

Aiming at Improving Access to Research Output through the Institutional Repository

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Abstract

The paper is to introduce the institutional repository (IR) as a powerful tool to support the researchers of the institution to archive and disseminate their research findings freely to the scholarly community on the Internet. The IR can improve the access to an institution's research output enormously. The operations of an IR also require various interactions with researchers, which enables the library to gain a solid understanding of research needs and expectations. Through such interaction, the relationship and mutual trust between researchers and the library are strengthened. The experiences of the Institute of Developing Economies (IDE) library can be useful to other special libraries.

Keywords: institutional repositories, subject repositories, special libraries, open access, users, scholarly communication

1. Introduction

Institutional repository (IR) is the system which collects, preserves, and disseminates the intellectual output of the institution in digital format. It is a way to achieve open access to the research information on the Internet by self-archiving. Open access aims to provide free access to scholarly content without cost; and self-archiving supports authors to make their articles freely available in a networked environment. The Institute of Developing Economies (IDE), JETRO undertakes basic and comprehensive research on economic, political, and social issues in developing countries and regions. As part of the institution, the IDE library collects academic materials on our subject fields and at the same time disseminates the survey findings and research studies that are conducted by the institution. To support the institutional mission, IDE developed the Academic Research Repository at the Institute of Developing Economies (ARRIDE) (<http://www.ide.go.jp/English/Library/Ir/>) to make research output available on the Internet and to increase the institution's reputation and public value.

The paper first describes the changing information environment in the digital era, especially the changes in scholarly communications and the ideas of open access and IRs. Second, the implementation and operation of the IR in IDE are introduced, discussing the organizational mission and linking ability to outside databases. Third, the advantages of subject-based IRs are explored. Fourth, the activities that the IDE library has undertaken to better understand needs and satisfaction of its users are described. In conclusion, greater focus may need to be placed on the customer relationship, beyond the traditional focus on library collections and services. Mutual trust and user satisfaction are important elements to connect the library and the users (both researchers who contribute to the IR content and general users). The day-to-day operations of an IR require intensive interactions with researchers. This requires the library to understand

research needs and expectations, and through these interactions the relationship and mutual trust between researchers and the library are strengthened.

2. Changing Scholarly Information Environment

In the 1990s, with the advent of the Internet and technological advances, the information environment surrounding researchers and the library began to shift. The digital era has brought about various changes to the research needs and expectations. With the improved Internet capabilities, some people tend to be satisfied with the simple and intuitive information they can find through general search engines, such as Google. For scholars, the volume of research information and varieties of media have increased, and yet they require seamless service to ensure resources are immediately available in hand, from anywhere, and at any time. Users are demanding more and more in an environment overflowing with information. It seems that a library has become only one of their choices among many information resources.

In this evolving research environment, this paper focuses on changes in scholarly communications, notably open access and the IR. From the late 1980s, the increased cost of scholarly journals caused a “serials crisis” and many academic libraries have been forced to cancel some of their journal subscriptions. The Open Access Movement has progressed internationally, aiming at free access to scholarly content without cost. In December 2001, the Open Society Institute held a meeting in Budapest, and the Budapest Open Access Initiative (BOAI) was adopted in 2002. It gives a statement of principle and strategy to achieve open access to the scholarly resources in digital format. BOAI also defines the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), which allows external systems to retrieve IRs’ metadata so that it can be used for searching and other purposes.

Most notably, BOAI recommends two strategies: self-archiving and open-access-journals. Self-archiving supports authors to make their scholarly output freely available on the Internet. In order to realize self-archiving, the IR has been implemented by staff skilled in information technology, largely by academic libraries. The IR is the system which collects, preserves, and disseminates the intellectual output of the institution in digital format. To define IRs, Crow (2002) says that it is a digital archive of the intellectual product created by the members of an institution and accessible to end users both within and outside of the institution. Lynch (2003) also describes the IR as a set of services that an institution offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. Drake (2004) points out issues to consider when developing IRs, including the institutional culture, the scope of the repository, content, access levels, legal aspects, standards, sustainability, and funding. The IR archives the institutional product, so that it is recognized as a showcase to maintain the institution’s reputation and prestige. Thus, the development and management of IRs relate closely to the organizational mission.

3. Experiences of the Institute of Developing Economies

3.1. Development of ARRIDE

ARRIDE, which stands for Academic Research Repository at the Institute of Developing Economies, was developed by the library of the Institute of Developing Economies (IDE) in 2006 with the internal financial support of the organization. The implementation of ARRIDE has been ensured in the Mid-term Plan of the Institution since 2005, aiming at disseminating internationally the survey findings and research studies of high-quality striving to be the best in the world. The National Institute of Informatics (NII) has worked together with universities and research institutions to realize the information infrastructure of scholarly content. Academic libraries of universities have been funded by NII to develop their IRs. There are 132 IRs registered at the

website of the NII Institutional Repositories Program (<http://www.nii.ac.jp/irp/>), of which eight were developed by the research institutions outside universities, and ARRIDE is the first IR among eight research repositories (as of November 17, 2010). To promote open access and IRs in Japan, the Digital Repository Federation was also established in 2006 with 87 universities and research institutions, and IDE is also a member institution.

ARRIDE provides online full-text access to research output of the institution in a timely manner. Upon the launch, a committee was organized and it initiated the activities of ARRIDE during the first year. The working group has been formed to handle on-going work, including system maintenance, document acquisition and processing, the actual data input tasks; and to handle copyright matters. ARRIDE aims to contribute to the scholarly community as an open access data provider, so that institutional output can be disseminated to various databases with value-added indexing and searching services by OAI-PMH. The IDE library chose DSpace software, and several customizations and enhancements were performed on it. As for the content development, the quality is taken seriously so as to maintain the reputation of the institution. Among institutional output, the committee has decided to confine its holdings to peer-reviewed articles written by researchers currently employed by the institution. Articles they publish in journals outside IDE are also included as the content of ARRIDE, which requires the working group to deal with copyright issues. In order to convince researchers to deposit research output for their own sake, an internal newsletter has been issued quarterly and distributed to researchers by email, promoting IRs and reporting trends and current issues. In addition, when contents are added to ARRIDE, each author receives a notification by email. The operation process of ARRIDE requires the IDE library staff to engage in various interactions with researchers, such as obtaining contents, clarifying bibliographic information, and clearing copyright issues.

3.2. Linkage with RePEc

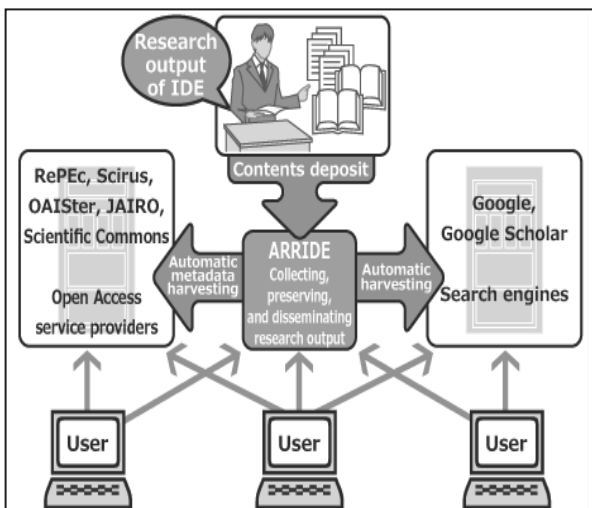


Figure 1. Linkage with Other DBs

While some contents of IDE publications are made available on the IDE website, ARRIDE uploads metadata of bibliographic information to various international service providers through different channels with complete access to full text content. Thus, the content of ARRIDE can be searched in the other databases and search engines as well. These include Scirus, OAISter, Google Scholar, Scientific Commons, and JAIRO. JAIRO is the abbreviation of Japanese Institutional Repositories Online, which was created by NII (or the National Institute of Informatics). It is a portal site that allows one to cross-search 1,044,420 contents in 166 Japanese IRs (as of November 18, 2010).

Among open access service providers, the Research Papers in Economics (RePEc)

(<http://repec.org/>) provides the most important international databases in our institution's primary subject fields. RePEc is a decentralized relational archive of scholarly resources in economics and social sciences. The content of RePEc is further uploaded automatically to the EconLit or the Economists Online. RePEc is ranked in the third among 800 IRs at the Ranking Web of World Repositories (<http://repositories.webometrics.info/>) for the global visibility and impact of the scientific repositories. 293 Japanese institutions are taking part in providing metadata to RePEc (as of November 17, 2010).

Romary and Armbruster (2009) compare the general IR with the central research publication repository, such as RePEc, from perspectives of deposit, quality, visibility, access, standards, preservation, and cost. Central research publication repositories demonstrate distinct advantages, including continuous improvement of services supported by unified and high standards; and more efficiently managed maintenance and preservation, etc. They also emphasize that the IR must bring the benefit to scholars when they offer dedicated services supporting the production of new knowledge (Armbruster and Romary, 2010). They state that the subject-based repositories offer “the opportunity to communicate ideas and results early in the form of working papers and preprints, from which a variety of benefits may result, such as being able to claim priority, testing the value of an idea or result, improving a publication prior to submission, gaining recognition, achieving international attention and so on” (Armbruster and Romary, 2010). Researchers are eager to submit their research findings to RePEc in order to obtain such indispensable benefits.

To measure the usage rate of repositories, Sato and Yoshida (2010) provided the log analysis of six Japanese repositories; they included only full-text downloads and excluded access by programs, such as search engine robots. They also identified countries of origin for access to each repository, and their findings show that many users reach the content of ARRIDE through RePEc from overseas. Other repositories are reached by general search engines besides direct access. The analysis also indicates that the download rate of ARRIDE is relatively high although the size of the collection is not large (Table 1.). It proves that uploading metadata to RePEc has successfully brought an effective impact to the content of ARRIDE by increasing accessibility, usability, and visibility.

**Table 1. Comparison of ARRIDE and other Repositories
(created by using data of Sato and Yoshida, 2010)**

Name of IR	ARRIDE	CRFukui	HUSCUP	KURENAI	QIR	Tulips-R
Number of items	688	2,171	29,992	47,625	12,166	8,919
Full-text downloads	28,333	33,209	539,569	820,273	491,233	230,683
Downloads per item	41.18	15.30	17.99	17.22	40.38	25.86

4. Subject Oriented Services

The impact of ARRIDE resulting from the linkage with RePEc implies that the specialized content of ARRIDE sufficiently fills specific user needs in the targeted scholarly community. In other words, IRs can be effectively utilized when the IR content is clearly defined, for example, by the subject. There are international subject-based repositories, including PubMed (medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences), ArXiv (physics, mathematics, computer science, quantitative biology, quantitative finance and statistics), and SSRN (social sciences), etc. The linkage with outside databases combined with the subject strength will greatly improve access to the IR content.

In the digital environment, IRs will provide researchers, as users, with free access to scholarly content and also help them, as authors, to archive their findings to share with other scholars. The American Marketing Association defines on their website marketing research as the function to obtain “the information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process.” If archiving and disseminating research findings on the Internet are thought of as the marketing of researchers, the librarians must tactically find and justify the most effective path to make them accessible, usable, and visible by employing “marketing research” business strategies. Lynch (2003) says that researchers have been exploring ways in which works of authorship in the new digital medium can enhance

research activities and make scholarship vital and effective. Moreover, Armbruster and Romany (2009) feel that librarians are well positioned for crucial role in supporting fast and wide dissemination; and permanent access in the process of IRs.

5. Building Better Relationships with Users

In the networked environment, various library collections and services have become more available without users needing to actually visit the library. For instance, virtual reference services or ILL services are popular among distance, or remote users. Physical interactions between librarians and users are apparently decreased. In such circumstances, librarians must strive to shift this negative situation themselves, listening to users' voices more carefully than ever before.

The IDE library has undertaken the following activities to enhance its understanding of user needs and satisfaction. In November 2009, we conducted a questionnaire survey on user satisfaction with the aim to improve library services and public value. 436 questionnaires were handed out to general users who visited the library, of which 275 were collected with a 63% response rate. For overall satisfaction, 96.7% of respondents found the IDE library useful. While the questionnaire survey is an effective method to collect data on a large number of people, there are certain weaknesses. For example, questions may not cover the entire library services, and we may not know what non-responders are thinking. The response rate of internal users, i.e., researchers of the institution, has been lower, the average rate in recent few years being 33%. To cultivate user needs and satisfaction of organizational researchers, comprehensive formal interviews were conducted between September and November, 2009. The researchers were grouped according to their research fields by geographical regions or subjects. 16 interviews were performed with a total of 63 researchers taking an average time of 1-1.5 hours. Librarians who deal with acquisition work moderated the interviews. One outcome was being able to recognize the kind of library resources and services that researchers need or expect reflecting their research interests. The interview is a good method for librarians as interviewers to observe the in-depth attitudes of researchers as regards to the library collection and services.

We have made an effort to understand the needs and expectations of researchers as targeted core users by conducting questionnaires and interviews. Hernon and Whitman (2001) give this important point of view on the library services and user satisfaction. "Service should be relationship-driven (between the customer and the library), and whatever service is provided comprises the means, not the end. The end relates to what customers gain from service delivery—having their information needs satisfied. (snip) The focus is no longer merely on collections and things that the library possesses; rather, the core activity is the people served and the relationship (ideally a long-term one) between them and the library" (Hernon and Whitman, 2001). Accordingly, the continued mutual satisfaction will be delivered once the relationship between the users and the library is established and understood.

6. Conclusion

The digital era has brought about changes to the research needs and expectations, with an increasing array of choices of information resources. We have also seen changes in how scholarly communications are carried out, notably open access and the IR. To achieve open access by the IR, self-archiving is recommended to make scholarly output freely available on the Internet. The development of IRs has largely taken place at universities, but any organization can adapt its concept. The library of the Institute of Developing Economies (IDE) shares many characteristics of a special library. Special libraries may find IRs useful to reallocate the existing resources and increase the institution's visibility and public value. ARRIDE's experience of linkage with outside databases together with its subject strength have shown how access to the IR content improved tremendously. Special libraries that have a focus on a subject area may find

development of their IR as an opportunity. The IR archives the institutional product so that it is recognized as a showcase to maintain the institution's reputation and prestige. Since the IR represents the institution, the operational process involves every member of the institution and requires frequent interactions between researchers and the library. The improved understanding of process and needs of research studies conducted by the institution, resulting from the interactions with researchers, will ultimately improve the quality of the library resources and services. At the same time, the improved operation of the library will support us to play an important role within the institution, proving our expertise. In the future perspective, no matter whether we are researchers or librarians, each member of the institution should find the best practice in each role and share the opportunity of the digital era, which will help boost the status of the institution as a whole.

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References

1. American Marketing Association. "Definition of Marketing." American Marketing Association.
<http://www.marketingpower.com/AboutAMA/Pages/DefinitionofMarketing.aspx>
2. Armbruster, Chris, and Laurent Romary. "Comparing Repository Types: Challenges and Barriers for Subject-based Repositories, Research Repositories, National Repository Systems and Institutional Repositories in Serving Scholarly Communication." *International Journal of Digital Library Systems*, vol.1 no.4 (2010): 61-73.
<http://arxiv.org/ftp/arxiv/papers/1003/1003.4187.pdf>
3. Budapest Open Access Initiative. "Budapest Open Access Initiative." Budapest Open Access Initiative.
<http://www.soros.org/openaccess/read.shtml>
4. Crow, Raym. *The Case for Institutional Repositories: a SPARC Position Paper*. Washington, DC: Scholarly Publishing and Academic Resources Coalition, 2002.
http://www.arl.org/sparc/bm~doc/ir_final_release_102.pdf
5. Drake, Miriam A. "Institutional Repositories: Hidden Treasures." *Searcher: The Magazine for Database Professionals*, vol.12 no.5, (2004): 41-45.
<http://www.infotoday.com/searcher/may04/drake.shtml>
6. Herson, Peter, and John R. Whitman. *Delivering Satisfaction and Service Quality: a Customer-based Approach for Libraries*. Chicago: American Library Association, 2001.
7. Lynch, Clifford A. "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age" *ARL*, no. 226 (February 2003): 1-7.
<http://www.arl.org/bm~doc/br226ir.pdf>
8. Romary, Laurent, and Chris Armbruster. *Beyond Institutional Repositories*. Author Manuscript (June 29, 2009)
<http://arxiv.org/ftp/arxiv/papers/1003/1003.4187.pdf>
9. Sato, Sho, and Yoshida Mitsuo. "Usage Log Analysis of Articles in Six Japanese Institutional Repositories: Which Region Do Users Access Articles From?" (paper presented at the 2010 CiSAP colloquium on Digital Library Research, Taipei, Taiwan, November 15, 2010)
http://www.lis.ntu.edu.tw/cisap2010/Abstracts_files/ds01.pdf