

## INVITED ARTICLE

### Open Access: Empowering Knowledge Sharing And Global Collaboration

#### ABSTRACT

Open Access has revolutionized the way academic knowledge is disseminated, accessed and shared globally. It has become a driving force in promoting unrestricted access to scholarly literature, fostering collaboration and accelerating the pace of scientific progress. This article explores its importance and all the aspects related to Open Access. It delves into various initiatives, modes of Open Access, its benefits for researchers, students and scientists and how journals can thrive by transitioning from print to Open Access. Being digital born Open Access Journal articles are made available to readers immediately upon publication under Creative Commons license and allows authors to keep copyrights.

**Keywords:** *Open knowledge, academic publishing, creative commons, open licensing*

Open Access refers to unrestricted and free access to scholarly research outputs, allowing reading, downloading, copying, distribution, and usage without financial, legal, or technical barriers. Rooted in the belief that knowledge is a public good, it aims to make information readily accessible worldwide, regardless of location or financial limitations. Open Access breaks down barriers, democratizes knowledge, and fosters the global exchange of ideas. Its significance lies in revolutionizing academia by increasing the visibility and impact of research, encouraging interdisciplinary collaboration, and accelerating scientific progress through the building upon existing knowledge.

#### Open Access movement

The Open Access movement has gained significant momentum through initiatives such as the Budapest Open Access Initiative and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities. These efforts have paved the way for global adoption of Open Access. India has been actively participating in this movement, with



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various academic institutions, government bodies, and research organizations implementing Open Access policies to promote wider dissemination of Indian scholarship.

A recent international initiative, 'Plan S', backed by 'cOAlition S' and European research funding agencies, mandates immediate Open Access to publicly funded research. Additionally, Open Access Week, celebrated annually in October, serves as a global event dedicated to raising awareness and advocating for Open Access adoption. Institutions, libraries, and researchers organize events and campaigns during this week to highlight its benefits.

In India, the Open Access movement has experienced a surge in recent years, with universities, research institutions, and government bodies actively supporting Open Access policies. The Government of India's Science, Technology, and Innovation Policy 2020 (STIP 2020) emphasized Open Access to promote domestic research and foster collaboration.

### Route to Open Access

Open Access can be achieved through:

**Open Access Journals:** Open Access Journals provide immediate and free access to articles on the publisher's website. They allow readers to access content freely right after publication while also enabling authors to retain copyright ownership. Typically, articles in these journals are licensed under Creative Commons or other open licenses. Some Open Access Journals charge Article Processing Charges (APCs) from authors, known as Gold Open Access Journals. Conversely, Diamond Open Access Journals, published by non-commercial entities like universities or scholarly societies, do not charge APCs. The Directory of Open Access Journals (DOAJ) indexes numerous high-quality Open Access journals, making them easily accessible.

**Open Access Repositories:** These are institutional or subject-specific repositories where authors can self-archive their preprints or post-prints. These digital libraries preserve various scholarly outputs, including articles, theses, conference papers, and datasets. Authors have the option to share their deposits under an open license, such as Creative Commons, allowing wider accessibility. According to the Directory of Open Access Repositories (OpenDOAR), there are approximately 6,038 repositories worldwide,

contributing to the dissemination and accessibility of scholarly research.

- **Shodhganga:** India's national repository of electronic theses and dissertations, plays a crucial role in facilitating the submission, access, and sharing of research outputs created by Indian scholars. By serving as a centralized platform, it has substantially enhanced the visibility of Indian research on a global scale. As of now, Shodhganga holds an impressive collection of 3,81,087 theses, further solidifying its importance in preserving and promoting academic knowledge in India.
- **Krishikosh:** Krishikosh is the institutional repository for National Agricultural Research System (NARS) of the country. This digital repository hosts and preserves a wide range of research outputs related to agriculture, mainly, theses and dissertations, Annual Reports, Technical Reports etc. Currently, Krishikosh houses an impressive collection of 1,93,543 theses, contributing significantly to the dissemination and preservation of agricultural knowledge.

**Preprints:** In addition to Open Access journals and institutional repositories, there is a growing trend of preprint repositories that host early versions of research papers shared before peer review. These preprint repositories play a crucial role in timely dissemination of findings and invite valuable feedback from the academic community. They facilitate rapid and open communication of research results, fostering dialogue among researchers. However, it's essential to acknowledge that preprints have not undergone peer review yet. Therefore, caution should be exercised when interpreting their findings. Researchers should be transparent about the preliminary nature of the work when citing preprints in their own research. Some popular preprint repositories include arXiv (for physics, mathematics, computer science, and related fields), bioRxiv (for biology), medRxiv (for health sciences), PsyArXiv (for psychology), IndiaRxiv (for India), and agriRxiv (for agriculture). These platforms contribute significantly to the exchange of scientific knowledge and the acceleration of research advancements.

- **IndiaRxiv:** It is an open-access preprint repository specifically designed for researchers and scholars in India. It serves as a platform where researchers can disseminate their work before formal peer review and publication in academic journals. Covering a diverse array of subject areas, IndiaRxiv encourages multidisciplinary research and fosters knowledge exchange across various fields. This platform can contribute significantly to the acceleration and visibility of research in India, benefiting the academic community and beyond.
- **agriRxiv:** It is an open-access preprint repository specifically dedicated to agricultural and related research. Originally established by the Open Access India community of practice, agriRxiv provides a platform for researchers in the agricultural sciences to freely share their early findings, manuscripts, and data before formal peer review and publication. This repository is administered by CABI for the global agricultural research community.

### Article Processing Charges

Many Open Access journals rely on Article Processing Charges (APCs) to cover their publishing costs. Authors or their institutions typically pay these fees when their articles are accepted for publication. While this model allows the journal to make articles freely available to readers, concerns have been raised about the affordability of APCs, especially for researchers and institutions with limited funding resources. To address this issue, some funding agencies and institutions offer financial support to cover APCs for researchers who may face financial constraints.

### Diamond Open Access Journals

The Diamond Open Access journals receive financial support from academic institutions, research organizations, or funding agencies to cover their publishing expenses. As a result, articles published in these journals are made freely available to readers without any cost borne by the authors. The Diamond Open Access model aims to ensure equitable access to knowledge by removing financial barriers for both authors and readers. Out of the 19,640 journals indexed by DOAJ, a significant portion, 13,288 journals, do not charge any APCs.

### Benefits of Open Access

Open Access brings numerous benefits to a wide range of stakeholders. Researchers benefit from increased visibility and accessibility of their work, leading to higher citations and impact. Open Access journals attract a broader readership, including researchers, practitioners, policymakers, and the public, leading to more citations and greater impact for published articles. Access to Open Access resources enables unrestricted learning and access to research methodologies for researchers and students.

By breaking down paywalls, Open Access promotes a more inclusive and equitable research ecosystem. It fosters collaboration among researchers and scientists, facilitating cross-border and interdisciplinary work. Open Access also democratizes education and research, providing access to valuable information for individuals from underprivileged backgrounds. Open Access publishers often allow authors to retain copyright ownership, empowering them to share and reuse their research more freely. This fosters the discovery of new literature, leading to comprehensive reviews and innovative ideas. When print-only journals transition to online and Open Access, they experience increased readership and impact, broadening the global reach of regional research and enhancing engagement with the academic community. Scholarly societies' Open Access journals benefit from a broader audience and increased international readership, expanding their impact on the global academic community. This growth may attract more submissions and readers, leading to an increase in the society's membership base. Authors may be more inclined to become members to enjoy benefits like publishing fee discounts and networking opportunities.

Open Access ensures that research is accessible to all without technical, legal, or financial barriers, aligning with the core principles of scholarly research and promoting equitable access to knowledge for all. Overall, Open Access has a transformative impact on the research landscape, benefiting researchers, institutions, societies, and the public, fostering collaboration and knowledge exchange worldwide.

### Open Licensing

Open licensing is a critical component of Open Access and Open Science, enabling researchers and content creators to share their work while retaining

certain rights and ensuring that the work can be reused, redistributed, and built upon by others. One of the most widely used open licensing frameworks is Creative Commons. The Creative Commons licenses provide standardized and legally robust ways for authors to indicate the permissions they grant to users regarding their creative works and they come in various combinations of four key elements:

1. Attribution (BY): Requires users to give appropriate credit to the original creator when using the work.
2. ShareAlike (SA): Requires derivative works to be shared under the same license as the original work.
3. NonCommercial (NC): Prohibits commercial use of the work without explicit permission from the creator.
4. NoDerivatives (ND): Prohibits the creation of derivative works based on the original.

By choosing an appropriate Creative Commons license, authors can clearly communicate the permissions they grant for their work, enabling others to use, share, and build upon it while respecting the creator's rights and intentions. Creative Commons licenses are widely adopted in the Open Access movement, open educational resources, and other open initiatives, fostering a culture of open collaboration and knowledge sharing while respecting intellectual property rights.

### Open Journal Systems

Open Journal Systems (OJS) is an open-source, web-based platform designed to facilitate the management and publishing of academic journals. Developed by the Public Knowledge Project (PKP), OJS provides a comprehensive and user-friendly system that allows journal editors, authors, and reviewers to streamline the entire scholarly publishing process. It has the following key features:

- Seamless submission and peer-review process
- Efficient editorial workflow
- Online publishing for global accessibility
- Customizable website design
- Integration with indexing services
- Archiving and preservation capabilities
- Support for Open Access journals
- Multilingual functionality
- Flexible user roles and permissions

The 'Indian Agricultural Research Journals' is an online journal publishing platform established by the Indian Council of Agricultural Research using the OJS. Presently, it provides hosting support to approximately 50 journals published by various institutes, universities, and scholarly societies under the NARS.

### Long Term Preservation

Long-term preservation is a critical aspect of Open Access scholarly literature. To ensure the preservation of research outputs, Open Access content is assigned Digital Object Identifiers (DOIs) and archived using the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) to facilitate the retrieval of records. As digital-born publications, Open Access journals face the risk of losing valuable academic content over time. To address this concern, various practices and initiatives have been established. DOIs provide permanent links to digital content, making it easier for researchers, scholars, and readers to locate and cite specific resources, even if their location or metadata changes. DOIs are integrated with major bibliographic databases, enabling indexing services, libraries, and academic platforms to track and display citation metrics and usage statistics. These stable identifiers aid in archiving, supporting the long-term preservation of digital objects and ensuring continued access to important scholarly resources.

### LOCKSS

The Lots of Copies Keep Stuff Safe (LOCKSS) system is an approach to long-term preservation. It is a decentralized preservation system where participating libraries create and maintain copies of digital content. If the original copy becomes inaccessible, participating libraries can provide copies to users, guaranteeing long-term availability. Additionally, in the latest version of the OJS, the PKP supports content preservation through the PKP Preservation Network, following a similar model to LOCKSS. These preservation efforts ensure that Open Access content remains accessible and protected for future generations of researchers and readers.

### Internet Archive Scholar

The Internet Archive Scholar is an initiative by the Internet Archive, a non-profit digital library, to provide free and unrestricted access to academic research. It aims to enhance discovery and access to scholarly literature by aggregating and indexing Open Access articles from various sources, including institutional repositories, preprint servers and publisher websites.

### AmeliCA

AmeliCA is a prominent initiative in the Latin American and Caribbean region dedicated to promoting Open Access to scholarly research and knowledge. The name “AmeliCA” stands for “América Latina en Acceso Abierto” or “Latin America in Open Access.” The primary goal of AmeliCA is to empower non-commercial scholarly communities by providing a robust platform for sharing research outputs freely and openly. By advocating for fair and equitable Open Access principles, the initiative aims to ensure that knowledge is accessible to all, without financial barriers. AmeliCA is actively involved in promoting the creation and maintenance of Open Access infrastructures and platforms. Through its AmeliCA XML software support, it facilitates the publication of research articles in multiple enriched reading formats such as VIEWER, HTML, MOBILE, ePUB XML JATS, in addition to PDF. One of the beneficiary of this initiative is Journal of Horticultural Sciences published by the Society for Promotion of Horticulture, Bengaluru.

### Best Practices for Open Access Journals

- *Editorial Board:* The journal should have an editorial board comprising experts from diverse disciplines and geographic regions. This helps in establishing the credibility and attracting high-quality submissions.
- *Rigorous Peer Review:* A high standard peer review should be in place to ensure the quality and integrity of published research. Transparent and timely review process, involving subject-matter experts, to uphold the credibility of the journal should be ensured.
- *Clear Editorial Policies:* The journal’s scope, aims and ethical guidelines to authors, reviewers and readers should be clearly communicated. Detailed information about the

submission process, review criteria, and publication policies should be mentioned on the journal website.

- *Open Licensing:* The journal should adopt Creative Commons license, such as CC-BY, CC-BY-SA or CC-BY-NC-SA, to allow unrestricted reuse and distribution of published content, while ensuring proper attribution to the original authors.
- *Transparent Fees:* Any Article Processing Charges or publication fees associated with the journal should be mentioned clearly outlining the charges, waivers and funding options available to authors to avoid any ambiguity.
- *Preservation and Archiving:* Partnering with reputable repositories and platforms long-term preservation and accessibility of published content should be ensured. The journal should be registered with indexing services and archiving initiatives for increased visibility and discoverability.
- *Accessibility:* Multiple enriched reading formats may be published for easy access, readability and indexing.
- *Thorough Editorial Workflows:* Efficient editorial workflows to minimize publication delays should be in place. For this, Open Journal Systems publishing software may be used for the submission, peer review and production processes.
- *Ethical Publishing Practices:* Publication ethics guidelines, such as those outlined by the Committee on Publication Ethics (COPE), to avoid plagiarism, duplicate publication and other unethical practices should be established and adhered.
- *Promotion and Marketing:* After publication of articles, the journal should promote its contents through various channels, including social media, academic networks and mailing lists. Engaging with the academic community would increase readership and submissions.
- *Collaboration and Networking:* Collaborating with other Open Access journals, scholarly societies and institutions helps in sharing best practices and fostering sense of community within the Open Access publishing landscape.

- *Data Sharing and Supplementary Materials*: The journal should adopt a policy which encourage authors to provide open access to research data and supplementary materials to enhance the reproducibility and transparency of published research.
- *Tracking and Reporting*: Monitoring journal metrics, such as article downloads, citations, and alternate metrics helps in assessing the journal's impact and reach. The same may be regularly reported to authors and stakeholders.
- *Responsive and Supportive Communication*: Maintaining a prompt and supportive communication approach with authors, reviewers, and readers ensures efficient publishing experience.

Open Access is a transformative force, fostering equitable access to knowledge and global collaboration in research and education. Open Access Journals have become a powerful catalyst for promoting equitable access to knowledge and fostering global collaboration in research and education. Preprints play a vital role by enabling early dissemination and scientific collaboration, thus accelerating research progress across disciplines. Events like Open Access Week, initiatives like Shodhganga, and the growing prevalence of preprints exemplify the dynamic nature of Open Access. As the momentum builds, addressing challenges and striving for a sustainable and inclusive future for scholarly communication is paramount. With global support and continuous efforts, Open Access holds the potential to revolutionize research dissemination, benefiting researchers, students, and societies on a global scale.

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