

Open Access Journals: A Pathway to Scientific Information in Iran

Alireza Noruzi

University of Tehran, Dep. of Library and Information Science, Tehran, Iran
e-mail: nouruzi@gmail.com

Abstract

This paper reviews the movement of open access (OA) journals in Iran, investigates and compares the influence of Iranian journals in terms of citation ranking, using the Citation Indexes of Thomson-ISI. There has been growth in the number of open access journals in Iran. The advantages of open access for Iranian researchers are: (i) provides access to other research done in their research fields; (ii) speeds up scholarly communication and scientific dialog between researchers; (iii) provides greater visibility and possibly greater impact, although only if open access to the full text is provided. Authors' experiences and motivations have a vital and key role to play in open access. This study indicates that for linguistic reasons, Iranian (Persian-language) journals may not receive and attract the attention that they deserve from the international scientific community. Since there has been little or no discussion in the literature on the impact that the increasing use of OA journals has on scientific production and academic institutions in developing countries, this case study of Iranian experience should be useful for developing countries.

Keywords: open access; scientific journals; Persian-language; Iran

1 Introduction

The traditional model of scholarly publishing (i.e., publication through peer-reviewed journals) and the new information and communication technologies (i.e., the Internet and the Web) have converged to publish scientific open access (OA) journals, which are freely available to those who want to read, download and print them. Open access has removed many access barriers to the scholarly literature, sharing the knowledge of developed countries with developing countries and vice versa, accelerating research and enriching education. In this new strategy, researchers generally publish the results of their research in scholarly open access journals without payment. Open access can increase the internationality, readership, visibility and Impact Factor (IF) of a journal.

Open access means making the full text of an article available online to all users free of charge, immediately and permanently. It has been defined as "free availability of [scholarly literature] on the public Internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of 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 [1]. Stevan Harnad [2] argues that "open access is free, immediate, permanent online access to the full text of research articles for anyone, worldwide." However, there remains one constraint linked to copyright: authors control the integrity of their work and must be properly acknowledged and cited. An open access journal is defined here as full text available toll-free on the Web.

The open access movement is a global effort to provide electronic free access to scholarly literature, especially peer-reviewed journals. Open access to the scholarly literature means removing access barriers and limits (e.g., subscription fees, limited access, and so on) to scientific work. There are two parallel "routes" towards open access: open access journals and self-archiving. "Scholarly articles can be made *freely* available to potential readers in one of two main ways – by being published in an open access journal or by being deposited in an electronic repository which is searchable from remote locations without restrictions on access" [3].

OA journals make published articles immediately freely available on their web site, a model mainly funded by charges paid by the author (usually through a research grant). The alternative for a researcher is "self-archiving" (i.e., to publish in a traditional journal, where only subscribers have immediate access, but to make the article available on their personal and/or institutional web sites [including so-called repositories or archives]), which is a practice allowed by many scholarly journals [4].

Open access journals allow, potentially, a greater number of people to access materials compared with subscription-based journals only and in turn helps to solve the research access/impact problem - where restricted access results in the loss of potential research impact [5, 6]. MacCallum and Parthasarathy argue that papers freely available in an open access journal will be more often read and cited than those behind a subscription barrier [7]. A study by Eysenbach [4] reveals that self-archived articles are also cited less often than OA articles from the same journal.

In Iran, open access journals are coming of age, and in a relatively short time have become a mature medium for reporting the results of research. The convenience of open access journals makes them an attractive information resource for Iranian readers and they are increasingly becoming accepted as credible sources of scholarly information.

Iranian open access journals began to proliferate as the Web emerged. For example, 20 journals published in either English or Persian by *Tehran University of Medical Sciences* are open access. Iran is making an electronic version of its English and Persian journals, originally published in print format, freely available to the world. Providing open access to journals is consistent with their strategic goal of enhancing the global visibility of their research output through increasing readership, attracting more contributors, and expanding the influence of Iranian authors in general. The use of open access journals in other fields such as education, science, health, culture, art and development is also maximizing research access through publishing peer-reviewed articles. The Iranian community can now gain access to the results of research by participating in an open access model of research dissemination and individual researchers achieve increased impact typically measured by the number of times a paper is cited and Iranian science gains recognition.

Ensuring that the results of research supported by public funds are made accessible and available for consultation by the research community and others is an integral part of the research process. It involves a partnership between all players involved (universities and other employers of researchers, funders, publishers, libraries, as well as researchers themselves). Ideas and knowledge derived from publicly-funded research are made available and accessible for public use, interrogation, and scrutiny, as widely, rapidly and effectively as practicable [8].

In Iran, open access has already improved the productivity, quality and effectiveness of scientific output, facilitating scholarly communication between Iranian researchers and their foreign colleagues as well as increasing the impact factor (IF) of scientific work based on their citations. Iranian scholarly literature is vital to national productivity and well-being. Publicly-funded research undertaken in Iranian universities and research centers lies at the heart of a productive economy, as well as supporting the social, cultural and physical health of the Iranian nation. Therefore, open access is a valuable vehicle to promote the scientific productivity of Iran. As Brody says: "increased *access* generates the increased *impact*" [9]. The purpose of this paper is to examine the state of open access scholarly journals in Iran and to analyze their visibility through citations to Iranian OA journals in Thomson-ISI Citation Indexes.

2 Literature Review

Previous studies demonstrate that open access articles are more immediately recognized and cited than non open access articles, although it depends on the field of science. The effect of OA publishing may be even higher in fields where journals are not widely available on the Web and where articles from the control group remain *toll-access* [4]. Open access increases impact factor [4, 7, 10, 11], that is, authors who make their peer-reviewed articles open access are cited more than those whose full texts are available only on a subscription-basis from the same refereed venue. It is expected that the growth and use of OA will increase as awareness spreads among authors that OA increases visibility, resulting in more citations and therefore leading to greater impact [6].

Eysenbach [4] shows that articles published as an immediate OA article on the journal (*PNAS: Proceedings of the National Academy of Sciences*) site have higher impact than self-archived or otherwise openly accessible OA articles. It is also shown that OA authors are cited more often per paper. He found strong evidence that, even in a journal that is widely available in research libraries, OA articles are more immediately recognized and cited by peers than non-OA articles published in the same journal. He deduces that OA is likely to benefit science by accelerating dissemination and uptake of research findings and suggests that OA journals facilitate knowledge dissemination to a greater degree than self-archiving, presumably because few scientists search on Google for articles if they have encountered an access problem on the journal web site.

Any scientific open access journal's success depends on authors choosing to submit their research to it for publication. Authors publish research in order for the value of their findings to be recognized. The kudos granted by a

solid publication record is crucial for a scientific career. If a journal had a reputation for publishing poor science, it would not receive submissions. Thus the system is inherently self-correcting [12]. However, Ghane reports that a large proportion of randomly selected faculty members, as authors, are not familiar with the concept of open access. Thus, the attitudes and experiences of authors, as owners of the copyright of articles, who have published work in open access journals, play an important role in promoting the idea of open access [13].

Antelman studies the impact of freely available articles in different disciplines (philosophy, political science, electrical / electronic engineering and mathematics). The data of the study show a significant difference in the mean citation rates of open access articles and those that are not freely available online in all four disciplines. The relative increase in citations for open access articles ranged from a low of 45 percent in philosophy to 51 percent in electrical and electronic engineering, 86 percent in political science, and 91 percent in mathematics [14].

Thomson-ISI recently conducted a study of the overall performance of OA journals, using a selection of OA journals in the field of natural sciences and focusing on determining whether OA journals perform differently from other journals in their respective fields. The study's initial findings indicate that there was no discernible difference in terms of citation impact or frequency with which the (open access) journal is cited [15]. On the other hand, Lawrence, investigating the impact of free online articles citation rates in the field of computer science, reported that there is a clear correlation between the number of times an article is cited and the probability that the article is online. More highly cited articles, and more recent articles, are significantly more likely to be open access [11].

The impact factor of journals continues to attract a lot of attention, especially from journal editors, publishers, authors and librarians. Librarians may use the ISI impact factor as one element in selection and de-selection procedures; scientists may be interested in journals with high impact factors in order to reach the highest possible visibility for their published results; funding agencies may consider the impact factors of the journals in which researchers given a grant publish funded research; and university research councils may use journal impact factors as indices in local evaluation studies [16].

3 Research Questions

This research seeks to answer the following questions:

- What constitutes a successful open access journal and how can we ascertain and measure such success?
- What is the role of the authors?
- How is certification of an open access journal related to success?
- What incentives and assistance are needed?

4 Materials and Methods

The approach used in this study includes the following steps:

- First, we conducted a search on Google and Iranian directories of scholarly journals to find open access journals, see *Iranian Directory of Open Access Journals* [17];
- Second, to determine citation rates and Citation Impact¹[18], *Web of Science* (Thomson-ISI citation index) was searched on April 10, 2007, for all Iranian open access journals.

5 Results

It is noteworthy that there are 960 Iranian (either Persian or English language) print-based journals and magazines out of which 247 journals (i.e., 28 English and 175 Persian) are accredited by the Iranian *Ministry of Science, Research and Technology* (MSRT, [19]), and 113 journals (i.e., 23 English and 90 Persian) in the fields of medicine, health, nursing, dentistry, pharmacy, podiatry, and biomedicine are accredited by the *Ministry of Health and Medical Education* (MOHME, [20]). Almost all of the English-language journals accredited by MSRT and MOHME are now open access or *back access* (back-issue or back-volume open access) (see *Iranian*

¹ The Citation Impact is the ratio of the total number of citations received to the total of citable items published in a journal. Citation Impact can be used as a measure of the *impact* an article has had within its particular field [18].

Directory of Open Access Journals). It should be noted that *Thompson-ISI* citation indexes index only 15 English-language journals from Iran. The current study includes only OA journals published in English.

Table 1 shows the total number of citations to Iranian English-language OA journals, either the ministries accredited or not. The total number of citations (with or without self-citations) is a reliable indicator of scholarly impact and influence [21].

Journal title	Total No. of Citations in WoS	No. of Citations since OA began
Iranian Polymer Journal	304	304
Iranian Journal of Chemistry & Chemical Engineering	183	29
Iranian Journal of Public Health	152	24
Journal of Sciences (Islamic Republic of Iran)	150	31
Iranian Journal of Medical Sciences	119	77
Archives of Iranian Medicine	80	80
Acta Medica Iranica	76	10
Iranian Journal of Pharmaceutical Research	47	42
DARU	40	32
Journal of the Earth and Space Physics	38	0
Journal of the Iranian Chemical Society	35	35
Iranian Biomedical Journal	24	21
Journal of Agricultural Science and Technology	21	21
Iranian International Journal of Science	14	14
Journal of the Iranian Statistical Society	13	0
Iranian Journal of Biotechnology	11	11
International Journal of Endocrinology and Metabolism	10	10
Iranian Heart Journal	10	2
Iranian Journal of Pharmacology and Therapeutics	9	9
Webology	8	8
International Journal of Environment Science and Technology	7	7
Shiraz E-Medical Journal	6	6
Journal of Research in Medical Sciences	6	4
Iranian Journal of Allergy, Asthma and Immunology	6	3
Iranian Journal of Radiation Research	5	5
Iranian Journal of Immunology	4	4
Iranian Journal of Pharmaceutical Sciences	4	4
Iranian Journal of Reproductive Medicine	4	4
Iranian Journal of Veterinary Research	4	0
Journal of Medical Education	4	4
Iranian Journal of Pediatrics	3	1
Iranian Journal of Clinical Infectious Diseases	2	2
Iranian Journal of Radiology	2	2
Iranian Journal of Mathematical Sciences and Informatics	1	1
Journal of Dentistry of Tehran University of Medical Sciences	1	1
Advanced Research Yields across Atherosclerosis	0	0
Caspian Journal of Environmental Sciences	0	0
Hepatitis Monthly	0	0
International Journal of Hematology- Oncology and Bone Marrow Transplantation	0	0
Iranian Journal of Environmental Health Science & Engineering	0	0
Iranian Journal of Parasitology	0	0
Iranian Journal of Pathology	0	0
Iranian Rehabilitation Journal	0	0
Journal of Tehran Heart Center	0	0
Journal of Respiratory Disease, Thoracic Surgery, Intensive Care and Tuberculosis	0	0
Urology Journal	0	0

Table 1: Total Number of Citations to Iranian English-Language OA Journals

Table 1 is a ranked list of the English-language OA journals included in the study, although ranking by total citations obviously favors older and more famous journals. The last column shows the number of citations since OA began. It should be noted that Iranian English-language journals, published by well-known universities, are still in their infancy and need more time to be recognized by their peers and the international scientific community. It seems that one of the main reasons why Iranian journals are not widely cited is that they are not indexed and circulated by foreign databases, especially American and British databases (e.g., Medline, CAB, EBSCO, Proquest, ERIC, Web of Science, WorldCat, LISA, INSPEC, Agris, COMPENDEX, etc.). Therefore, not only open access but also wide circulation is important for a journal's acceptance and reputation.

Table 2 comprises a sample of Persian-language OA journals (including English-language abstracts), nationally well-known, for comparison with the English-language journals.

Journal title	Total No. of Citations in WoS	No. of Citations since OA began
Iranian Journal of Diabetes & Lipid Disorders	6	6
Iranian Journal of Nuclear Medicine	2	1
Audiology	0	0
HAYAT	0	0
Journal of Dental Medicine	0	0
Scientific Journal of School of Public Health and Institute of Public Health Research	0	0
Tehran University Medical Journal	0	0

Table 2: Total Number of Citations to Persian-Language OA Journals

The comparison between non-English-language and English-language open access journals from Iran shows that English-language journals are more cited. Examination of citations to Persian-language OA journals from English-language journals shows that they are infrequent and only cited by Persian-speaking authors. Therefore, it can be concluded that English-speaking authors do not cite Persian-language journals. It should also be noted that Thomson-ISI citation indexes have a bias towards the English-language, indexing few non-English-language journals.

6 Suggestions for Improvement

Iranian institutions should implement a policy:

- to encourage their researchers to publish their research papers in open access journals where a suitable journal exists (and provide the support to enable that to happen);
- to launch new open access journals, where necessary, to serve individual communities, and should support existing journals who want to make the transition to open access;
- to establish open access repositories for English and Persian papers written by Iranians;
- to require Iranian researchers to deposit a copy of all their published papers in a national open access repository; and
- to submit OA journals for inclusion in a large number of indexing and abstracting databases to be widely circulated and widely read.

Creating and developing digital repositories that will assist Iranian academic organizations in the ongoing process of curating –identifying, selecting, acquiring, managing, describing, and providing access to– their scientific collections is vital if the community is to successfully ensure the preservation and continuing access of electronic resources. It is recommended that the Iranian government and authors consider the following suggestions:

- The Iranian government should provide funds for all universities to launch open access institutional repositories, appointing a central body to launch a national repository for preservation and to coordinate the implementation of a network of institutional repositories;
- Iranian universities should launch and support open access journals, and encourage faculty members to take action in support of open access;
- All Iranian universities should establish institutional repositories as an important first step toward more radical change;

- Authors of articles based on government funded research should deposit articles in their institutional repositories, after publication;
- Authors should self-archive (deposit electronic articles into electronic archives);
- Iranian universities should call on all university faculties to self-archive a digital copy of every article accepted by a peer-reviewed journal into the institutional repository.

7 Discussion and Conclusion

To sum up, ‘open access’ to Iranian scholarly literature is the key element for Iran, improving and accelerating the scientific activities. The Internet makes it possible for Iranian research papers to be read more easily and therefore probably get cited more, because of free, unrestricted access to open access journals. Research institutions that support open access will benefit greatly in terms of impact and influence, due to the greater accessibility and visibility of their research. Iranian researchers should absolutely have the right to see the results of the research that their taxes have paid for.

Some Iranian journals (English or Persian language) currently offer delayed free access, or *back access*, making issues of journals free six months or a year after journal publication. It is worth noting that in fast-moving topics, such information may be out of date when the readers gain access, thus providing *back access* rather than open access. The overall costs of providing open access to scholarly journals are far lower than the costs of traditional print journals, therefore we suggest that Iranian journals, especially international English-language journals become OA, because it is not possible for a print journal to be circulated throughout the world.

Ensuring that the main outputs of research –knowledge and ideas- are disseminated widely is vitally important. Iranian universities should support moves by the research community and scholarly journal publishers to develop new publishing models that are based on the principle that research outcomes should be freely accessed and disseminated as widely as possible via the Internet. It should be noted that OA by itself does not guarantee greater impact and influence for an OA journal, except if the journal publicizes and circulates its contents as widely as possible via international discussion groups, listservs and databases.

Briefly, the advantages of open access for Iranian researchers are: (i) provides access to other research done in their research fields; (ii) speeds up scholarly communication and scientific dialog between researchers; (iii) provides greater visibility and possibly greater impact, although only if open access to the full text is provided.

Acknowledgments

The author wishes to thank Mrs. Marjorie Sweetko for her helpful comments in producing the paper.

References

- [1] CHAN, L., et al. Budapest Open Access Initiative, (2002, February 14). Available at: <http://www.soros.org/openaccess/read.shtml>
- [2] HARNAD, S. *American-Scientist-Open-Access-Forum*. Re Proposed update of BOAI definition of OA Immediate and Permanent, 2005. Available at: <http://www.ecs.soton.ac.uk/~harnad/Hypermail/Amsci/4420.html>
- [3] SWAN, A.; BROWN, S. *JISC/Open Society Institute Journal Authors Survey*, 2004. Available at: http://www.jisc.ac.uk/uploaded_documents/JISCOAreport1.pdf
- [4] EYSENBACH, G. Citation Advantage of Open Access Articles. *PLoS Biology*, 4(5) (2006), e157. Available at: <http://biology.plosjournals.org>
- [5] HARNAD, S. *et al.* The green and gold roads to open access. *Nature*, 2004. Available at: <http://www.nature.com/nature/focus/accessdebate/21.html>
- [6] HARDY, R.; OPPENHEIM, C.; BRODY, T.; HITCHCOCK, S. Open Access Citation Information. Final Report – Extended Version, JISC Scholarly Communications Group, September 2005. Available at: <http://eprints.ecs.soton.ac.uk/11536/>
- [7] MACCALLUM, C.J., & Parthasarathy, H. Open Access Increases Citation Rate. *PLoS Biology*, 4(5) (2006), e176. Available at: <http://biology.plosjournals.org>
- [8] Research Councils UK. RcuK Position Statement on Access to Research Outputs, 2005, June. Available at: <http://www.rcuk.ac.uk/access/statement.pdf>

- [9] BRODY, T. Citation Analysis in the Open Access World. Author eprint, 2004. Available at: http://eprints.ecs.soton.ac.uk/10000/01/tim_oa.pdf
- [10] HITCHCOCK, S. The effect of open access and downloads ('hits') on citation impact: A bibliography of studies, 2005. Available at: <http://opcit.eprints.org/oacitation-biblio.html>
- [11] Lawrence, S. Online or Invisible? *Nature*, 411(6837) (2001), p. 521.
- [12] WEITZMAN, J.B. (Mis)Leading Open Access Myths, 2006. Available at: <http://www.biomedcentral.com/openaccess/inquiry/myths/>
- [13] GHANE, M. A Survey of Open Access Barriers to Scientific Information: Providing an Appropriate Pattern for Scientific Communication in Iran. *The Grey Journal: An International Journal on Grey Literature*, 2(1), 2006.
- [14] ANTELMAN, K. Do open-access articles have a greater research impact? *College & Research Libraries*, 65(5) (2004), 372-382. Available at: <http://eprints.rclis.org/archive/00002309/>
- [15] Thomson-ISI. *The Impact of Open Access Journals: A Citation Study from Thomson ISI*, 2004. Available at: <http://www.isinet.com/media/presentrep/acropdf/impact-oa-journals.pdf>
- [16] ROUSSEAU, R. Impact of African Journals in ISI Databases. *LIBRES: Library and Information Science Research Electronic Journal*, 15(2), (2002). Available at: <http://libres.curtin.edu.au/libres15n2/index.htm>
- [17] Iranian Directory of Open Access Journals, 2007. Available at: <http://nouruzi.googlepages.com/IDOAJ.doc>
- [18] BRODY, T. *et al.* The effect of open access on citation impact. *National Policies on Open Access (OA) Provision for University Research Output: An International meeting*. Southampton University, Southampton, UK, 19 February 2004. Available at: <http://opcit.eprints.org/feb19oa/brody-impact.pdf>
- [19] MSRT. Ministry of Science, Research and Technology, 2006. Available at: <http://www.msrt.gov.ir/>
- [20] MOHME. Ministry of Health and Medical Education, 2006. Available at: <http://www.net.hbi.ir/new/dynamic/journals/journal-index.php>
- [21] CRONIN, B.; MEHO, L. Using the *h*-index to rank influential information scientists. *Journal of the American Society for Information Science and Technology*, 57(9) (2006), 1275–1278.