

Analysis of Recent Developments in Domestic Institutional Repositories: Postprint

Authors: Cao Yanfeng

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Abstract

[Purpose/Significance] Institutional repositories have experienced rapid development in recent years, yet still encounter challenges in conceptual understanding, policy, technology, promotion, and sustainable development. Analyzing and addressing these issues is of paramount importance for the healthy advancement of institutional repositories.

[Method/Process] Through diverse research methods including website investigation, telephone surveys, and expert interviews, this study examines the current development status of institutional repositories in China and analyzes existing challenges in their development.

[Results/Conclusion] Corresponding solutions are proposed to address these challenges, including enhancing promotion, stimulating researchers' enthusiasm for uploading research outputs, and reforming the management and evaluation systems for research outputs, thereby advancing open access as a vital channel for promoting the dissemination of research outputs and the exchange of scientific ideas.

Full Text

Preamble

The Latest Development of Domestic Institutional Repositories

Cao Yanfeng¹²

¹Library of Capital University of Economics and Business, Beijing 100070

²School of Statistics, Capital University of Economics and Business, Beijing 100070

Abstract

[Purpose/Significance] Institutional repositories have developed rapidly in recent years, yet they continue to face challenges related to conceptual understanding, policy frameworks, technical infrastructure, outreach, and sustainable development. Analyzing and addressing these issues is crucial for the healthy advancement of institutional repositories. **[Method/Process]** This study investigates the current state of institutional repositories in China through website surveys, telephone interviews, and expert consultations, analyzing existing problems in their development. **[Result/Conclusion]** The paper proposes corresponding solutions to these challenges, including strengthening promotional efforts to motivate researchers to deposit their work, reforming the management and evaluation systems for research outputs, and promoting open access as a vital channel for disseminating research findings and facilitating scholarly communication.

Keywords: open access; institutional repositories; academic exchange; knowledge management

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The Latest Development of Domestic Institutional Repositories

Introduction

R. Crow, Senior Advisor to the Scholarly Publishing and Academic Resources Coalition (SPARC) and a leading authority on institutional repositories, defines an institutional repository (IR) as a digital archive established by academic institutions to capture and preserve their intellectual output [1]. This definition identifies two strategic missions: first, to provide a reformed scholarly communication system by incentivizing innovative publishing structures; and second, to preserve institutional research achievements long-term while demonstrating institutional visibility, academic reputation, and social value. Although numerous subsequent definitions have emerged both domestically and internationally, most extend this core concept to reflect contemporary developments.

Based on this definition and practical implementations, institutional repositories exhibit several fundamental characteristics: (1) the subject is the institution itself; (2) the object comprises scholarly resources including journal articles, theses, conference papers, instructional videos, and working papers; (3) resources are dynamically growing and require long-term preservation; and (4) most resources are openly accessible. Their primary functions include: (1) storing and preserving scholarly resources; (2) providing retrieval and open access services;

(3) facilitating knowledge management and academic exchange; (4) supporting education and research; and (5) enhancing institutional prestige and demonstrating social value.

As of November 19, 2015, OpenDOAR registered 2,989 open access repositories worldwide, including 2,518 institutional repositories. Among these, mainland China had 40 registered IRs, Hong Kong had 2, and Taiwan had 58 [2]. ROAR registered 4,122 open access repositories, with over 3,100 being institutional repositories. Mainland China accounted for 86 IRs, Hong Kong for 5, and Taiwan for 68 [3]. The rapid global growth of institutional repositories reflects their increasing importance as platforms for preserving scholarly outputs and strengthening academic communication.

1. Latest Developments in Domestic Institutional Repositories

Institutional repositories were introduced to China at the beginning of this century, with pioneering efforts by Xiamen University Library and Hong Kong University of Science and Technology Library. From these early initiatives to over 80 registered institutions on ROAR today, IRs have experienced significant growth in China. However, due to cultural and institutional differences from Western countries, some Chinese IRs have evolved into “archives” that merely publicize published works, while others have become specialized databases showcasing institutional strengths or unique collections. Some have even become “sleeping repositories” over time due to various factors.

Consequently, China’s institutional repositories urgently need to transform from “outcome archives” into “knowledge service platforms.” As Zhang Xiaolin argues, IRs serve as crucial mechanisms for institutions to manage research outputs, disseminate scholarly knowledge, and support societal innovation, increasingly forming essential components of knowledge infrastructure and tools for supporting digital research and education [4]. Supporting non-textual information storage, facilitating research and educational activities, and enabling strategic knowledge management represent future trends for Chinese IRs [4].

Major well-developed institutional repositories in China include the Chinese Academy of Sciences Institutional Repository Grid, Xiamen University Academic Repository, Taiwan Academic Institutional Repository, and Hong Kong Institutional Repositories.

1.1 Chinese Academy of Sciences Institutional Repository Grid

Launched in 2007, the Chinese Academy of Sciences (CAS) IR project has developed into China’s largest IR alliance—the CAS IR Grid. This repository aims to enhance institutional knowledge sharing and management capabilities by rapidly collecting, preserving, and disseminating institutional knowledge assets. It actively builds capacity for capturing, transforming, disseminating, utilizing, and auditing knowledge content, gradually developing knowledge services including content analysis, relationship analysis, and capability auditing

to support comprehensive knowledge management [5].

The CAS IR Grid currently integrates data from 101 institutional repositories, with over 500,000 entries as of November 2015, accounting for 75% of total entries with an average of 19.8 downloads per item [6]. Content types include journal articles, theses, conference papers, patents, and other formats. The platform provides one-stop retrieval and knowledge discovery services across all member institutions, forming China's largest-scale IR cluster and most influential IR grid, offering an excellent platform for open sharing of natural science academic resources.

1.2 Xiamen University Academic Repository Established in 2006, the Xiamen University Institutional Repository (XMUIR) was among the earliest IRs in mainland Chinese universities. It primarily stores and showcases high-value scholarly works, journal articles, working papers, conference papers, research data, and presentation materials from Xiamen University faculty and students [7]. The repository offers five browsing methods (community, date, author, title, subject) and RSS subscription functionality. Collected works are faceted by author, subject, and publication date, sorted in descending order by collection volume. Most content without special restrictions is available for browsing and full-text download. As of November 19, 2015, the repository contained 89,795 entries [8].

1.3 Taiwan Academic Institutional Repository The Taiwan Academic Institutional Repository (TAIR), commissioned by Taiwan's education authority and built by National Taiwan University Library in 2006, serves as a portal for Taiwanese academic research output. It involves 137 academic institutions with a total of 1.89 million entries [9]. TAIR aggregates bibliographic data from participating institutions to facilitate integrated searching and browsing of Taiwan's overall research output, providing links to full-text materials in original institutional repositories.

1.4 Hong Kong Institutional Repositories Hong Kong's institutional repository integrates metadata resources from eight government-funded universities, providing open access to partial or complete resources from these institutions. It has harvested 365,764 metadata records, including published and preprint journal articles, conference papers, books, reports, patents, and videos. The system is developed and maintained by Hong Kong University of Science and Technology Library [10].

The eight universities covered are: The University of Hong Kong, Chinese University of Hong Kong, The Hong Kong University of Science and Technology, The Hong Kong Institute of Education, The Hong Kong Polytechnic University, City University of Hong Kong, Hong Kong Baptist University, and Lingnan University. As T. Palmer of the University of Hong Kong Libraries noted, institutional repositories have become university-wide knowledge asset management

platforms that facilitate effective research information management [11].

1.5 China Academic Institutional Repository (CHAIR) Led by Peking University Library, the CALIS Phase III Institutional Repository Construction and Promotion Project aims to reveal and promote Chinese universities' academic achievements. It helps institutions publish, share, and protect digital resources representing their knowledge, scientific, and cultural heritage, establishing a "distributed deployment, centralized discovery" national university IR system called CHAIR [12].

The project pioneered a "demonstration library + participating library (1+4 or 1+5)" mechanism. Five demonstration libraries (Peking University, Tsinghua University, Xiamen University, Beijing Institute of Technology, and Chongqing University) collaboratively developed the national platform, dividing tasks to coordinate management and promote IR construction across Chinese universities. Each demonstration library, after completing its own IR platform, is responsible for building IRs for participating libraries in its group, providing technical support, developing standards, and offering business consultation.

2. Development Obstacles and Solutions

Due to their relatively short development history, China's institutional repositories face numerous challenges and obstacles. Many experts have provided detailed analyses [13-15], which can be summarized as: (1) policy support issues (both national macro-policies and institutional micro-policies); (2) funding sources; (3) legal issues such as copyright licensing; (4) content quality control; (5) technical issues including metadata storage and interoperability; and (6) conceptual barriers among contributors.

To address these challenges, both national and institutional levels have made considerable efforts and attempts with some success, though further improvements are needed.

2.1 Government Policy and Funding Support The UK Research Councils' Open Access Policy, implemented on April 1, 2013, requires research outputs from funded projects to be made openly accessible through OA journals or self-archiving. In February 2013, the U.S. White House Office of Science and Technology Policy (OSTP) mandated that all federal agencies with annual R&D funding exceeding \$100 million must deposit funded research papers into institutional or disciplinary repositories for open access within 12 months of publication. Ireland, India, and other countries have also formulated corresponding open access policies [16].

Under China's "Culture Going Global" strategy, the government has begun emphasizing policy and financial support for open access. At the opening ceremony of the 2014 Global Research Council Beijing meeting, Premier Li Keqiang stated:

“Knowledge is a global public good. Building more open platforms enables everyone to share the nourishment of scientific knowledge and achieve inclusive development.” He also expressed national support: “We support establishing an open access mechanism for scientific knowledge funded by public finance to promote common development of Chinese and global scientific endeavors.”

2.2 Policy Formulation and Improvement for Open Access Shang Xinli and Ma Yunfei’s comparative study of open access policies at Tsinghua University, Peking University, and Xiamen University analyzed nine specific aspects: (1) policy display methods on IR websites; (2) regulations from publishers and research institutions; (3) accepted work types and contributor scope; (4) submission policies; (5) usage policies; (6) format and version requirements; (7) legal basis; (8) withdrawal policies; and (9) privacy policies [17]. The study identified exemplary practices while proposing improvements.

Since IRs first matured in developed countries, China can learn from advanced experiences and policies in the U.S., UK, and Germany to establish a scientific, standardized, and reliable academic exchange platform with clear legal and regulatory frameworks.

2.3 Technical Issues

2.3.1 Repository Software Development and Application The most widely adopted repository software are DSpace and EPrints. In ROAR, DSpace is used by 1,609 repositories (39%), followed by EPrints (578, 14%), Bepress (383, 9%), and Fedora (58, 1.4%) [2]. As these software packages were developed abroad, China faces localization and compatibility challenges. The National Science Library of Chinese Academy of Sciences has localized DSpace, releasing the Chinese version CSpace 4.0 for IR construction. Domestic companies are also developing commercial repository software.

2.3.2 Interoperability Technology and Protocols Traditional interoperability refers to the ability to exchange and share data across different platforms or programming languages, encompassing hardware, networks, operating systems, database systems, data formats, and data semantics. Institutional repositories must resolve interoperability issues including: between different information systems, between different open-source software, between OAI-compliant and non-OAI-compliant repositories, and between IRs and search engines. These technical considerations are essential to ensure smooth data harvesting, preservation, migration, and emulation, preventing incompatibility, unreadability, or data corruption.

Liang Na and Zhang Xiaolin analyzed IR interoperability requirements from knowledge management, knowledge services, and research education perspectives, constructing an interoperability framework addressing technical, semantic, and managerial interoperability across multiple stakeholder needs [18]. Due to

implementation complexity, these specifications should incorporate input from technical professionals.

2.4 Leveraging Collective Strength At the 2014 China Institutional Repository Symposium, Zhu Qiang of Peking University Library called for collaborative mechanisms among university IRs, forming working groups on policies, technologies, and content development [19]. The CALIS Phase III project exemplifies this collective approach, leveraging group advantages to promote IR construction nationwide, making open access concepts widely understood, and mobilizing enthusiasm across university libraries and research communities.

The China IR Implementation Group, established during the first China OA Week in 2012, comprises 14 members including the National Science Library of Chinese Academy of Sciences, Tsinghua University Library, Peking University Library, and others. The group promotes IR content deposit, technical operations, management policies, and talent development, organizing annual symposiums to gather insights and advance national IR development.

Beyond inter-institutional cooperation, intra-institutional collaboration among libraries, research offices, and academic departments is crucial for communication, promotion, and standard compliance, avoiding the “information silo” phenomenon.

2.5 Maintenance and Promotion Due to traditional publishing models and research evaluation systems, Chinese researchers are often reluctant to make all their works openly accessible, especially preprints, lacking incentive mechanisms. Gray literature and theses particularly require strengthened copyright and dissemination regulations. Therefore, promoting conceptual transformation and incentivizing timely deposit is critical.

Long-term maintenance planning is also essential, encompassing data preservation, duplicate checking, periodic evaluation, and addressing technological obsolescence.

3. Conclusion

After more than a decade of development, institutional repositories are maturing. However, domestic implementation still faces significant challenges, including researchers’ concerns about depositing works and institutional research management systems. Widespread adoption of IRs and comprehensive open access in China requires time. We must first guide conceptual change and motivate researchers to recognize and actively use IRs. Second, technical and legal safeguards must be strengthened to protect authors’ rights. Additionally, promotional efforts must expand, collective strengths leveraged, and policy and financial support secured. Currently, China’s IR development has gained widespread attention from government, research institutions, and libraries, and

will undoubtedly become a vital force for promoting open access to scientific information, resource sharing, and enhanced knowledge management.

References

- [1] CROW R. The Case for Institutional Repositories: A SPARC Position Paper[R]. Washington DC: SPARC, 2002: 2.
- [2] Directory of Open Access Repositories[OL]. [2015-11-19]. <http://www.opendoar.org/>.
- [3] Registry of Open Access Repositories[OL]. [2015-11-19]. <http://roar.eprints.org/>.
- [4] Zhang Xiaolin. Trends and Challenges of Institutional Repositories[J]. Modern Library and Information Technology, 2014, 2(1): 1-7.
- [5] About the Chinese Academy of Sciences Institutional Repository Grid[EB/OL]. [2015-04-20]. <http://www.irgrid.ac.cn/guiter?id=1>.
- [6] Chinese Academy of Sciences Institutional Repository Grid[OL]. [2015-11-19]. <http://www.irgrid.ac.cn/>.
- [7] About Xiamen University Institutional Repository[EB/OL]. [2015-03-21]. <http://dspace.xmu.edu.cn/dspace2/other/about.htm>.
- [8] Xiamen University Institutional Repository[OL]. [2015-11-19]. <http://dspace.xmu.edu.cn/dspace/discover>.
- [9] Taiwan Academic Institutional Repository[OL]. [2015-11-19]. <http://tair.org.tw/>.
- [10] HKIR[OL]. [2015-11-19]. <http://hkir.ust.hk/hkir/Search/Results?lookfor=&type=AllFields&submit=Find>.
- [11] Journal Center of School of Information Management, Wuhan University[EB/OL]. [2015-11-19]. <http://www.dik.whu.edu.cn/CN/column/item134.shtml>.
- [12] Nie Hua, Wei Chengfu, Cui Haiyuan. CALIS Institutional Repository: Construction, Promotion, Reflection and Prospect[J]. Journal of Library Science in China, 2013, 39(24): 5-9.
- [13] Ke Ping, Wang Yingjie. Research on the Development of Institutional Repositories[J]. Library Tribune, 2006, 26(6): 246-247.
- [14] Guo Shaoyou. Research on Several Issues in Institutional Repository Construction[J]. Journal of Library Science in China, 2006, 32: 77-80.
- [15] Deng Jun, Bi Qiang. Research Progress on Domestic Institutional Repositories[J]. Library and Information, 2007(5): 39-40.
- [16] Zhang Yaokun. National Open Access Policy: A Pilot Study[J]. Information and Documentation Services, 2013, 06: 5-9.
- [17] Shang Xinli, Ma Yunfei. Investigation and Research on Open Access Policies of Three Major University Institutional Repositories in China[J]. Library, 2015(1): 41-43.
- [18] Liang Na, Zhang Xiaolin. Interoperability Requirements and Interoperability Specification Framework for Institutional Repositories[J]. Modern Library and Information Technology, 2013(9): 1-7.
- [19] Steering Committee for Library and Information Work of Higher Education Institutions, Ministry of Education. Summary Report of the 2014 China Institutional Repository Symposium[EB/OL]. [2015-03-19]. <http://www.scal.edu.cn/zxdt/201411240129>.

Note: Figure translations are in progress. See original paper for figures.

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