



Status of digital standards, licensing types, and archiving policies in Asian open access journals registered in Directory of Open Access Journals

Soon Kim¹, Hyungwook Choi²

¹Research Institute for Social Science, ²Department of Library and Information Science, Ewha Womans University, Seoul, Korea

Abstract

Purpose: This study aims to analyze the digital standards of Asian journals registered in the Directory of Open Access Journals (DOAJ) which has been recognized as an index of quality for open access journals.

Methods: Data including 54 fields of each journal listed in DOAJ were provided by the DOAJ team in June 5, 2018. We focused on 11 fields including digital standards, content licensing types and digital archiving policy.

Results: Based on raw data from DOAJ from June 5, 2018, there are 11,534 journals registered in the directory. Among all journals in the directory, Asian journals comprise 1,972 journals from 18 countries. Indonesian journals rank at the top for Asian journals, with 1,322 journals originating from that country. Other major Asian countries' registration status includes India (238), South Korea (82), China (80), Malaysia (45), Pakistan (39), Taiwan (30), Thailand (27), Japan (20), and Hong Kong (20). Eighty percent of journals (1,584) are using PDF-only as their full-text format, and DOI is adopted in 852 journals (43%). Almost 98% of journals (1,936) are having a Creative Commons license; however, 85% of journals (1,689) do not have a digital archiving policy.

Conclusion: Generally, digital standards are well implemented in South Korea, and digital archiving/deposit policy is well accepted in Indian journals. Many Asian open access journal editors can refer to this study result when they digitalize their journals in order to meet global standards.

Keywords

Digital standards; Directory of Open Access Journals; Open access journal; Open access publishing; Publication technology

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Correspondence to Soon Kim
soonkim123@ewhain.net

ORCID

Soon Kim

<https://orcid.org/0000-0001-7154-2809>

Hyungwook Choi

<https://orcid.org/0000-0002-4075-0768>

Introduction

As the number of open access (OA) journals increases, Directory of Open Access Journals (DOAJ) has firmly taken root at the core of this new field [1]. DOAJ is a community-created online directory that provides access to high-quality OA peer-reviewed journals. DOAJ is independent, and all funds are made through donations, with 40% coming from sponsors and 60% coming from members. All DOAJ services are free, and all data is available free of charge worldwide. It is not a blacklist which provides predatory journals not to publish. Rather, it is a white list that makes it easy to find, read, use and cite academic scholarly content [2].

Although DOAJ was only launched in 2003, it has already made significant progress in data quality and standardization of OA journal indexing. In April 2015, 50 members of Science Europe announced a guideline requiring that a journal must be listed in either DOAJ, Web of Science, Scopus or PubMed to be provided payment/subsidies to OA venues. As the number of DOAJ journals has increased from the 300 originally listed in 2003 to 12,437 listed in January 2019, there has been a demand for more detailed information about journals' OA policies. This situation required a more rigorous set of selection standards which would meet the expectations of stakeholders to encourage best practices and transparency of OA publishing [1].

In January of 2018, the Committee on Publication Ethics, the DOAJ, the Open Access Scholarly Publishers Association, and the World Association of Medical Editors revised their joint 'Principles of transparency and best practice in scholarly publishing' which was first published in 2013 and revised thirdly in 2018 [3]. This guideline is used as the criteria for evaluation of new journals into DOAJ. DOAJ requires a total of 54 fields of journal information to be input on the DOAJ application site

divided into five groups: basic journal information, quality and transparency of the editorial process, openness of the journal, content licensing, and copyright and permissions [1].

This study aimed to characterize digital standards of journals such as the use of Crossref DOIs, full-text formats, crawling, download statistics and plagiarism screening tools. As a licensing type, we investigated Creative Commons (CC) license types and whether journals allow the author to hold copyright without restrictions. Lastly, we studied journals' digital archiving policies. This result could help journal editors or publishers understand how to efficiently implement these digital standards in order to meet global publishing standards.

Methods

We obtained data for this study from the DOAJ team via an Excel spreadsheet dated June 5th of 2018 (Dataset 1). Journals must be peer-reviewed or of editorial quality control and be OA in order to be included in the DOAJ. To be registered in the DOAJ, a total of 54 questions must be answered on their application site (<https://doaj.org/application/new>). Based on answers input by a journal editor, DOAJ checks the journal homepage manually to evaluate the quality of each OA journal. Among all criteria, we focused on 11 fields for this study including digital standards, content licensing types and digital archiving policy as shown in Table 1.

Results

Overview of registered journals in DOAJ

Based on raw data from the DOAJ from June 5, 2018, there are a total of 11,534 journals registered in the database. Among them, Asian journals comprise 1,972 journals from 18 countries. Indonesian journals currently rank at the top for

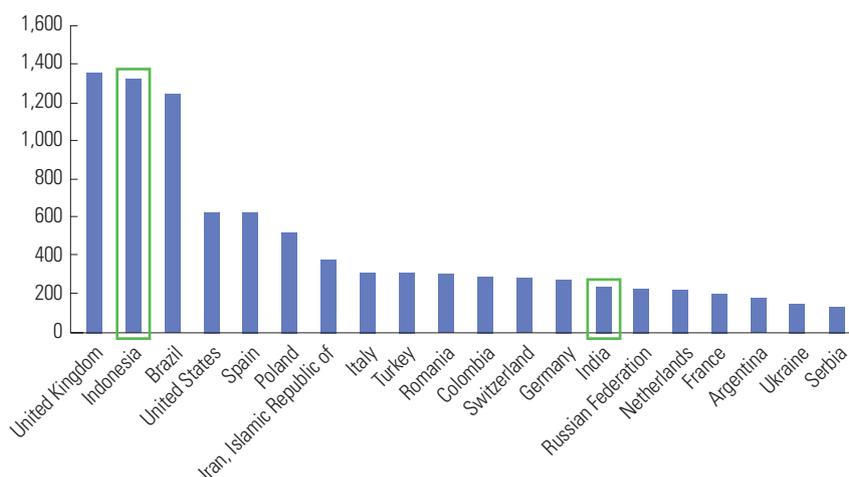


Fig. 1. Top 20 countries in Directory of Open Access Journals.

Asian journals with 1,322 journals from that country as shown in Fig. 1. Other major Asian countries' registration status include India (238), South Korea (82), China (80), Malaysia (45), Pakistan (39), Taiwan (30), Thailand (27), Japan (20), and Hong Kong (20).

Digital standards

The available full-text format is shown in Fig. 2. Eighty per cent of journals (1,584) are using PDF-only as their full-text format, and 330 journals (17%) are using HTML format. XML is available just for 81 journals (4%).

Regarding permanent article identifiers, Crossref DOI is

Table 1. Directory of Open Access Journals questions regarding digital standards, content licensing, and digital archiving policy for a new applicant

Category	Question	Answer	
Basic journal information	What digital archiving policy does the journal use? (Select all that apply. Institutional archives and publishers' own online archives are not valid.)	No policy in place CINES CLOCKSS LOCKSS PKP PN PMC/Europe PMC/PMC Canada Portico A national library Other	
	Does the journal allow software/spiders to automatically crawl the journal content (also known as text mining)?	Yes No	
	Which article identifiers does the journal use?	None DOI Handles ARK Other	
	Does the journal provide article download statistics?	Yes No	
	Please indicate which formats of full text are available (Tick all that apply).	PDF HTML ePUB XML Other	
	Does the journal have a policy of screening for plagiarism?	Yes No	
	Content licensing	Does the journal embed or display licensing information in its articles?	Yes No
		Does the journal allow reuse and remixing of content in accordance with a CC license or other type of license with similar conditions (Select 'Other')?	CC BY CC BY-NC CC BY-NC-ND CC BY-NC-SA CC BY-ND CC BY-SA Other
		With which deposit policy directory does the journal have a registered deposit policy? (Select all that apply)	None Sherpa/Romeo Dulcinea Héloïse Diadorim Other
	Copyright and permissions	Does the journal allow the author(s) to hold the copyright without restrictions?	Yes No
Will the journal allow the author(s) to retain publishing rights without restrictions?		Yes No	

CINES, National Computing Center for Higher Education; CLOCKSS, Controlled Lots of Copies Keep Stuff Safe; LOCKSS, Lots of Copies Keep Stuff Safe; PKP PN, Public Knowledge Project Preservation Network; PMC, PubMed Central; CC, Creative Commons; NC, non-commercial; ND, no derivative works; SA, share-alike.

well adopted in 852 journals (43%). Crossref is a non-profit organization which allows journal article to be found, cited, linked and assessed. Crossref is one of the most successful examples of cooperation across the publishing community.

Countries where DOI is well-implemented include Indonesia (400 journals, 30%), India (180 journals, 76%), South Korea (75 journals, 91%), and China (73 journals, 91%). Indonesia is one country where allowing software/spiders to automatically crawl the journal content has been well-imple-

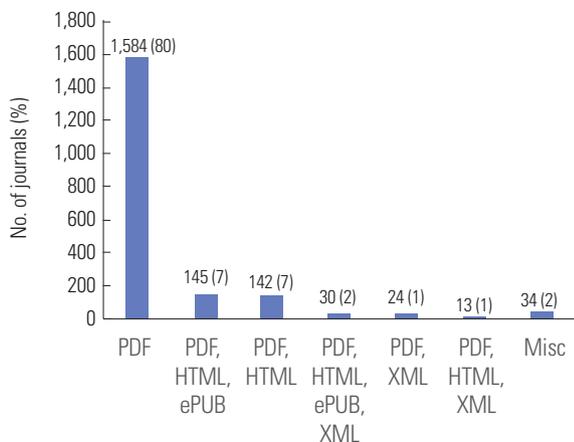


Fig. 2. The accessible full-text format of Asian journals (Misc includes other forms such as MS Word file or combined various formats such as HTML, ePUB, and XML).

mented (1,186 journals, 90%). Regarding article download statistics, India shows the highest penetration rate (174 journals, 73%) as indicated in Table 2.

Generally, digital standards are well implemented in South Korea, especially XML with an implementation rate of 55% and screening for plagiarism with an implementation rate of 70%. Currently, some journals have started using Journal Article Tag Suite (JATS), an XML format for describing online scientific literature, in order to be promoted globally. Implementation of JATS XML is an efficient way to adopt most digital standards. If journals are produced with JATS XML, it is easier to get included in free full-text databases such as PubMed Central [4].

Content licensing and copyright issue

DOAJ accepts journals into their database where copyright must be transferred to the publisher if articles are published OA in compliance with the Budapest Open Access Initiative (BOAI). A total of 1,952 journals (98.9%) allow unrestricted reuse by BOAI.

However, this situation is not advantageous for authors since the publisher could have the commercial rights of the contents if an author has transferred copyright to a publisher [1]. Hence, DOAJ encourages journals to allow authors to retain copyright. However, only 358 journals (18%) allow authors to hold publishing rights without restrictions, and 378 journals (19%) allow authors to hold copyright without restrictions. In an exam-

Table 2. Digital standards adoption rate of top five Directory of Open Access Journals registered countries in Asia

Country	Total	Permanent article identifiers: DOI	%	Full-text crawl permission	%	Provide download statistics	%	Plagiarism screening policy	%	XML implementation	%
Indonesia	1,322	400	30	1,186	90	91	7	534	40	8	1
India	238	180	76	209	88	174	73	49	21	12	5
South Korea	82	75	92	55	67	25	30	57	70	45	55
China	80	73	91	46	58	27	34	59	74	5	6
Malaysia	45	13	29	36	80	3	7	27	60	2	4

Table 3. Content licensing status of top five countries registered in Directory of Open Access Journals

Country	Total	Allowing unrestricted reuse in compliance with BOAI?	%	Author holds publishing rights without restrictions	%	Author holds copyright without restrictions	%	Embed licensing information in its article	%
Indonesia	1,322	1,307	99	225	17	236	18	824	62
India	238	238	100	26	11	26	11	176	74
South Korea	82	81	99	10	12	10	12	64	78
China	80	79	99	13	16	16	20	49	61
Malaysia	45	45	100	8	18	7	16	5	11

BOAI, Budapest Open Access Initiative.

ple from the Asian region, 17% of Indonesian journals (225) allow authors to hold publishing rights as shown in Table 3.

DOAJ encourages copyright and licensing information to be displayed with all individual articles because published articles are sometimes separate from the journal [1]. A total of 61% of journals (1,205) have embedded CC licensing information in their articles. The four countries excluding Malaysia are having well-integrated licensing information as shown in Table 3.

The application of a CC license is encouraged but not required to be accepted in the DOAJ. If a journal does not have a CC license policy, the terms of license should be indicated on the journal homepage. The free journal is a different concept within the OA journal concept; a journal's OA policy is crucial in determining whether it allows secondary use for various purposes.

Free access journals can only be converted into OA journals after adopting a CC license [1]. One benefit of indexing in DOAJ is that Web of Science shows a journal as OA if it is registered in the DOAJ [4].

Fig. 3 shows the type of CC license for Asian journals registered in the DOAJ. Seven hundred eleven journals (36%) have a CC-BY license, and 441 journals (22%) have a CC-BY-SA license. A CC-BY license means that users should give creators credit by whatever method is requested by the creators.

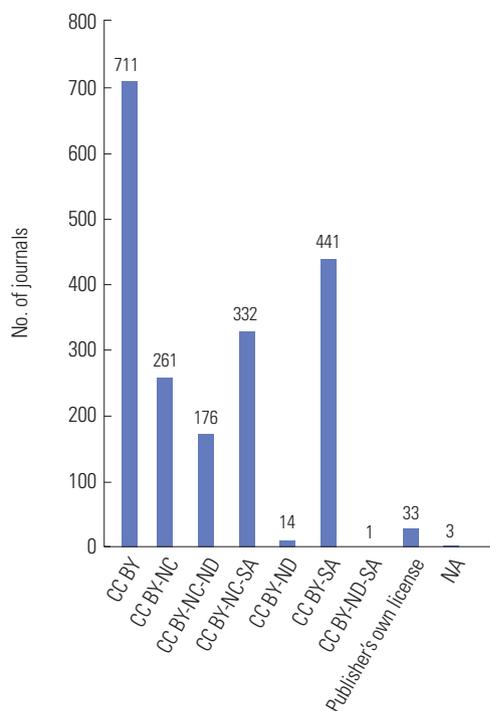


Fig. 3. Type of Creative Commons (CC) license of Asian journals which are registered in Directory of Open Access Journals. NC, non-commercial; ND, no derivative works; SA, share-alike; NA, not available.

A CC-BY-SA license means that users can copy, distribute, display, perform and modify the creator's work as long as the user distributes any modified work on the same terms as the original work.

Digital archiving and deposit policy

According to DOAJ guidelines, a journal's plan for digital backup and preservation of access to journal content such as CLOCKSS, Portico and PubMed Central should be documented in the event a journal is no longer published. CLOCKSS is a collaborative project between academic publishers and research libraries [5], and Portico has a diversified flow of funds from over 1,000 libraries and 100 publishers [6]. They both provide a sustainable dark archive to ensure the long-term viability of web-based academic content. PubMed Central is a repository for journal content deposited by participating journals and for authors following the research funding agency's public access policy [7].

However, as shown in Fig. 4., 86% of Asian journals (1,689) do not have any digital archiving policy. Three hundred fourteen journals are using LOCKSS and CLOCKSS, 152 journals are using Portico, and 106 journals are using PubMed Central as their deposit repository.

Deposit policies vary among publishers and journals, resulting in confusion among authors as to how to deposit their articles. To combat this confusion, the DOAJ has a policy of checking whether journals are using directories like Sherpa/

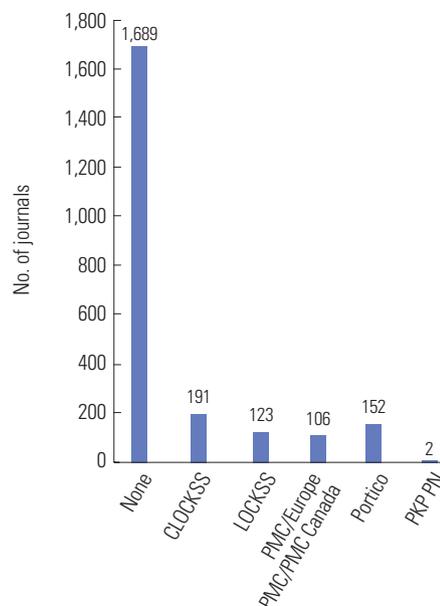


Fig. 4. Status of digital archiving policy in Directory of Open Access Journals registered Asian journals (Total number is over 1,972 as selected as many as possible). CLOCKSS, Controlled Lots of Copies Keep Stuff Safe; LOCKSS, Lots of Copies Keep Stuff Safe; PMC, PubMed Central; PKP/PN, Public Knowledge Project Preservation Network.

Table 4. Digital archiving status of top five countries registered in Directory of Open Access Journals

Country	Total	Deposit policy directory: Sherpa/Romeo	%	Digital archiving policy	%
Indonesia	1,322	40	3	15	1
India	238	140	59	152	64
South Korea	82	16	20	38	46
China	80	16	20	39	49
Malaysia	45	0	0	1	2

Romeo which provide information on journals' archiving policy [1]. India is the top Asian country regarding Sherpa/Romeo registration (140 journals, 59%).

Stating a deposit policy on the journal's homepage shows that a journal recognizes the author's right to archive a copy of his/her work. India is the top Asian country regarding digital archiving and deposit policy as shown in Table 4.

Discussion

The DOAJ aims to increase the visibility of peer-reviewed, OA content. Adoption of digital technology is an essential element for the promotion and internationalization of journals to raise awareness of their content. In particular, to quickly adopt DOI, Crossmark, Funder Registry and ORCID, many publishing experts are recommending using full-text JATS XML [4]. PubMed Central is also requesting full-text JATS XML as a primary standard in order to be indexed. Journal citation rates generally raise after being posted in international databases such as PubMed Central, therefore full use of JATS XML is beneficial for journal editors who want to increase their journal's global visibility [8].

For the active promotion of journals to an international level, more journals should utilize these digital standards. However, journals need extra budget items and digital publication technology experience in order to implement digital standards. Journal editors and scientific societies can refer to this study when they prepare their journal enhancement plan. This study only analyzed Asian DOAJ journals. The number of all registered DOAJ journal was 12,436 as of January 3, 2019. Further investigation is recommended for expanding this study to all registered DOAJ journals.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Data Availability

Dataset 1. Raw data received from DOAJ team and analysis data are available from the Harvard Dataverse at: <https://doi.org/10.7910/DVN/PGC7GJ>.

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