constantly evolving. Over the last two decades, digital technology and the changes that came with it have accelerated this transformation to a point where evolution starts to become a revolution. The wider Open Science movement, and Open Access in particular, is one of these changes, and it is already having a profound impact. Under the subscription model, the role of libraries was to buy or license content on behalf of their users and then act as gatekeepers to regulate access on behalf of rights holders [1]. In a world where all research is open, the role of the library is shifting from licensing and disseminating to facilitating and supporting the publishing process itself [2].

This requires a fundamental shift in terms of structures, tasks and skills. It also changes the idea of a library's collection. Under the subscription model, contemporary collections largely equal content bought from publishers [3]. Under an open model, the collection is more likely to be the content created by the users of the library (researchers, staff, students etc.), content that is now curated by the library. Instead of selecting external content, libraries have to understand the content created by their own users and help them to make it publicly available, be it through a local repository, payment of article processing charges or through advice and guidance [4].

Open access publication is defined and described from a variety of perspectives:

- Suber defined Open Access as "Open access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions" [5].
- Willinsky emphasized the access principle, viz., commitment to scholarly work carries with it a responsibility to circulate that work as widely as possible. 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 [6].

Research Methodology:

This research article has been developed from descriptive secondary information searched by reviewing literature about Human Resource Development (HRD) and published in research journals in the form of research articles, research reports of various organizations and books of Human Resource scholars relevant to this topic.

Importance of open access resources:

The open access resources are most important due to published research results and ideas are the foundation for future development in science and medicine. Open access publishing, therefore, leads to wider dissemination of information [7].

- Open access resources mean to change the traditional publishing model whereby publishers financial journals through readers subscriptions to a model where electronic access to journals will be free without legal, electronic and technological barriers.
- Open access works within the legal framework of copyright law
- Open access initiative is being supported to makes the published output of their researchers available as part of their digital library [8].

Open access aims to create links to other collections basically for researchers to publish their results. Open access helps to ensure long-term access to scholarly articles [9]. Unlike articles that are licensed in traditional article databases, libraries and others are able to generate local copies and repositories of these resources. Libraries, by working together to formulate repositories of open access literature, know how to ensure continued access to these scholarly publications into the distant future [10].

Features of open access:

- Open access literature is digital form, free of charges and free of copyright.
- They equal right to all, irrespective of color, caste, creed, sex, and religions.
- They are compatible with the guarantee of worldwide access.
- Open access is compatible with copyright, peer review, revenue, print, preservation, prestige, career advancement, indexing and supportive service associated with conventional scholarly literature.
- Open access campaign focuses on the literature that authors give to the world without expectation of payment.

Colour naming system: Different open access types are currently commonly described using a colour system. The most commonly recognized names are "green", "gold", and "hybrid" open access; however, a number of other models and alternative terms are also used [11].

- **Gold OA:** In the gold OA model, the publisher makes all articles and related content available for free immediately on the journal's website. In such publications, articles are licensed for sharing and reuse via creative commons licenses or similar [12]. The majority of gold open access journals which charge APCs are said to follow an "author-pays" model, although this is not an intrinsic property of gold OA.
- **Green OA:** Green OA is gratis for the author. Some publishers may charge a fee for an additional service such as a free license on the publisher-authored copyrightable portions of the printed version of an article. If the author posts the near-final version of their work after peer review by a journal, the archived version is called a "post print". This can be the accepted manuscript as returned by the journal to the author after successful peer review [13].

- **Hybrid OA:** Hybrid open-access journals contain a mixture of open access articles and closed access articles. A publisher following this model is partially funded by subscriptions, and only provide open access for those individual articles for which the authors (or research sponsor) pay a publication fee. Hybrid OA generally costs more than gold OA and can offer a lower quality of service. A particularly controversial practice in hybrid open access journals is "double dipping", where both authors and subscribers are charged [14].
- **Bronze OA:** Bronze open access articles are free to read only on the publisher page, but lack a clearly identifiable license. Such articles are typically not available for reuse [15].
- **Diamond/platinum OA:** Journals which publish open access without charging authors article processing charges are sometimes referred to as diamond or platinum OA. Since they do not charge either readers or authors directly, such publishers often require funding from external sources such as the sale of advertisements, academic institutions, learned societies, philanthropists or government grants [16]. Diamond OA journals are available for most disciplines, and are usually small (<25 articles per year) and more likely to be multilingual (38%).
- **Black OA:** The growth of unauthorized digital copying by large-scale copyright infringement has enabled free access to paywalled literature. This has been done via existing social media sites (e.g. the #CanHazPDF hashtag) as well as dedicated sites (e.g. Sci-Hub). In some ways this is a large-scale technical implementation of pre-existing practice, whereby those with access to paywalled literature would share copies with their contacts. However, the increased ease and scale from 2010 onwards have changed how many people treat subscription publications [17].
- **Gratis and libre:** Similar to the free content definition, the terms 'gratis' and 'libre' were used in the BOAI definition to distinguish between free to read versus free to reuse. Gratis open access refers to online access free of charge, and libre open access refers to online access free of charge plus some additional re-use rights [18]. Libre open access covers the kinds of open access defined in the Budapest Open Access Initiative, the Bethesda Statement on Open Access Publishing and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities [19].
- **FAIR:** FAIR is an acronym for 'findable, accessible, interoperable and reusable', intended to more clearly define what is meant by the term 'open access' and make the concept easier to discuss [20]. Initially proposed in March 2016, it has subsequently been endorsed by organizations such as the European Commission and the G20.

Licenses: Subscription-based publishing typically requires transfer of copyright from authors to the publisher so that the latter can monetize the process via dissemination and reproduction of the work. With OA publishing, typically authors retain copyright to their work, and license its reproduction to the publisher [21]. Retention of copyright by authors can support academic freedoms by enabling greater control of the work or licensing agreements.

Funding: Since open access publication does not charge readers, there are many financial models used to cover costs by other means [22]. Open access can be provided by commercial publishers, who may publish open access as well as subscription-based journals, or dedicated open-access publishers such as Public Library of Science (PLOS) and BioMed Central. Another source of funding for open access can be institutional subscribers. One example of this is the "Subscribe to Open" publishing model by Annual Reviews; if the subscription revenue goal is met, the given journal's volume is published open access [23].

International Initiatives: Internationally, a number of initiatives have been taken up for spreading the open access concept and the open publishing philosophy of scholarly communication. They can be divided into [24] :

- (i) The research initiatives: The researcher initiatives are author driven initiatives which include the e-print services such as the physics e-print archives arXiv first subject repository set up by Paul Ginsparg and the PubMedCentral [PMC], 'BioMed Central' (BMC) and the 'Public Library of Science' (PLOS) which provide open publishing facility for the biomedical researchers.
- (ii) Commercially driven initiatives: 'Crossref', a publisher-linking service promoted by more than 180 publishers the world over, is an example of commercially driven initiative. The open access movement was further intensified by the Budapest Open Access Initiative, Bethesda statement and the Berlin declaration, commonly known as the three Bs, represent the most highly regarded definitions of OA, and all agree on the essentials.
- (iii) Collaborative projects: The Wellcome Trust requires OA to Wellcome-funded research within six months of publication, and the Research Councils UK also have a similar policy. Major research institutions in Australia, China, France, Germany, Greece, Hungary, Italy, Norway, Portugal, Switzerland, the UK, and the US have committed themselves to provide OA to their research output.

Current Scenario: As of March 2021, open access mandates have been registered by over 100 research funders and 800 universities worldwide, compiled in the Registry of Open Access Repository Mandates and Policies [25]. As these sorts of mandates increase in prevalence, collaborating researchers may be affected by several at once. Tools such as SWORD (protocol) can help authors manage sharing between repositories. Compliance rates with voluntary open access policies remain low (as low as 5%). However it has been demonstrated that more successful outcomes are achieved by policies that are compulsory and more specific, such as specifying maximum permissible embargo times. Compliance with compulsory open access mandates

varies between funders from 27% to 91% (averaging 67%). From March 2021, Google Scholar started tracking and indicating compliance with funders' open access mandates, although it only checks whether items are free-to-read, rather than openly licensed.

Indian Scenario: Research in India is plagued due to two problems which relate to access and visibility. Both these problems can be solved by widespread adoption of Open access [26]. While the Open Access (OA) movement has been a topic of major debate and interest around the world, in India it is seen as an unprecedented opportunity to provide equality of access to essential research information and raising awareness of national research. Right since the initiation of the OA movement, the academic and the scientific community in India has been striving to promote unrestricted access to scholarly literature through Open Access. Several local, national, regional as well as international initiatives, have been taken up in different parts of the country, adopting open access software, configuring and commissioning of open archive harvester services, providing open course wares to the academic world, imparting training programmes on e-publishing of journals as well as on institutional repositories etc. Some of the creditable activities such as the OA journals of the Indian Academy of Sciences (IAS), eprints@iisc, Librarian's Digital Library at DRTC, OpenMED and the IndMed services of NIC New Delhi, NISCAIR, IISC, efforts of MedKnow publications, the e-journal initiatives and archives at INSA, IIT Delhi, Raman Research Institute, NIT Rourkela, Vidyanidhi. UGC has mandated the open access to theses and dissertations since 2009 and provided access through 'ShodhGanga' [27]. These efforts deserve special mention. But the progress in the adoption of open access is slow.

Impact on Library Resources and Service: Libraries have played a fundamental role in setting up and managing repositories, and this is widely acknowledged and welcomed. The library fraternity's contribution to the OA movement is commendable with the Association of Research Libraries (ARL) forming the Scholarly Publishing and Academic Publishing Coalition (SPARC) in 1997 towards curbing the impending scholarly journal crisis and to look for alternatives such as the open access. Two key conditions are necessary for fundamental change to occur in scholarly communication: scholars and scientists must recognize the benefits of change, and mechanisms for recovering the costs must be implemented [28]. The combination of institutional repositories and open access journals is increasingly seen as giving libraries and researchers their first chance to change fundamentally the way the scientific information is communicated. They provide a better, more equitable and more efficient system of scholarly communication, one that can better serve the international research community [29].

Suber described what librarians can do to promote open access:

- Make sure scholars at their institutions know how to find open access journals and archives in their fields and set up tools to allow them to access them.
- Establish institutional repositories.
- Help faculty archive their research papers (new and old) within the repository, digitizing older papers if necessary.

- Help open access journals launched at their institutions become known to other libraries, indexing services, potential funders, and potential readers.
- Engage with University/Institute administrators and funding bodies to raise the awareness on issue of open access.

Supporting Open Access Resources: Considering the merits of the Open Access system and the advantages it can bring to Indian research community librarians should contribute to the Open Access [30]. Librarian can support Open Access by

- Providing enhanced access to OA Works by linking OA works through library catalogue, making them a part of the federated search, including OA resources in article alerts and SDI services for researchers.
- Publishing of OA works: Many research organizations have in-house publications, which can be considered to be made OA, hosting of journal through Open Journal system. Library can take publishing initiatives and identify potential avenues of publishing activities in different campus environments, from journal publishing to publishing special collections and student-created content [31].
- Digitize OA versions of out-of-copyright works.
- Librarians should initiate celebrating the Open Access week in the month of October, to celebrate International Open Access week every year which could involve a variety of activities like arranging talks, rewarding a researcher, orienting the researchers with new developments in the field etc.

Building Digital Repositories: Institutional Repositories have been the building blocks of Open Access. Libraries should initiate the IRs in their respective institutions, encourage faculty deposit their work considering the associated copyright framework [32]. It will directly help faculty to improve the visibility of their work and the institution to the global research community. Librarians should help improving workflows to make deposit easier and to alleviate researchers' concerns by linking in services such as SHERPA's RoMEO and JULIET which set out publishers' and funders' policies on issues including copyright, deposit, and open access[33].

Conclusion: Open Access has a profound effect on the role of libraries and librarians. The focus of role of librarian from being a gatekeeper of information has shifted towards being actively involved in supporting the creation and dissemination of scientific and scholarly information produced by researchers of their institutes. New skills and competencies have to be acquired and strengthened, infrastructure for publishing and archiving has to be developed, the sources of funds have to be redirected from paying for getting access to paying for providing access too. The open access movement has gained considerable momentum in the last decade. It is one of the important reforms of scholarly communication. The rapid pace of change presents challenges as well as opportunities for both libraries and researchers. The library community, which has long suffered the effects of the serials crisis welcomed Open access. However, libraries have been somewhat slow in their embrace of open access, uncertain about its acceptance from the research community and effects on the scholarly publishing system. Librarians should try to increase awareness of researchers about Open Education Resources, try and clear the myths around the Open Access, and demonstrate that Open Access is equally creditworthy in the research community. Librarians can help faculty to raise awareness and promote the benefits of the repository, educating researchers on authors' right, authors' addendum, and funders' policies to help them make informed decisions. Many funding agencies have now adopted Open Access policies. Libraries can work towards increasing awareness of researchers' obligations to their institution and to their funders, to ensure that funders' open access requirements are met by grant holders. Libraries can also enlighten administrators if required about the changes in the scholarly communication and help Funding for Open Access Efforts or subsidize open Access journal fees through institutional memberships with publishers, which either eliminate or reduce such fees for affiliated authors considering several factors to keep in mind when thinking about these memberships. The future of involvement of librarians in Open Access will be to enable the opening up of scholarship and research through the growing open access, open education, open science and open innovation movements. All of this involves acquiring new digital skills. Understanding the 'Open Science' and growing with the changes in the scholarly communication will be a key for librarians to remain relevant in the profession.

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