

The Application Research on DOI in the Digital Publication of Chinese Sci-Tech Journals

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Abstract

DOI, Digital Object Identifier, has been pervasively applied in digital information resources overseas and becomes an international standard, while in China it's still on the initial stage. This article discusses the application of DOI in the digital publication of Chinese sci-tech journals, and analyzes the problems, such as inadequate attention, lack of engagement, unsatisfactory application and so on, as well as the countermeasures. Giving the lifting effects of DOI on the digitalizing and networking of Chinese sci-tech journals, journal articles should be registered on DOI for the display degree and citation rate.

Keywords

DOI, Digital Object Identifier, Chinese Sci-Tech Journals, The Digitalization of Journals, Digital Publication

1. Introduction

DOI (Digital Object Identifier) is a tool for the location identification of digital information published on Internet. Praised as “the bar code on Internet” [1], DOI is the only code to digital resources, providing Internet links to the full text of electronic journals. At the same time, as a complete international service system, DOI could offer the one-stop services, including several value-added ones, such as registration, analysis and citation link.

In sci-tech journals, the earliest, most mature and largest scaled applied area, DOI has been adopted widely overseas and becomes the only standard of papers for many publishers of digital documents such as Elsevier, Springer, John Wiley, and Blackwell. Compared with the increasingly mature digitalization and internalization of DOI abroad, it is only on the initial stage at home.

This article starts with the application status of DOI in Chinese sci-tech journals, and then goes into the applied value, problems as well as countermeasures. At last the conclusion is made that the journals should attach great importance to digitization and make full use of the network technique for the DOI registration, building the periodical website for the full texts of journals to promote the display degree and availability.

2. Application Status of DOI in Chinese Sci-Tech Journals

As the carrier of exchange of academic thoughts, spread of sci-tech information, publication of scientific achievements and promotion on the commercialization of research findings, sci-tech journals hold the characteristics such as timeliness, large information and high reference value. With the development of information resource construction, the digitalizing and networking of sci-tech journals have been an inevitable trend [2].

The sole and permanent identification on digital objects is the premise of the management of digital network contents. Before 2007, almost all the unique identifiers came from Chinese publishers are self-defined, without a uniform analytical system. Under the duly authorization of IDF (International DOI Foundation), the institute of science and technology information of China (ISTIC) became the only simplified Chinese agent for DOI registration.

After that, China DOI saw a rapid development, with the registration number the world second since 2009. By May 14 2015, the number totaled 22,303,283, of which periodical numbers reached 20,957,603, accounting for over 94% [3].

The building of China DOI service system makes the digitalization of Chinese sci-tech journals urgent while viable. Beside the journals, books and scientific data, the DOI numbering and registration also cover the sub-items of journals and scientific data, such as graphs, tables and pictures, and even extend to academic papers and conference proceedings.

3. Application of DOI in the Digital Publication of Chinese Sci-Tech Journals

3.1. Permanent Query Function

DOI can provide the unique identifier of a single digital resource and a permanent link on Internet. Therefore, the core function of it is to resolve DOI to the registered URL (Universal Resource Identifier), providing a convenient access to the full texts of journals.

For example, in the DOI service system an online journal article has its metadata, including a URL which can help to find the article. The process is called the analysis of DOI.

If the website of an article changes, all it needs to do is to update the URL in DOI metadata. The uniqueness and permanence of DOI shall offer easy access to relevant websites and lift up the visiting volume and downloads, praised as the IDs of sci-tech articles.

3.2. Citation Link of Journals

DOI can also be used as the references to contents in the forms of codes in the bibliography. As the only and public identifier as well as the permanent link for some contents, DOI supplies simple and reliable interlinkages between the resources among publishers. Nowadays, many publishers, academies and associations suggest that writers cite the online published articles with DOI codes instead of volume number, issue number and page number.

When the quoted contents include DOI codes, the original format from the publishers could be used, with the codes in the end and “doi:” before them, e.g., Ren, X. Z.; Liu, T.; Sun, L. N.; Zhang, P. X. *Acta Phys. -Chim. Sin.* 2014, 30(9), 1641. doi: 10.3866/PKU.WHXB201406172.

DOI, however, DOI plays as a supplement rather than a replacement. As one of the elements in the description of sci-tech journals, DOI can supply a systematical link between abridgment and full text, quotation and full text, Chinese journals, as well as Chinese and foreign journals. And the building of the outbound links for references in online publication may provide a method leading directly to the source article that may interest the reader. The information is organized through step-by-step backtrace, putting the integrating and sharing of digital journals in full use [4], so the availability of the journals is to be lifted up and the usage rate of information climbs up as a whole.

3.3. Application in On-Line First

On-Line First means to bring forward the publication of printed journals in the forms of digital publishing like Internet and mobile phone [5]. To answer the publishing development, this form can solve the time-lag problems [6].

As one of the problems in the development of Chinese sci-tech journal publication, time-lag may dampen the initiative, timeliness and forwardness, affecting the achievement affirmation; it may prevent the readers getting the latest research conditions and progresses as well as the application; and the publishers may lose their attraction to excellent works at home and abroad, as well as core competitiveness. On-Line First will decrease the diffusion cycle of articles, speed up the spread of knowledge and strengthen innovation ability.

Nowadays, some publishing agencies for sci-tech journals at home and abroad combine DOI and On-Line First, releasing articles and their DOIs online before printing. And then publishers offer DOI codes and get registered. On the printing plate, the same DOI codes will be seen on outstanding spots like page header, solving the correspondence problem.

Issued on the website of Chinese sci-tech journals or retrieval system in corporation, articles can carry the latest information fast [7]. The combination of the two types of publications brings articles online a few weeks or even months earlier, promoting the timelines.

3.4. Application in Journal Assessment

As at home and abroad the citation standards for references and the layout standards of sci-tech journals have listed DOI as the bibliographical particulars, and the DOI labeled on references can lift the accuracy and automation of citation statistics, providing good technical support for journal assessment.

Some organizations have put DOI in sci-tech assessment. CrossRef has already supplied the quotations of DOI literatures for journal publishers, and the statistics has been taken as one of the identifiers by scientific metrology 2.0 statistical tools when valuing a single article, becoming the statistical source for theses and journals. In 2013 the second outstanding website evaluation of journals in Chinese universities put DOI into assessment criteria as well, making China DOI as the statistical source.

The lack of dissemination of DOI in Chinese journals limits its role as a criterion in sci-tech journals. A rapid emergence of China DOI in China, a new evaluation system could also be built. Through the link and statistics services by DOI, Chinese sci-tech journals can be used to analyze the articles with high quote rate, including authors, department and article information. So the hot spots, influence and trend of academic research in certain field as well as the impact and the latest achievements of the researcher.

4. Problems and Solutions of DOI Application in Chinese Sci-Tech Journals

4.1. Inadequate Attention

Due to a short time of entrance into China and the lack of wide acceptance among participants, some problems of DOI can be seen in publishers, such as inadequate attention, lack of engagement, unsatisfactory application and so on. The main reasons are as follows: 1) insufficient propaganda at home leads to inadequate attention to DOI and little understanding of its value, let alone to make use of it; 2) most publishers in China belong to public institutions, in which the administrative leadership has a say in personnel, funds and publishing. This publishing pattern may lead to resource shortages, insufficient money, obscure target location, as well as narrow channels of spread and publishing. Limited by funds, many publishers throw a large amount of money in editing affairs instead of techniques, leading to insufficient independent innovation and difficulty in the management of digital publishing and relevant businesses.

4.2. Low Popularity of Registration in Core Journals

According to the statistics in China DOI website, it has 20 million registrations of over 6200 Chinese academic journals and more than 30 scientific data [8]. Based on the random sampling of 248 journals by Tian Haijiang *et al.* in 2014, the number of those registered on China DOI is 59, accounting for 23.79% and that of the core journals is 21 only, accounting for 8.47% [9]. Therefore, despite the rapid development of China DOI, the number of relevant core journals is small and the registration of popularity is low, weakening its further application.

In 2013 ISTIC initiated a public benefit activity for free registration of China core journals and OA (Office Automation) journals for the promotion of the application of DOI international standards. In 2015 ISTIC expanded the coverage with CSCD (Chinese Science Citation Database) for journals of statistic source. With those for the CSTPCD (Chinese Scientific and Technical Papers and Citation Database), GCJC (Guide to Core Journals of China) and CSSCI (Chinese Social Sciences Citation Index) added, four major journal assessment databases are all included. Chinese core journal should make full use of this policy.

4.3. Unsatisfactory Accuracy of Collecting Metadata

Although some publishing agencies of Chinese sci-tech journals have realized and made use of DOI, even in the printed papers, analytical accuracy is unsatisfactory. The reasons are as follows: 1) publishers have marked DOI codes in printed papers, not register it in DOI system and supply relevant data; 2) inaccuracy of the data supplied lead to obscure analysis. The function of DOI only comes true through registration, but the lack of technology in the production of sci-tech literature source and unitary standards affect the accuracy rate and usage rate of the collection and reuse of the metadata later [9].

Given this, the author suggests the publishers of Chinese sci-tech journals register an independent DOI system, accessing to the OA website through a link resolver. For the convenience of independent registration by editorial staff for paper's DOI, the free use of the client-side for metadata conversion and checkout is launched. The publishers with abundant money are advised to make the independent registration and develop the one-click registration, increasing the accuracy and timeliness.

5. Conclusion

To sum up, DOI can support the spread of Chinese sci-tech journals, accelerating the digitalization and networking. However, the relevant development of Chinese journals lags much behind foreign ones in collectivizing, digitalizing and networking. During the initial stage, Chinese sci-tech journals should make full use of network techniques and level up the impact and competitiveness at home and abroad through making the registration of DOI, accelerating academic publication.

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