

## A Critical Review of Open Access Movement in Korea

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### ABSTRACT

*This study aims at investigating the barriers against sustainability of open access movement in Korea, which have not been covered in detail, thus seeking adequate solutions. Achieving this goal would provide valuable suggestions for the promotion of the OA movement in Korea. Especially, this study could be helpful in the fundamental development of OA in Korea, where OA is in its early adoption stage. This study found that governmental support and copyright problems are the reason for the slow growth of the OA movement in Korea. This study also suggested alternatives to solve the problems: national development planning for OAK business, preparing copyright belonging rules of commercial scholarly journals, and establishing cooperation with commercial scholarly journal filed for OA.*

**Keywords:** open access movement, Korea, OA publishing, scholarly communication

### INTRODUCTION

In the mid-1980s, scholarly communities ran into trouble. While academic journals became the core media of scholarly communications, the number of journals and subscription fees skyrocketed beyond capacity. As this so-called “serial crisis” was being exacerbated, open access has been supported as a countermeasure to deal with the predicament. This open access movement has expanded from a private to governmental movement, and it became even a global project.

Prior to this research, several studies investigated issues of open access (OA). For example, Antelman (2004) discovered that the impact of OA was far more powerful than expected through researching the impact factors of an OA article. Eysenbach (2006) also compared the statistics on the citation number of OA articles and that of non-OA articles, which were issued in the same journal. He concluded that OA articles have a higher citation-based impact than non-OA articles. These articles proved that OA has the possibility to enable the acceleration of the awareness and distribution of research results. Accordingly, scholarly communities are now encouraging the expansion of OA in pursuit of these expected benefits. Korea is now following this trend by joining the OA movement with

governmental support.

While many former academic studies on OA concentrated upon the benefits of OA, the skeptics of OA, pointing out the instability elements, still doubt the practical benefits of OA. Some of the critical instability elements could be presented in various ways. In order to make OA another media of important scholarly communication, it is essential to support improvements and supplements of OA. In this effort, it is important to discuss the OA issues from various perspectives.

Therefore, this study aims to focus on investigating the barriers against sustainability of OA in Korea, which have not been covered in detail, thus seeking adequate solutions for these elements. Achieving this goal would provide valuable suggestions for the promotion of the OA movement in Korea. Especially, this study could be helpful in the fundamental development of OA in Korea, where OA is in its early adoption stage.

### BENEFITS OF OPEN ACCESS IN GENERAL

From the previous empirical findings on OA, it is possible to suggest two beneficial effects: economic and the high impact of scholarly works.

### Economic Aspect

OA is based on the concept that contents such as journal articles and proceedings are provided free through the Internet. Because OA users do not need to pay to get such resources, they benefit economically. Providers of the green way contents also have economic merits because they can upload their papers to OA archives freely. Thus, they do not need to worry about the distribution costs.

Navin and Starratt (2007) reviewed articles that explain the reasons for moving onto OA publishing. But, as they state in their paper, "Once the costs of distribution are removed from consideration, the remaining issue for the second justification for open access publishing is 'who paid for the research?'" (p. 325). In order to answer this question, the authors investigated the sources of funding for published researches in economics, mathematics, and chemistry by examining articles appearing in some of the top journals over the past two to five years. The authors found that chemistry journals' percentage of public funding is 59 percent and that of private funding is 22 percent. Economics journals' percentage of public funding is 31 percent and that of private funding is 32 percent. Finally, mathematics journals' percentage of public funding is 59 percent and that of private funding is 18 percent. These findings indicate that at least 66 percent of funding is being done in each field. Regarding this issue, Drott (2006) also mentions that author fees for OA publishing can be supported by an author's organization, such as a university or research institution. With this financial support from institutions, OA journals are able to find a way to reduce subscription costs and author fees. Therefore, it can be said that OA has a relative economic advantage thanks to funding and being supported by institutions.

### Impact Power

OA materials are free of charge. Based on this attribute, the following assumption can be easily deduced. That is, the access to OA is easy, and the distribution of OA papers is fast. Articles in the OA environment may be exposed and read often by many scholars, thus leading to the increase in influence of the articles. Accordingly, OA articles can possibly obtain a relatively higher citation advantage.

Antelman's (2004) study, as mentioned before, advocates this idea. It attempts to measure the

impact of OA articles compared with that of non-OA articles of 40 journals in four disciplinary areas: electrical and electronic engineering, mathematics, philosophy, and political science. It uses citation rate, as recorded in the ISI Web of Science database, as a measurement of the research impact. The result shows that OA articles have a higher impact than non-OA articles in all four areas, ranging from a 45 to 91 percent citation increase.

Eysenbach's research (2006), as also mentioned in the introduction, strongly underpins this outcome. He investigates the bibliometric impact of articles of OA publishing and non-OA publishing from the Proceedings of the National Academy Sciences (PNAS), dealing with science areas such as biology and chemistry, between June 2004 and December 2004 and in April 2005 and October 2005 by measuring citations. The number of whole articles is 1492: 212 (14.2 percent of all articles) are published as OA articles and 1280 (85.8 percent of all articles) as non-OA articles. The finding of this research is that OA articles are cited more often than non-OA articles on average.

### OPEN ACCESS KOREA: OAK

OAK (Open Access Korea) is the name for the OA movement in Korea. Unlike other countries' OA movements, it is a government-led project. The OAK project deals with the green way and gold way of OA. Policy about OA is also included in OAK, such as public access research. OAK has held an annual OAK conference on global Open Access Week since 2010. Therefore, OAK is the largest and most significant OA movement in Korea.

OAK started as the Ministry of Culture, Sports, and Tourism (MCST) carried forward the project, Creative Management and Spread of Intellectual Contents of National Library, on March 2009. The Library and Information Policy Planning Bureau from MCST began the Development of Generic Technology of Intelligent Library project immediately, and, from June to December 2009, it developed domestic OAJ (open access journal) and established an electronic publishing trial system based on XML and integrated service system for internal and external OA. Since then, it has developed the OAK-Repository based on DSpace and started a publicity campaign and cooperation for domestic OA. From January to March 2010, it received professional advice and verification of the project and have completed the primary project and established secondary

project plan. Since March, it has selected and disseminated seven trial institutions to build the OAK Repository and supported the institutions to publish OA academic journals from seven domestic academies. Also, it has begun an OA policy study on the research output funded by public funds and developed thesaurus and semantic technology for national language resource system.

Through these processes, OAK projects have been developed up to now, and it is leading the OA movement in Korea. The OAK consists of three fields: technology infrastructure development, policy research and establishment, and business model development. Through these fields, OAK develops and disseminates repositories, publishes OAJ, provides OA information service and spreads OA movement and cooperation. These activities are based on OAK governance and include OA committee activity, national OA movement and cooperation, and OA policy establishment and legislation. To put it concretely, the OA project of OAK includes three areas: OA Repository, OAJ, and OA central and portal.

The OA Repository is a Korean model based on MIT DSpace and developed by KISTI for Korean society. It supports a variety of resource formats and is designed for the ease of global expansion by Google, etc. The main characteristic of the OA Repository is a function for institutional expansion and supporting the external linkage. The OAK Repository uses a metadata sharing system by OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting), and it can be expanded to the OAK portal, sharing contents based on OAI-PMH, register of OpenDOAR (Open Directory of Open Access Repositories), CNRI (Corporation for National Research Initiatives) handle system, and function for collecting statistics. Also, it aids the auto-search word completion using expanding functions of OAKR, language supporting, Korean morpheme analyzer, statistics system, PDF converter, auto classification, OpenAPI, and national identification system. OAKR is established through three steps: analyze, install, and customize. First, it collects requirements and information about current systems by visiting institutions. This is an environmental survey to develop OAKR as an ideal platform. Next, it installs OAKR core module additionally after installing the DSpace basic module. Finally, it is finished to provide custom functions for each institution by

developing specialized functions based on demand surveys.

The OA journals of OAK aim at setting a system based on foundation e-publishing services and building e-journals by observing international standards. This is made through the process of selecting a journal's object and scope and analyzing the structure; the process of building journal data based on NLM, XML, DTD; starting electronic publication; improving a work bench of XML full-text; and finally the process of model test of a work bench of XML full-text and drawing the joint initiative with another system.

OAK Central is a domestic OAJ archive. It has the objective to offer domestic major scholarly journals for XML full-text and high-value-added service such as a searching form for images and graphs. In contrast, the OAK Portal means domestic OAR information integrating service. It conducts the role of a gateway for information, which is produced by domestic institutions, and collects metadata along with offering a search service specialized by institution or type of information.

### OA JOURNALS IN KOREA

In Korea, open access journals have been processed in the gold way, while the open access archive is highly concentrated in scientific areas. Open access in Korea has not been fully adopted in academic society due to the unique characteristics of scholarly communication contexts in Korea. For example, the relatively low cost of scholarly journals and various free content available might reduce the necessity of open access. However, the high-cost problems of international journals are still applicable to Korea.

Joung (2011) discussed the type of Korean OA and present conditions dealing with Korean OA journals. Sorting through the OA journals among the KCI (Korea Citation Index) reveals that of the 22 percent of journals, 309 are OA journals. It has higher rates than the 360 of DOAJ OA journals, which are the 15 percent of peer-reviewed in Morrison's report. There are also two OA movements to develop the OA. That is the industry of scholarly village and the conference of university medical scholarly journals. KISTI (Korea Institute of Science and Technology Information) has pushed ahead development of technology to support science fields in the 1960s. This includes digitizing scholarly journals, constructing database,

offering search service, management of scholarly submission on the web, and constructing and managing a scholarly homepage. Also, the conference of university medical scholarly journals operate a digital archive, called KoreaMed Synapse, which deals with Korea medical journals and supports free scholarly journal services such as KISTI in the science field. These two organizations are the model in the development of OA movement.

In Korea, while most journal services are provided by commercial databases, OA journals can be accessed through Korean government research institutes or academic societies. Their repositories include the Science and Engineering Academic Society Village of KISTI (Korea Institute of Science and Technology Information), KAIST Open Access Self-Archiving Service (KOASAS), dCollection by Korean Education and Research Institute Service (KERIS), and Science Attic by Seoul National University and KISTI. These are the institutional or disciplinary repositories, which archive scholarly articles in one or more than one subject area.

There are three stable university repositories. These include the S-Space of the Seoul National University, the KOASAS of KAIST, and the INHA D-Space of Inha University. They request submission of articles that have been submitted in conferences or academic journals. In particular, S-Space demands conference proceedings, manuscripts before publishing, dissertations, project reports, and undergraduate students' reports. INHA D-Space also requests submitting documents that describe academic events such as lectures besides formal journals and research reports. Often, they require the file format as a PDF. Mostly, faculties are to submit their papers to these archives. This is not mandatory but encouraged.

In addition, Open Access Korea by KISTI provides nine Korean journals and archives. The fields of journals include psychology, environmental engineering research, aeronautical science and astronomy, optical and electronic engineering areas. As for open access archives, five university archives and four research repositories are available. There are more foreign journals and archives available in Open Access Korea, which are listed according to their alphabetic orders and subjects.

Often, open access journals are generally run by page charges, article-processing charges (APC),

and extra miscellaneous charges to submit the articles in journals. An open access journal receives 24,000 won in average for its charges, while non-open access journals receives 11,000 won on average. Also, 69.8 percent of open access journals receive funds from the Korean Research Fund and others. Moreover, 45 percent of these journals also have advertisement fees, and the membership fees that are less than 30,000 won. In other words, OA journals are not only receiving higher submission charges but also attempting to obtain more funds and other additional sources of revenue such as advertisement and membership fees. This phenomenon is contradictory to the benefit of open access, which was expected to be lower than the burden of subscription fees.

Also, public funded research articles are other targets to be served in open access archives. Korean Research Fund now provides the search service for articles that received its funds. However, the percentage of these publically accessible articles is low. Additionally, National Technology and Science Information Service (NTIS) collects public-funded research articles. Yet, this is currently unavailable in open access. Because the articles are government-funded, there is increasing demand that this inaccessibility should be settled for invigorating public access.

### PROBLEMS OF KOREA'S OA MOVEMENT

As with the OA movement in other countries, there is a promotion problem in the OA movement in Korea. The reason for this is as follows: First, it has been only a short time since the Korea government began to support the OA movement. The Ministry of Culture-Sports began the first OA movement, called the Creative Management and Diffusion of National Library Knowledge Contents project. In the USA, an OA-related bill was introduced in 2003. In the United Kingdom, the UK House of Commons Science and Technology Select Committee recommended OA-related suggestions in 2004. Compared with these countries, the Korea government took action very late. In the case of public access of public-supported fund, Korea has never proposed a bill, unlike in the USA and United Kingdom. This may be a main cause why the OA movement is not active in Korea.

Second, the regulations of copyright in the process of publication are not mature in Korea. OA, by its nature, cannot help but remain

closely relating to copyright. However, Korea has a problem with regulations for handling copyright issues. Hong (2008) covered this matter by analyzing 906 cases of journals by categorizing copyright belonging into nine types by main agent of ownership. After analysis of 906 domestic papers, 0.7 percent of authors only can write their name on the paper that can play roles of paper rights. Also, some 306 types are four papers that regulate the right to reproduce and right of transmission. Abroad, only 25.5 percent of 306 papers agree with the copyright transfer agreement between authors and publishers. According to Hong, most papers follow traditional customs such as the indifference right of paper rather than actively cope with these problems. The most important thing to do is the enactment of a related law in the digital environment.

Certain clues explain the problem of the OA movement in Korea. First, as there is intervention of government in the OA movement, contents of OA offered from OAK are not sufficient. Laws in Korea do not enforce public access of papers funded by public funds. Second, the copyright laws are not clear enough to be applied to commercial publishers. In Korea, authors do not have the copyrights of paper in archiving their papers in OAJ, which can affect the problems that deprive scholars of the chance to join scholarly communications in efforts to join the OA movement in Korea. Therefore, these two problems create insufficient OA development.

### POTENTIAL SOLUTIONS FOR GROWTH OF KOREA'S OA MOVEMENT

Most scholars understand the insufficient OA development in Korea. To solve the problems, scholars study the problems and publish papers. First, there are the ways to solve the problems and enhance the OA situation reported by OAK specialists.

Accordingly, these scholars assert active participation of government promotions of OA and establish bonds of sympathy. Also, to avoid the conflict between current laws and new laws, the papers funded by public funds should be publicized and collaborated to the interested parties. Through these efforts, the government should (1) support the promotion of the OAK movement; (2) trigger the participation of

scholars; (3) secure content and high-quality content; (4) secure budgets, and management strategies should be prepared.

From papers related to copyright, other countries have offered ways to participate in the CCL (Drott, 2006). However, these ways cannot help the situations of Korea because there is no clear copyright law between authors and publishers (Woo, 2009). Thus, Hong (2008) asserts some methods, as follows: (1) make the law about the paper submission; (2) define main agent of copyright; (3) reorganize titles of copyrights; (4) make the laws clear about digital duplication and transmission; (5) offer complete understandable sentences about transfer; (6) prepare the agreement of copyright transfer and stabilize the submission; (7) definitive contents and clues about copyright belongs to active OA and OA archive; (8) make compulsory author signatures.

Currently, as a national work, the OAK can be said to be the only core OA movement in Korea. In the OAJ field, OAK carries the business that converts requested journals into OAJ; in the OAR field, it carries the business of installing a Korean repository, which is based on Dspace in the applicant institutions. However, the scale of such OA movement is quite small, and it cannot resolve the copyright problems of existing commercial academic journals. OAK aims to create a new OA market, which can be symbiotic with commercial academic journals, but it is not enough to become an active OA movement such as in foreign countries. Because the OA, which OAK provides, has some limitations, most researchers publish their research outcome through commercial publishers, not OAK's OAJ or OAR. In the case of Korea, where a legally protected public archive does not exist, unlike NIH in the United States, limitation of the national OA movement is further revealed. Therefore, the possibility of the Korean OA movement's development will decrease unless OAK or the government try to intervene to solve the copyright problem between commercial publishers and authors or to draw a cooperative relationship between existing commercial publishing markets and OA.

Presently, cooperation and discussions for commercial academic journals and OA in Korea are proceeding slowly. The argument between

the academic and business fields in the World Intellectual Property Day Debate of 2011 demonstrated this problem. In this argument, the academic field suggested legislation for publicly funded articles, unification or multiplication for a main agent of publicly funded article archiving, and fund institutional support for publishing scholarly OA journals. Improving a library consortium's role for domestic OA, seeking easy access to free scholarly OA journals, but the business field said that legislation of OA is a waste of budget and a serious moral hazard. This field also claimed that the scholarly field has no empirical analysis and rational alternatives and pointed out that it is the biggest problem that the cost of foreign DB laid a burden on whole library's budget. Finally, the argument between the scholarly and business fields was incompatible; thus, this is the present situation in the Korean OA movement. To develop the Korean OA movement, the national role, represented as OAK, is also important, but it is essential to prepare an agreement between the publishing field and OA through solving copyright problems.

### CONCLUSION

OA is a movement that has appeared as an alternative to existing scholarly communication, and it has been focused on as an alternative to pricing crisis and permission crisis in the existing publishing field. The OA movement, materialized by OAJ and OAR, has settled widely in foreign countries such as the United States and the United Kingdom; thus, the legislation for OA movement has been established. Moreover, it can be said that OA is a global new wave.

OAR and state-dominated OAK exists, but, in terms of overall OA scale, it holds fewer contents when compared with those of foreign countries. As to the cause of this problem, this study states that late governmental support and copyright problems are the reason for the slow growth of the OA movement in Korea, all based on two aspects: domestic OA work and the existing commercial publishing field. Finally, this study have suggested alternatives to solve these problems: national development planning for OAK business, preparing copyright belonging rules of commercial scholarly journals, and establishing cooperation with commercial

scholarly journal filed for OA.

For the role of government, commercial publishers, and academic field, scholarly content is important for activating the OA movement in Korea. This study suggests a brief direction for the interested groups to participate in and activate the OA movement, thus reviewing systematically the existing researches on the Korean OA movement. To take part in OA, the global trend of scholarly communication, and to activate domestic scholarly communication, it is necessary to continue the succeeding researches about the concrete role of these interested groups.

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