

Original Paper

Analysis and Research on the Open Access Policy System of Institutional Repositories in Chinese and Foreign Universities

Zong Liang^{1*}

¹Library, University of Shanghai for Science and Technology, Shanghai, China

*Zong Liang, Library, University of Shanghai for Science and Technology, Shanghai, China

Received: June 24, 2024

Accepted: July 7, 2024

Online Published: July 26, 2024

doi:10.22158/csm.v7n2p38

URL: <http://dx.doi.org/10.22158/csm.v7n2p38>

Abstract

Formulating a complete and comprehensive Open Access (OA) policy is conducive to the healthy and orderly development of institutional repositories. Through investigating the OA policies of a total of 30 universities in China, the United States and the United Kingdom, the author analyzes the policy contents from aspects such as the purpose of OA, deposit policy, usage policy, copyright policy and fund sponsor policy, and draws enlightenment in the formulation of OA policies. Chinese universities should gradually promote the implementation of mandatory OA policies according to their own characteristics; formulate a scientific and comprehensive policy system by providing detailed policy interpretations and term explanations; formulate personalized OA policies according to the disciplinary characteristics of universities and the characteristics of the knowledge base; and add the OA policy content of the fund project sponsors related to the university in the policy to facilitate the reasonable use by the authors.

Keywords

open access, colleges and universities, institutional repository, open access policy

Open Access (OA) refers to the free and unrestricted access to the scientific knowledge produced by humans (Zhang, 2017). As a brand-new academic publishing and communication model, it has been promoted and popularized worldwide, promoting the free dissemination of academic achievements in various countries. The Institutional Repository (IR) was generated under the background of the Open Access movement and is a digital resource library used to centralize, preserve, and facilitate users to obtain the research achievements of academic institutions. With the development of science and technology and the increase of the need for academic exchanges, the institutional repository has entered a period of vigorous development. According to the statistics of the authoritative Open Access

Repository Directory Open DOAR, as of November 2023, there have been 5910 institutional repositories registered in this platform (Open DOAR, 2023). Among them, there are 818 in the United States, and the number of institutional repository registrations ranks first in the world; there are 270 in the United Kingdom, ranking fourth; there are only 66 knowledge bases registered in this platform in China, and it is still in the early stage of development.

Many scholars in China have conducted in-depth research from aspects such as the construction mode, functional services, and application practices of institutional repositories. Deng Jun (Deng, 2010) explained the mode characteristics of three well-known foreign knowledge bases and put forward the optimized choice strategy for the construction of domestic institutional repositories. Ma Jianxia (Ma, 2010) by analyzing the needs of the stakeholders of the institutional repository, put forward the trends in content construction and service design of the knowledge base. Li Honggang and others (Li & Tang, 2020) based on the construction practice of the institutional repository of Nankai University, put forward a feasible plan for the construction of knowledge bases in universities. However, there is relatively little research on the Open Access policy for knowledge bases. The Open Access policy has guiding significance for the construction and implementation of institutional repositories. A complete and comprehensive Open Access policy is a powerful guarantee for the healthy development of institutional repositories. In countries such as the United States and the United Kingdom, where open science is relatively advanced in development, major well-known universities or their subordinate units have successively formulated OA policies, which has greatly promoted the construction of institutional repositories in universities and colleges and promoted the exchange and dissemination of academic achievements. This paper investigates the OA policies of institutional repositories in Chinese and foreign universities, summarizes and sorts out the investigation results, analyzes and summarizes the inspirations for the construction of the OA policy system of institutional repositories in Chinese universities, in order to provide reference and basis for the construction and development of the repositories.

1. Research Objects and Methods

In the “Leiden Ranking2023” released by the Center for Science and Technology Studies of Leiden University in the Netherlands in 2023, 1411 universities in 65 countries around the world were included. Among them, the top three countries in terms of the number of universities are: 273 in China, 206 in the United States, and 64 in the United Kingdom. According to the ranking of open access-related statistical data in the Leiden ranking, the top 10 universities in China, the United States, and the United Kingdom were selected, and the OA policies of these universities were collected from the website of the Registry of Open Access Repository Mandates and Policies (ROARMAP), an international registration institution, for detailed analysis and comparative research. Among them, since the number

of universities registered in ROARMAP in China is relatively small, only 3 universities in Hong Kong, the author used the online survey method to check the official websites of each university and its library in turn according to the ranking, and collected the OA policies and some basic information of the institutional repositories of the following universities.

The 10 universities in China are: Peking University (A1), Shandong University (A2), Wuhan University (A3), Nanjing University (A4), Dalian University of Technology (A5), Xiamen University (A6), University of Hong Kong (A7), Jiangsu University (A8), Nanjing Tech University (A9), Hong Kong University of Science and Technology (A10); the 10 universities in the United States are: Harvard University (B1), Johns Hopkins University (B2), California State University (B3), University of Pennsylvania (B4), Cornell University (B5), Columbia University (B6), Duke University (B7), Pennsylvania State University (B8), Massachusetts Institute of Technology (B9), University of California (B10); the 10 universities in the United Kingdom are: University of Oxford (C1), University College London (C2), University of Cambridge (C3), Imperial College London (C4), University of Manchester (C5), University of Nottingham (C6), University of Birmingham (C7), University of Sheffield (C8), University of Leeds (C9), Cardiff University (C10).

It can be known from the statistical results that the amount of open access data of the institutional repositories of universities in China is relatively large, and the reason may be that the number of knowledge bases in the same unit is relatively small. In this way, resources are relatively concentrated and stored, and the scope of inclusion of academic achievements is relatively broad, which is beneficial to the data retrieval, deposit, sharing and use of scientific researchers. The construction of institutional repositories in the United States and the United Kingdom is both in a leading position in the world. The effective time of the OA policies of universities in the two countries is mostly before 2013. Cornell University in the United States even formulated relevant OA policies as early as 2005. The exploration and practice of open access by these universities in the past ten years or so have effectively promoted the development of the open access movement and played an important role in the policy formulation and resource construction management of the open access institutional repository.

2. Analysis of the Contents of University OA Policies

Analyze and compare the specific contents of the collected OA policies, including the purpose of open access, deposit policies (stored content, version requirements, submission policies, preservation policies, withdrawal policies), usage policies (metadata usage, full-text usage, unrestricted usage), copyright policies (copyright statement, authorization license, embargo restrictions, responsibility attribution, privacy policy), and funder policies. The policy situations of the 30 universities are shown in Table 1.

Table 1. Statistical Situation of the OA Policy Contents of 30 Universities

U	TP O	Deposit policy					Usage policy			Copyright policy					PF S
		SC	VR	SP	RP	EP	MU	FTU	UU	CS	AL	ER	LA	PP	
A1	√	√		√	√	√	√	√		√	√			√	
A2	√	√		√	√	√	√	√		√	√		√	√	
A3	√	√			√	√	√	√		√			√	√	
A4	√	√		√	√			√		√					
A5	√	√		√	√	√	√	√		√			√	√	
A6		√		√	√		√	√		√					
A7		√				√	√			√	√		√		
A8	√	√		√	√	√	√	√		√			√	√	
A9		√		√	√	√	√	√			√		√	√	
A10		√	√	√	√		√	√							
B1	√	√	√	√	√	√				√	√	√			
B2	√	√	√		√							√			
B3	√	√				√	√						√	√	
B4		√	√							√					
B5		√			√	√			√	√					
B6		√	√	√	√	√			√	√		√		√	
B7	√	√	√			√				√	√	√			
B8	√	√			√	√				√	√				
B9		√			√	√				√	√	√		√	
B10	√	√	√		√	√			√	√	√	√			
C1	√	√	√		√					√					√
C2	√			√	√				√	√					√
C3	√	√			√							√			√
C4	√		√							√	√	√			√
C5	√	√	√						√			√			√
C6		√	√												√
C7	√		√	√					√			√			√
C8	√	√	√	√					√		√	√			√
C9	√		√						√	√	√	√			√
C10		√	√	√	√	√	√		√	√		√			

Annotate:

U: universities; TPO: The purpose of OA; SC: Stored content; VR: Version requirements

SP: Submission policy; RP: Retention policy; EP: Exit policy; MU: Metadata usage

FTU: Full text usage; UU: Unlimited usage; CS: Copyright statement; AL: Authorization license

ER: Embargo restrictions; LA: Liability Attribution; PP: Privacy Policy; PFS: Policy of fund sponsors

It can be seen from Table 1 that the OA policies of universities in China almost all have clear explanations and regulations on the content, submission, withdrawal policies of stored resources, as well as the use of metadata and full text. Most universities have issued relevant policies for the copyright protection of OA resources, responsibility attribution, and the privacy protection of authors; Some universities in the United States have particularly put forward requirements for the version and embargo period of resources, but most do not have specific submission and use policies, and have not made relevant explanations for responsibility attribution and the privacy of authors; In the OA policies of British universities, the vast majority have explained the purpose and significance of this action of OA, and put forward clear version requirements and embargo period limitations. Most universities have no restrictions on the use of resources and have also provided the OA requirements of fund project sponsors.

2.1 The Purpose of Open Access

Among the 30 universities investigated by the author, most of them introduced the purpose and significance of Open Access in the preface part of the policy, mainly covering the following four aspects. The first is to collect and preserve the academic and intellectual achievements of the university's researchers and spread them as widely as possible; the second is to provide a series of services for the academic research and academic exchanges of researchers, including archiving, management, publishing, retrieval and open sharing, etc.; the third is to maximize the demonstration and improvement of the academic reputation and influence of the university and its scholars globally to promote academic development; the fourth is to conduct in-depth mining and analysis of various achievement data to realize the data association between universities, scholars and achievements, show the research directions and progress of various disciplines, and promote the mutual understanding of researchers in the same field.

Some universities also mentioned copyright protection in this part. For example, the OA policies of Harvard University and the University of California in the United States believe that by formulating strategies, authors can more easily retain extremely extensive rights of use and reuse without having to give up their rights when reaching an agreement with the publisher. In view of the sharp increase in the cost of online journals and databases, some universities believe that Open Access and Open Educational Resources can help improve the affordability of the school and solve the crisis of the rising

subscription cost of academic resources, such as Johns Hopkins University and Pennsylvania State University in the United States.

2.2 *Deposit Policy*

2.2.1 Stored Content

The stored content in the university knowledge base is mainly the works and achievements with teaching or research value generated by the faculty or students of the university. In the OA policy of Shandong University, the above academic resources are divided into three levels: core level, extended level and associated level. Core-level resources include publicly published journal papers, conference papers, monographs, translations, compilations, patents, etc.; extended-level resources include master's and doctoral dissertations, preprint articles, scientific and technological reports, academic reports (PPT), research reports, learning objects, data sets, working documents, non-text resources etc.; associated-level resources include the resources already available in other systems of the school, including teachers' courseware, online open courses, MOOCs, excellent courses, lecture videos etc.

Most university knowledge bases can accept various types and formats of content, such as documents, images, videos, multimedia exhibitions, etc., but generally all the achievement content must be uploaded in digital form. The University of Nottingham in the UK requires that if it is not possible to store the open access version of the full paper, a publication record should be created in the knowledge base and a link to the version held externally should be provided.

2.2.2 Version Requirements

The knowledge base of the University of Sheffield in the UK has given four classifications for the version of the work submitted by the author, as follows.

- (1) Submitted version also known as the preprint version, it refers to the version of the article or chapter that has been submitted to the publication but has not yet undergone peer review. It may be available online through a preprint server, but since it has not been accepted for release by the publisher, it is called the "submitted version".
- (2) Author-accepted manuscript also known as the post-print version, accepted version, and the author's final copy, it is the version of the article or chapter that has been accepted for release. It includes the changes made after peer review but has not yet been copied, edited or formatted by the publisher. This version is usually in the form of a Word document. If an article is created using the publisher's template, it may look similar to the published version but does not contain the DOI, volume and page numbers.
- (3) Record version also known as the published version, the final version, which has been copy-edited and typeset by the publisher and may not include the volume and page numbers.
- (4) Online published version also known as the "online first" on CNKI. After the article is determined to be accepted through peer review and before the completion of the paper journal publishing process, it is uploaded to the first-release platform.

Most of the knowledge repositories of universities in China do not have specific requirements for the version of the papers submitted by the authors, but generally, the default is the final published version. The OA policy of the Hong Kong University of Science and Technology has relevant instructions: The stored content includes but is not limited to working drafts, submitted versions, accepted versions and published versions. Harvard University designates the stored version as the author's final version after peer review, that is, the accepted version, which not only includes the text content but also should include all the charts in the manuscript; with the consent of the publisher, the knowledge base can also store the record version of the article and provides the terminological explanations for the above versions. The University of Pennsylvania requires the version stored by the author to include the first three types, Duke University, Johns Hopkins University and the University of California designate the article provided by the author as the electronic copy of the final version, and the OA policy of Columbia University declares that no editorial decisions will be made about the content in the knowledge base, that is, the works do not need to undergo peer review before entering the academic sharing area. The universities of Oxford, Imperial College London, Nottingham, Leeds, Birmingham and Sheffield in the UK require the author to provide the accepted version or the final version after peer review, and the University of Manchester requires the journal articles and conference records stored to be the final version, while the knowledge base of Cardiff University can accept the content storage of the first three versions.

2.2.3 Submission Policy

The submission policy in the OA policy mainly declares the identity and rights of the submitter. The work can be submitted by the author himself or an authorized agent of the author (such as a research secretary, a subject librarian, an administrative staff member of the department etc.). Most of the above universities require this, and only the Hong Kong University of Science and Technology and University College London in the UK propose that the work can only be directly deposited by the university's researchers, and the author can only submit his own work for archiving, while only Harvard University and Columbia University among the 10 universities in the US mention the identity of the submitter, and the coverage is relatively wide. The author has the rights to claim, copy, transform and reprocess the stored works, and Wuhan University provides a specific claiming and submission process.

Some universities have put forward requirements on the OA mode of the work, that is, the green policy of open access through the knowledge base and the golden policy of open access through the journal. For example, Harvard University in the US believes that the golden policy limits the freedom of researchers to choose the place of submitting works, requires paying more and more author-side fees for OA journals, and is not conducive to the multi-directional development of academic genres, so it requires the author to adopt the green policy. Imperial College London and the University of Birmingham in the UK provide both green and golden routes and explain that the peer review and

release processes of the two routes are the same, but the school supports green open access more and encourages the authors to self-archive the published and unpublished works in the knowledge base as much as possible.

2.2.4 Preservation and Withdrawal Policy

As can be seen from Table 1, among the 20 universities in China and the US, the OA policies of 12 universities have corresponding regulations on the preservation and withdrawal of the works in the knowledge base, and another 7 universities are involved in one of them. The policy contents of these two aspects are as follows: Generally, it is promised that the work will be retained in the institutional knowledge base indefinitely, a permanent identifier and a permanent web address URL will be given, and the content in the knowledge base will be managed sustainably to ensure that users can access the content information of scientific and technological achievements for a long time; in specific circumstances, it is possible to withdraw from the knowledge base by submitting a removal application and stating the reasons for withdrawal, but all the original entry records of all withdrawn content, including all the original metadata (identifier/URL of the project), will be retained indefinitely and continue to provide open access to users.

2.3 Usage Policies

For the purposes of archiving, preservation, and academic research, the user's use of the achievements in the institutional knowledge base generally includes replication and transformation, or reprocessing them and making them publicly available online. In this process, the specific usage principles are divided into metadata usage policies and full-text usage policies. Most universities in China have given detailed descriptions of the two usage policies. When the submitter stores the achievements, it is required to submit the metadata, source, and format describing the achievement at the same time. Users can use this metadata for free, and only need to provide the link or OAI identifier of the metadata record when using it. When using the full text of the achievement, the user must provide the author, title, detailed bibliographic information, hyperlink or URL of the original metadata page, and cannot modify its content in any form. Generally, the non-profit purpose is the premise of the usage policy, but in the OA policy of the Hong Kong University of Science and Technology, it is proposed that "as long as the OAI identifier or the link of the original metadata record is clearly provided, the metadata can be reused in any media without permission, and there is no need to be for a non-profit purpose".

For the use of metadata or full text of academic achievements in the knowledge base of foreign universities, there are mostly no unified restrictions, or relevant policies are put forward in the copyright authorization and licensing part. For example, Columbia University reminds users that they should first confirm whether a certain work is protected by copyright, and then download and use the work reasonably according to the license terms and conditions selected by the copyright owner. Cardiff

University simply mentioned that any full-text materials in the knowledge base are available to the public and can be accessed indefinitely.

2.4 Copyright Policies

2.4.1 Copyright Declarations and Authorization Licenses

There are three situations regarding the copyright ownership of institutional knowledge base resources: first, the copyright belongs to legal persons or institutional organizations; second, the copyright belongs to the author; third, the copyright belongs to the publisher (Li, 2012).

Generally, the institutional knowledge base platform does not require the author to transfer the copyright, but only requires compliance with the submission license agreement, and this is no exception for university knowledge bases. Academic achievements that are publicly released for the first time in the knowledge base can be republished without restriction. Before submitting the work, sign the Creative Commons (CC) agreement online with the knowledge base. The CC agreement allows the author to choose different combinations of rights to declare the authorization method of his work and reduce the risk of copyright infringement. For example, Shandong University provides authors with two relatively open submission license agreements. One is Attribution-Non-commercial Use-No Derivatives, that is, the author owns the copyright of the work and allows anyone to use the work for non-commercial purposes without making any modifications, conversions, or derivative works based on the work while keeping the inherent attribution of the work; the other is Attribution-Non-commercial Use-Same Way Sharing, that is, the author owns the copyright of the work and allows anyone to use the work for non-commercial purposes under the premise of keeping the inherent attribution of the work. If it is changed, converted, or created based on the work, only the derivative work can be released under the same license agreement as this agreement. In the OA policy of the University of Hong Kong, it is required that the knowledge base data can be publicly provided to visitors under the license of Creative Commons-Attribution-Non Commercial (CC BY-NC).

Harvard University's requirements in terms of authorization licenses are relatively more relaxed, believing that "the grant of rights should be as extensive as possible", while limiting it to "non-exclusive rights". In February 2008, the OA policy mentioned in the knowledge base of the Faculty of Arts and Sciences of Harvard University: "The license granted by each faculty member is a non-exclusive, irrevocable, paid, global license, which can exercise all the rights related to the copyright of each of his academic articles in any medium and authorize others to do so as well, provided that the sale of these items is not for profit. Some institutions that follow this model have abandoned the proviso of 'not for profit'. If your institution can do it, we suggest you do it. This will give the institution the rights required to authorize works covered by the CC-BY policy." This policy reflects the true meaning of open access and can achieve the purpose of wide dissemination and communication to the greatest extent.

The Massachusetts Institute of Technology uses the CC agreement to provide selective licenses, and the author can freely allocate and release some rights in the copyright law. The most open licensing policy is the attribution license. Under this policy, the work can be distributed anywhere or modified according to the specific needs of others without changing the inherent attribution, and the author can disseminate his research results to the greatest extent.

2.4.2 Embargo Period Limitations

Many publishers allow the authors to save the accepted version or published version of their publications in the institutional knowledge base or other academic sharing platforms, but require that the full text (descriptive information of the work can be provided, but the file cannot be downloaded) not be publicly provided before the specified time period, and this time period is called the embargo period (or confinement period). Regarding the release policy during the embargo period, most knowledge bases of domestic and foreign universities have relevant requirements. In the OA policies of Chinese universities, it is generally proposed that before the end of the embargo period of the publisher or funder, public open access to the submitted content will not be provided. However, visitors to the knowledge base of Shandong University can obtain a copy of the achievement through channels such as DOI, the Shandong University Academic Resources Discovery System, or the author's email; the Hong Kong University of Science and Technology requires that the achievement not be stored before the end of the embargo period.

In the OA policies of American and British universities, it is considered that the author can specify the embargo period during the storage process according to his own choice or at the request of the publisher, usually 6 months or 12 months, and some universities can extend it to 24 months. Johns Hopkins University stipulates that the author can submit the final version at any time and specify the end date of the embargo, and the knowledge base system will release the thesis file at the appropriate time, and at the same time, visitors can use the Sherpa RoMEO database to search for the embargo period of different journals.

2.4.3 Responsibility Attribution and Privacy Policies

The institutional knowledge base provides the website platform and achievement content for visitors, while the use of the website and the risks related to the content should be borne by the users themselves. When any direct, indirect, special, accidental, secondary, punitive, exemplary, or other damages occur due to the content of the knowledge base, it is generally the responsibility of the user himself. Most of the domestic university knowledge bases declare that any copyright infringement is the sole responsibility of the author. The regulations of the Hong Kong University of Science and Technology are relatively more rigorous and comprehensive: any act of copyright infringement is entirely the responsibility of the author/achievement submitter; if the knowledge base receives proof of copyright infringement, the relevant academic achievements will be immediately deleted. Among the knowledge

bases of the 20 foreign universities investigated, only the University of California has relevant responsibility descriptions and restrictions.

Users generate a large amount of information and data during the process of registration, login, and access to the knowledge base. The university knowledge base has the obligation to protect the user's privacy and not disclose it at will. This policy is reflected in the OA policies of many universities in China and the United States. For example, the libraries of universities such as Peking University and Wuhan University, as the maintainers of the knowledge base platform, any personal information collected during the process of providing content access will be subject to the relevant confidentiality regulations of the school and the Internet privacy part in the relevant policies. Columbia University uses the library's record confidentiality policy to protect the data of the knowledge base platform and has described in detail the user information collected and saved by the platform, including the user's identity information, IP address, statistical reports created by the user, and statistical information collected using analysis software etc.

2.5 Policies of Fund Sponsors

Among the Chinese, American and British universities investigated by the author, the 10 universities in the UK all have introductions to the OA policies of different fund project sponsors. The key points of the policy mainly include the author's standards, types of publications, copyright licenses, the duration of the embargo period, and the payment conditions and sources of funds for the Article Processing Charge (APC).

Among them, University College London, Imperial College London, the University of Nottingham, and the University of Birmingham provide brief summaries of the OA policies of some major research sponsors to help researchers comply with their rules and obtain relevant fees such as APC. Other universities list the main research projects currently funding the school and provide their relevant links to facilitate researchers to query the terms and conditions of APC. For unlisted sponsors, their open access requirements can be queried through the Sherpa Juliet database.

3. Insights

3.1 Implementing Mandatory OA Policies

Since the beginning of the open access movement, mandatory OA policies have been increasingly recognized in the academic community, promoting the development in directions such as OA publishing and the construction of institutional repositories (Li, Qiu, & Xiao, 2014). The data in ROARMAP shows that currently there are 76 countries implementing mandatory OA policies, and the partial statistics of China, the United States and the United Kingdom are as follows: In the United States, there are 90 universities and their sub-institutions and 12 fund sponsors that adopt mandatory

OA policies; in the United Kingdom, they are 95 and 23 respectively; in China, they are 4 and 1, and there are no universities and funds implementing such policies in the mainland.

When universities formulate mandatory OA policies, it is conducive to promoting and incentivizing the self-archiving of academic achievements of their own researchers, and actively submitting them to the institutional repository to enrich the resources of the repository. Following the countries with more advanced open science processes such as the United States and the United Kingdom, in the OA policies of universities, mandatory language and measures are adopted in the name of the university to formulate provisions to promote the open access movement, such as the mandatory open rule of these in this university, and the fund sponsors can require that the academic papers they fund be made freely available to the society (Feng & Liu, 2017). Encourage but do not require teachers to publish articles in OA journals and help them understand the difference between storage in institutional repositories and publication in OA journals. In addition, there must be certain difficulties in the comprehensive implementation from the encouraging policies to the mandatory policies. Universities can, according to their own characteristics, take colleges or other sub-institutions as pilot units to gradually promote the implementation of mandatory OA policies (Li, Qiu, & Xiao, 2014).

3.2 Formulating a Comprehensive OA Policy with Popular Science

The ultimate purpose of the OA policy of the institutional repository of universities is to promote the open access of the academic achievements of the university's researchers, and to promote academic exchanges and the sharing of achievements. The basis for achieving this goal is to improve the researchers' awareness of open access and deepen their awareness of the necessity of the open access movement. Therefore, it is very necessary to deeply interpret the national open science policy, give detailed explanations to the professional terms in the OA policy, reduce the concerns of researchers, answer the objections of the author group and eliminate potential storage obstacles. For example, the OA policy of the University of Sheffield gives detailed explanations to the open access terms, including article processing fees, article versions, digital object identifiers, embargo periods, gold-green policies, types of repositories, etc.; Johns Hopkins University is committed to building its knowledge base into an open and transparent knowledge sharing institution, and has announced the policy history and the composition of the scholar group participating in the discussion and the specific process of obtaining approval in the OA policy.

According to the statistical results in Table 1, it can be seen that the OA policies of most of the 10 domestic universities have relatively complete systems, such as the policies of the institutional repositories of Peking University and Shandong University covering relatively comprehensive contents. However, in the process of online research on the institutional repositories of domestic universities, it is found that the construction of many institutional repositories is not yet mature, and there is no complete open access policy formulated, or only problem explanations are carried out in the Frequently asked

questions (FAQ) module, and there is no separate policy page or file. Therefore, in the construction of the knowledge base of universities, there is still a lot of room for improvement in the formulation of the OA policy.

3.3 Formulating Individualized OA Policies for Universities

The policies of universities in the United States and the United Kingdom more consider the specific situations and disciplinary characteristics of each school. Although some policies are formulated using the policy tools of OpenDOAR, individualized operations are also set according to actual needs (Liu, Liu, & Ma, 2019; Lang, 2014). In October 2012, Harvard University released the “Good Practice for University Open-Access Policies” written by SUBER P and SHIEBER S, which provided a reference for the policy formulation of the institutional repositories of universities (SHIEBER S & SUBER P, 2013). Many universities have established their own OA policy systems for institutional repositories based on this guide and added individualized sections. The form of the policy formulation of the institutional repositories of universities in China is relatively single, and the contents of most policies have extremely high similarity. For example, the policy contents of Peking University and Jiangsu University are almost exactly the same, and the policy forms of the 10 universities investigated are basically the same mode, lacking the reflection of the individual characteristics of universities and institutional repositories.

The OA policy of the institutional repository of universities should not only cover all levels of open access to form a comprehensive policy system, but also reflect the disciplinary characteristics and individual characteristics of the university’s knowledge base to avoid being uniform. Therefore, the OA policy of universities can draw on, refer to or use policy tools for formulation, while also considering the needs and characteristics of the university.

3.4 Increasing the OA Policy Content of Relevant Fund Project Sponsors

At present, the formulation of OA policies in China is mainly based on universities, and most fund sponsors have no requirements or make relevant regulations on the open access of research results. Only the National Natural Science Foundation of China has issued a statement that since May 2015, it has started to use the “National Natural Science Foundation Basic Research Knowledge Base” to collect the full texts of research papers of funded project achievements and provide open access to the public to disseminate the cutting-edge scientific and technological achievements in the field of basic research (National Natural Science Foundation of China, 2015). At the same time, the OA implementation rules of this knowledge base have been released, including the contents of inclusion, submission and use, system operation, intellectual property rights and disclaimer.

From the open access experience of other countries, with the development of the open access movement, scientific research institutions and fund project sponsors will also actively participate in the formulation of OA policies, and ensure the wide dissemination and sharing of scientific research

achievements by limiting the use methods of scientific research funds, and promote the diversified development of the main body of open access policies. Therefore, in the OA policy of the university's knowledge base, the policy content or links of relevant domestic and foreign fund project sponsors of this university can be added to facilitate the authors to be familiar with the relevant policies before applying for this funding and make rational use of them.

4. Conclusion

Open access, as a newly emerging scientific and policy concept globally, has attracted certain attention in China, but still needs to be further enhanced. On the basis of improving the attention, awareness and participation of scientific researchers in open access, soliciting the opinions of relevant departments of the school and the dominant disciplinary groups, considering the key points of the school's development, and formulating a scientific, comprehensive and perfect open access policy system will help accelerate the construction of institutional repositories in universities and colleges and meet the urgent needs of scientific researchers for open science.

References

- Deng, J. (2010). Research on the Construction Mode of Institutional Repositories. *Library and Information Service*, 54(6), 112-116.
- Feng, P., & Liu, Q. (2017). Research and Analysis on the Mandatory Open Access Policy in Japan. *Library and Information Service*, 61(4), 31-39.
- Lang, Q. (2014). Research on the Construction of the Policy System of Institutional Repositories. *Information Theory and Practice*, 37(7): 23-27.
- Li, G., & Qiu, X., & Xiao, M., (2014). Research on the Mandatory Open Access Policy of Foreign Universities. *Journal of University Libraries*, (3), 39-43.
- Li, H., & Tang, Q. (2020). Analysis of the Difficulties in the Construction of Institutional Repositories in Higher Education Institutions—Thoughts Based on the Practice of the Construction of Institutional Repositories in Nankai University. *Library Construction*, (S1), 84-87.
- Li, N. (2012). Solution Strategies for the Copyright Problem of Resources in Institutional Repositories. *Library Construction*, (7), 1-5.
- Liu, L., & Liu, W., & Ma, W., et al. (2019). Research on the Open Access Policy of Institutional Repositories in British Universities. *Information Theory and Practice*, 42(3), 171-176.
- Ma, J. (2010). Trends in the Content Construction and Service Design of Institutional Repositories. *Information Theory and Practice*, 33(09), 23-27.
- National Natural Science Foundation of China. (2015, May 20). *The Policy Statement of the National Natural Science Foundation of China on the Implementation of Open Access for Scientific*

- Research Papers of Funded Projects*. Retrieved March 6, 2024, from <http://if.nsf.gov.cn/statement>
- Open DOAR. (2023). *Open DOAR Statistics*. Retrieved from <https://v2.sherpa.ac.uk/view/repository-by-country/>
- SHIEBER S, & SUBER P. (2013, September 30). Good practices for university open-access policies. Retrieved February 20, 2024, from <https://www.docin.com/p-1647180993.html>
- Zhang, W., & Zhang, Q., & Gao, B. (2017). Research on the Open Access Repository Policy of German Universities. *Journal of University Libraries*, (2), 75-80.