Print-Digital Integrated Library Catalogs: Innovative Applications and Development Postprint

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Abstract

[目的/意义]Against the backdrop of the digital age, the proliferation of digital resources has posed formidable challenges to traditional bibliography centered on print literature, necessitating urgent transformation of document collation and organization systems.[方法/过程]The construction of a library catalog integrating print and digital resources constitutes a "break-and-reorganize" process that dismantles barriers between digital resources, reorganizes and integrates print and digital document resources, thereby establishing a massive metadata repository and subsequently deploying these data to serve diverse target groups and application scenarios.[结果/结论]Based on this foundation, libraries can achieve fine-grained management of both print and digital resources concurrently, and leverage these data to conduct multiple innovative applications in document organization and bibliographic information analysis, thereby realizing a transformation from "participating in" academic research to "leading" academic research.

Full Text

Integration of Paper and Digital Resources: The Innovative Application and Development of Library Catalogs

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Abstract

[Purpose/Significance] Against the backdrop of the digital era, the surge in digital resources has posed enormous challenges to traditional bibliography,

which has long centered on paper documents. The systems for document organization and arrangement urgently require transformation. [**Method/Process**] The construction of an integrated library catalog for paper and electronic resources is a "break-and-rebuild" process that dismantles barriers between digital resources and reorganizes and integrates paper and digital document resources, thereby establishing a massive metadata repository to serve various target groups and scenarios. [**Result/Conclusion**] Based on this integration, libraries can achieve refined management of both paper and digital resources simultaneously and utilize this data to develop multiple innovative applications in document organization and information analysis, thereby realizing a shift from "participating in" to "leading" academic research.

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Bibliography has always constituted the core theory and methodology of library science. Libraries have developed a complete workflow system encompassing acquisition, description, cataloging, collection management, and circulation, all organized around the library catalog. This system ensures the operation of library document management and services, forming the fundamental method for document collection and service provision. Evidently, bibliography holds significant value in guiding the organization of library collections, effective storage and retrieval of documents, and providing readers with convenient, efficient, and comprehensive access to resources.

However, with the advent of the internet and the development of digital libraries, digital document resources have rapidly entered library collections. In many libraries, expenditure on digital resources has far exceeded that for paper documents. The contradiction between the continuous digitization of library resources and readers' growing demand for digital documents, coupled with the disconnect between traditional paper-based catalogs and the organization and utilization of surging digital resources, has created tremendous challenges for conventional bibliography centered on paper documents. Currently, most libraries lack effective management and utilization of digital resources, resulting in a de facto separation between paper and digital document management and services, which severely undermines the control system built around the library catalog.

Some scholars in the field have proposed constructing a bibliographic system for the digital library era, but overall, theoretical research outweighs practical research. Through more than three years of practice, we have attempted to apply fundamental bibliographic methodologies to construct an integrated library catalog for paper and electronic resources. Its workflow and standards strictly conform to bibliographic requirements, reconstructing library data management

and service capabilities centered on the catalog, and developing innovative services focused on document content.

2. Research and Practice Status

2.1 Overview of Digital Bibliography Theory Research

To solve the cataloging challenges of digital document resources, scholars have proposed the concept of digital bibliography, aimed at addressing the classification, cataloging, and retrieval of digital resources. This includes digital library catalogs, online cataloging, union catalog systems, electronic resource description in bibliographies, web resource classification, web resource organization, and secondary development of online information resources [1]. Professor Ke Ping pointed out as early as 1994 that bibliography was continuously developing toward digital bibliography [2]. Professor Peng Feizhang also emphasized that digital bibliography would effectively address the production, aggregation, organization, dissemination, development, and utilization of information resources in the digital age, representing a key focus for 21st-century bibliographic research in China [3]. Evidently, digital bibliography represents the new direction for bibliographic development.

Current research on digital bibliography has yielded some results both domestically and internationally. Foreign research focuses primarily on five aspects: search engines and web directories, mega-scale digital union catalogs, selective catalogs, open-access digital catalogs, and the integration of digital catalogs with traditional bibliographies [4]. Domestic research concentrates mainly on theoretical aspects, such as studies on the concept of digital bibliography. Professor Ke Ping defines digital bibliography as an emerging bibliographic discipline that studies digital resources and online bibliographic information work in digital environments, addressing the organization and development of digital resources to support information resource management and information services [5].

Regarding theoretical frameworks, Professor Ke Ping proposed five fundamental principles for constructing digital bibliography and divided its research content into three domains [5]. He also suggested that digital bibliography's basic framework comprises two components: digital bibliographic control and digital resource control [4]. Wang Meng, based on research into the development of bibliographic theoretical systems in the digital era both domestically and internationally [6], proposed the academic and technological backgrounds for bibliographic development in the digital age and presented the theoretical system from both formal and content perspectives [7]. Subsequently in 2016, he further explored theoretical issues in digital bibliography, including theoretical system problems, theoretical foundations, and the relationship between theoretical research and era development [8]. Si Li et al., starting from the characteristics of web information resource types, elaborated on several methods for web information resource organization—hypertext, search engines, index databases, metadata, and library cataloging—and their application to bibliography, proposing

new knowledge growth points for bibliographic innovation and development in the digital age [9]. In summary, both domestic and international research on digital bibliography construction and exploration has achieved certain results.

2.2 Practice and Problems of Knowledge Discovery Integration Retrieval

With the explosive growth of digital document resources, libraries have actively explored integrated retrieval solutions. Initially, cross-database search technology was adopted but gradually phased out due to efficiency issues. Later, knowledge discovery systems based on global massive literature metadata repositories were constructed, preliminarily achieving integrated searches for paper and electronic resources. However, the practice of knowledge discovery integration retrieval suffers from various deficiencies. The instability in metadata harvesting alone can cause multiple problems: most metadata is controlled by database vendors, leaving libraries without metadata autonomy and directly affecting price negotiations, usage rights, and metadata timeliness; there are no industry-standard systems for metadata harvesting, storage, and exchange, creating long-term hidden dangers for literature sharing system construction and application. During usage, many knowledge discovery systems provide standard system interfaces to libraries, but their configuration requires real-time adjustment, and interface stability affects and restricts reader usage [10]. Therefore, knowledge discovery systems are insufficient to solve the integrated paper-digital document catalog problem. It remains essential to grasp the main body of digital catalog construction and establish clear metadata harvesting agreements to ensure metadata quality and timeliness. These problems will be readily solved once metadata autonomy is achieved.

2.3 Research and Exploration of Integrated Paper-Digital Document Catalogs

The essence of constructing integrated paper-digital document catalogs in libraries is the effective integration of metadata for paper and electronic literature resources—such as titles, authors, and content data—to achieve standardized integration, revelation, storage, and utilization through a unified catalog system. The literature metadata repository is essentially the integrated library catalog. Its construction still aims at "distinguishing academic fields and tracing origins" as its fundamental purpose, representing an effective expansion of traditional library catalogs and a breakthrough in library bibliographic construction in digital environments.

Mo Shaoqiang once wrote that "the development of bibliography in network environments will take the research and practice of digital library metadata as a new research topic" [11]. Ke Ping et al. also believe that a key focus of digital bibliography research is to strengthen the study of document metadata, namely metadata for both paper and digital resources [4]. Si Li et al. proposed that strengthening research on literature resource metadata in network resource

bibliography construction facilitates access and retrieval of massive online information resources, provides more detailed and accurate descriptions of digital document resources, and helps form high-quality, intelligent bibliographic information systems to meet users' needs for efficient, accurate, and comprehensive resource acquisition in the new era [9]. Sun Rui, using Chongqing University Library as an example, comprehensively elaborated on the construction of integrated paper-digital document assets and pointed out that libraries have the right to manage purchased paper and digital literature resources through conventional cataloging to form catalogs and property records, enabling asset management functions such as addition, allocation, and inventory, and can provide services such as lending, copying, interlibrary loan, and compilation within legal boundaries [12].

In summary, we can observe three key points: First, after years of research and development, the concept of digital bibliography has become established, and basic research has essentially been completed and formed a scale. Second, there remains considerable room for expansion in applied research on digital bibliography; its application in library resource organization and utilization practices has not been fully popularized, and relevant standard procedures remain incomplete. Professor Ke Ping also pointed out that Chinese bibliography faces challenges such as theory-practice disconnect, neglect of new technological methods in applied research, and inability to keep pace with societal needs [1]. Third, against the backdrop of increasingly informatized environments, smart libraries represent the developmental goal for the library industry, and digital bibliography is a key focus and difficulty that must be addressed. Only by resolving the challenges of digital bibliography and acquiring sufficient data can libraries advance smart library development. Therefore, the most urgent need is to truly achieve breakthroughs in library bibliographic development, with the core task being the construction of integrated paper-digital library catalogs.

3. Purpose of Integrated Paper-Digital Library Catalog Construction

The construction of integrated paper-digital library catalogs refers to the standardized integration, revelation, storage, and utilization of metadata for paper and digital literature resources—including titles, authors, content, and other data—to establish a unified catalog system. The literature metadata repository is essentially the integrated library catalog. Its construction still aims at "distinguishing academic fields and tracing origins" as its fundamental purpose, representing an effective expansion of traditional library catalogs and a breakthrough in library bibliographic construction in digital environments. Therefore, integrated paper-digital library catalog construction holds the following important values:

3.1 Facilitating Effective Revelation and Utilization of Massive Literature Resource Metadata

Faced with massive library resources, readers struggle to accurately obtain target content. Therefore, comprehensive organization and management of library literature resources is particularly urgent and important. This paper constructs an integrated paper-digital library catalog process to systematically integrate literature resource metadata and effectively reveal resource content, which can most directly guide libraries in delivering high-quality services using abundant literature resources. Evidently, integrated paper-digital library catalogs are valuable for readers to efficiently search, acquire, and utilize massive literature resources through digital catalogs and represent a practical necessity for bibliographic development.

3.2 Foundation for Libraries to Achieve Refined Literature Resource Management

Currently, most libraries manage digital resources in "database" units, with separate and 粗放型 (extensive) management of paper and electronic resources that cannot meet readers' precise acquisition needs in unstructured contexts. Therefore, massive paper and digital literature must be effectively integrated, organized, revealed, and stored, transforming library management from "database"-level to "article"-level, or even refined to "paragraph" and "sentence" levels, to achieve refined literature resource management. This provides a strong foundation for libraries to develop various literature services.

3.3 Prerequisite for Smart Library Management and Services

With the emergence of smart libraries, libraries are gradually transforming their service models toward smart services, which directly imposes higher requirements on resource organization and construction. Smart library services are a new type of service based on big data, supported by new technologies, and oriented toward reader needs. Data has become one of the foundations and prerequisites for developing smart services. Particularly with the explosive growth of digital literature resources, effective organization of paper and electronic resources and effective mining and utilization of big data from document circulation have become prerequisites for smart library services. Only through comprehensive organization and presentation of integrated paper-digital literature resources and circulation data to form systematic integrated library catalogs can libraries provide the smartest services.

3.4 Effectively Enhancing Library Literature Intelligence Capabilities

Integrated paper-digital library catalogs enable effective classification of library literature resources by type, subject, and discipline, with effective division and annotation of different resource contents and themes, revealing resource content down to the article level. Libraries can thus have clear control over their massive

digital literature resources, enabling them to provide differentiated literature services according to different reader needs and service groups. Through detailed revelation of digital literature resources, libraries can enhance their literature intelligence service capabilities, mobilize digital literature resources targeted to specific service demands, provide the most accurate, comprehensive, and efficient literature services, and comprehensively improve service quality.

4. Practice of Integrated Paper-Digital Library Catalogs

Library bibliographic methods have three characteristics: First, they emphasize standardization—the MARC standard system has been used for decades and only recently been gradually optimized and progressed, as library collections must be preserved for thousands of years and must be managed with standard systems. Second, they emphasize metadata specification and quality, with complete quality control systems. Third, they are committed to long-term metadata preservation. Therefore, these characteristics must be maintained during integrated catalog construction.

4.1 Digital Literature Cataloging Process

Clarifying the construction process for integrated paper-digital library catalogs is the primary task, as it changes the original single paper document processing workflow, as shown in Figure 1 [Figure 1: see original paper]. The entire process comprises three aspects: rights protection, cataloging standards, and metadata storage, involving multiple stages such as acquiring resource catalogs, data classification, indexing and cataloging, deduplication, and storage. Each stage should have complete standard settings to guide its implementation. In practice, electronic resource management systems can be used to achieve specific process management and services.

Figure 1. Integrated Paper-Digital Library Catalog Construction Process

4.1.1 Rights Protection Libraries must sign metadata harvesting agreements with database vendors to ensure metadata quality and regular updates. Vendors should provide resource catalog lists refined to the "article" level according to agreement requirements. Through APIs, FTP, email, and other means, vendors should provide complete resource catalog lists within the scope and timeframe required by the contract and regularly provide updated metadata lists.

4.1.2 Cataloging Standards After obtaining the lists, libraries should first set corresponding database codes by "database" unit, then generate digital collection numbers for each lower-level resource. By mastering digital resource collection number data, libraries can comprehensively grasp the total quantity

and overall status of their digital resources, manage incremental and decremental data flows, enable unified classification of digital resources across restrictions, facilitate clustering and reorganization, and complete deduplication of identical resources while distinguishing different collection sources.

4.1.3 Metadata Storage Library catalogs completed through standardized processes and quality control systems—namely massive literature metadata—must be preserved long-term using standards. Currently, the most suitable and widely applied standard is the Dublin Core Element Set (DC). Stored metadata must also distinguish user permissions according to procurement status to enable asset management functions such as duplication checking, accounting, and verification.

4.2 Sources of Catalogs

Paper literature resource catalogs have formed stable processes and fixed patterns through years of library work, with metadata directly obtainable from the central MARC database. Digital literature resource catalogs represent the current difficulty and focus. Since libraries rarely have the conditions to index digital literature metadata themselves, they must rely on third-party companies or directly on database vendors. Regardless of the approach, libraries must clarify their own rights.

4.3 Adoption of Classification Methods

Paper documents basically adopt the 5th edition of the *Chinese Library Classification*, divided into 5 main sections and 22 basic categories. For integrated paper-digital catalog classification, public libraries can continue using the *Chinese Library Classification* standard. However, for university libraries, to facilitate literature organization and subject services, we recommend adopting the 13 disciplinary categories from the *Undergraduate Major Catalog for Regular Institutions of Higher Education* (April 2018 edition) approved and promulgated by the Ministry of Education, while enabling mapping to the *Chinese Library Classification*.

4.4 Indexing and Cataloging

With increasing digital literature procurement, indexing and cataloging in catalog construction must conform to standards. Database codes and digital collection numbers are the main control measures for catalog management. Taking Chongqing University Library as an example, database codes adopt the format "code annotation + language identifier + platform number + sub-database number," belonging to 16 types and 13 disciplines, with clear indication of whether the resource is purchased outright. For instance, the "Online Lecture Hall Database" has the code CQU100201, meaning "CQU (Chongqing University) + 1 (Chinese) + 002 (platform number) + 01 (sub-database number)."

Digital collection numbers, similar to paper book collection numbers, are the unique identifiers for libraries to recognize digital collection resources, adopting the format "institution code + document type code + serial number." The institution code uses the last five digits of the university identifier code assigned by the Ministry of Education (10611 for Chongqing University), and the document type code is 1 digit. For example, the electronic book *From Bibliography to Digital Bibliography* has the digital collection number 10611010112101400, meaning "10611 (Chongqing University) + 0 (Chinese book) + 10112101400 (serial number)," establishing a mapping relationship with the paper collection numbered CQU1568483.

For cataloging, comprehensive work forms have been developed for four document types (books, journal articles, dissertations, and standards), with detailed deduplication standards to determine duplication. Books have 22 cataloging elements including title, author, edition statement, ISBN, etc. Journal articles have 27 elements including title, author, funding, core collection status, source database, etc. Dissertations have 23 elements including title, author, advisor name, degree conferring year and institution, etc. Standards have 23 elements including title, issuing organization, standard number, edition, and issue date. When the asset system identifies duplicate resources, each resource generates a corresponding collection number, but only one metadata record is retained. The number of collection numbers indicates the number of copies, with resource link addresses pointing to corresponding database addresses, forming a standard metadata format for preservation. In short, this achieves "automatic merging of multiple sources for the same document, displaying all sources on a unified page, and simultaneously accessing paper + electronic resources."

4.5 Practice Progress

The goal of comprehensively integrating paper and digital resources to complete integrated library catalogs is to utilize massive data reserves and convenient retrieval conditions to provide comprehensive services for readers. As of mid-September 2018, Chongqing University Library's integrated paper-digital catalog indicated that collection resources had reached 16.757 million collection units. How to maximize the utility of this data is an important future topic. The emergence of smart libraries demonstrates one application model—libraries such as Ningbo University Library, Jinan University Library, and Inner Mongolia University Library have officially launched "smart library" homepages, showing that integrated library catalogs can maximize resource utilization to better serve and support various target groups and scenarios, truly achieving resource integration and utilization.

5. Innovative Applications Based on the New Library Catalog

Integrated paper-digital catalogs break down barriers between paper and digital resources, and literature asset metadata repositories break down barriers between resources, essentially achieving metadata integration and providing unlimited possibilities for subsequent services in research, teaching, and other fields.

5.1 Innovative Applications in Literature Organization

5.1.1 Applications for Target Groups For general readers, providing selectable reading content is the priority. In public libraries, detailed reading lists can be provided for free choice. For social research groups, relevant information push and services can be provided, such as services for social organizations by libraries in the Tianjin area [13]. Graded reading is also a typical example—children's libraries in Shenzhen, Hangzhou, and Xiamen have implemented age-based graded reading for populations under 18, achieving excellent social results.

In university libraries, for lower-grade students, reading lists related to teaching materials, extended materials, and extracurricular reading can be provided and established. For upper-grade students, more resources related to research, job seeking, and further education should be provided. For master's and doctoral students, more research services are needed. Researchers focus more on research needs, requiring more organization of research-related services, such as establishing research thematic databases, digital libraries by college unit, subject evaluation and analysis, SDI and citation verification services, and some special research services to fully participate in the scientific research work of various departmental laboratories. Senior leaders and decision-makers need to use library resources to promote their respective unit development, and relevant reports should be promptly provided to relevant functional departments and university senior leadership for display.

5.1.2 Applications for Scenario-Based Services Whether in public or university libraries, when readers use library resources personally, they can establish exclusive personal databases in their accounts, creating personal reading archives, literature reviews, collection bookshelves, annotated documents, followed recommendation topics, search records, etc., to aggregate needs within personal databases. In most universities, teaching is the core activity, with enormous demand for course materials. Libraries should fully utilize collection resources to participate in teaching activities throughout the process. For example, establishing teaching course material databases and recommendation services, providing textbooks, teaching references, and related learning materials for students, and providing teachers with subject resource thematic services related to the curriculum, including teaching assistance, papers, journals, and video resource services.

Universities are important frontiers for scientific research. As the largest research data aggregation platform on campus, libraries need to establish rich research thematic databases and recommendation services based on their institution's research status. For specific research projects, relevant literature resource services for research topics should be provided. Project teams and libraries can establish keyword-based resource customization, conduct relevant behavior analysis for project members and progress, and organize and recommend Chinese and foreign language subject resources.

When targeting research organizations such as colleges, research institutes, and laboratories, more macroscopic and targeted mobilization of collection resources is needed to provide more extensive and in-depth academic services. Timely annotation of relevant resource data profiles for the research organization, establishment of college digital libraries, and clear awareness of available resources for target colleges and units are necessary. Through data analysis, the latest achievements of the organization's researchers can be published, the latest citation situations can be clarified, and even scholar homepages for the organization's members can be created.

5.2 Innovative Applications in Literature Intelligence Analysis

5.2.1 Academic Analysis and Evaluation Against the backdrop of "Double First-Class" construction, libraries urgently need to increase support for university research, making academic analysis and evaluation increasingly important. Through integration of resource metadata, refined library catalogs provide powerful data support for academic analysis and evaluation focusing on the university itself while extending to national and even global higher education institutions and research organizations. Building different disciplinary evaluation systems based on various publicly available Chinese and foreign language data can provide regular analysis reports such as disciplinary academic influence analysis, professional comparative analysis, SCI paper inclusion analysis, and database paper statistical analysis for relevant university departments, colleges, and research groups, effectively supporting scientific research.

5.2.2 Integration with Institutional Repositories Relying on the refined and massive data from integrated paper-digital library catalogs, integration with institutional repositories can be achieved. The huge data center can exert tremendous functions: for decision-making management departments, it can benchmark competitor data to support decision-making; for colleges, departments, and research institutes, it can analyze disciplinary development status and participate in formulating future development plans; for personnel management departments, it can provide talent introduction evaluation reports; for teachers and scholars, it can provide multiple data statistical services. Various analysis reports and statistical statements can be constructed online intuitively. The system provides commonly used statistical analysis report templates for institutions and scholars, and customized personalized analysis reports can also

be provided according to user needs.

6. Problems and Trends

As the most fundamental theory of library science, bibliography must undergo tremendous transformation in the era of comprehensive data, not only "adapting to" changes but also "leading" changes. Currently, the library field still lacks awareness of bibliographic transformation. The rapid development of digitization has placed traditional bibliography in a completely new environment. Massive data growth forces bibliographic transformation, while continuously optimized information technology conditions provide strong technical support for this transformation, making its construction and development realistic. However, two key problems remain in the construction process of integrated paper-digital library catalogs:

6.1 Issues of Relevant Standards and Norms

Paper document bibliographic theories and methods already have relatively mature standard and norm systems, but digital document resource norm systems still face many gaps that urgently need to be filled by the industry to provide guidelines for future work. Meanwhile, the norm systems in some current application cases have relatively small application scopes and need expanded influence to become industry or national standards.

6.2 Authorized Acquisition of Metadata

The construction of digital literature resource catalogs refined to the "article level" will be a key focus for a long time. In this process, the attitude of digital literature resource providers is crucial. Their willingness to cooperate closely will directly affect the refinement level of digital literature resource catalogs and subsequent work. Based on practices at some libraries, most databases actively support this work, but a few refuse to provide article-level digital literature catalogs, creating certain negative impacts.

In the future, with widespread implementation of integrated paper-digital library catalogs, libraries will be able to achieve refined management and smart services, making literature co-construction and sharing more convenient. Meanwhile, with the rapid development and application of information technology, especially artificial intelligence, integrated paper-digital library catalog systems will play increasingly extensive roles. For example, Ningbo University Library has attempted to apply machine learning to construct "Academic Headlines," a thematic catalog push system with learning capabilities. Readers select reading objects according to their needs and preferences, and after a period, the system automatically pushes literature information that truly interests readers based on reader behavior data, generating thematic literature catalogs oriented toward "reader memory." We believe that active innovative services such as literature resource organization, thematic literature push, academic evaluation,

and research hotspot guidance will become the focus of library innovation and will inevitably become the core competitiveness of libraries.

References

[1] Ke Ping. The Current Situation and Future of Chinese Bibliography[J]. Library Journal, 2005(3): 5-11, 34-35.
[2] Ke Ping. On Modern Bibliography Based on Information Theory[J]. Library and Information Science Knowledge, 1994(2): 22-25.
[3] Peng Feizhang. Bibliography (Revised Edition)[M]. Wuhan: Wuhan University Press, 2003: 19-22.
[4] Ke Ping, Zeng Weizhong. On Digital Bibliography for Digital Bibliographic Control and Digital Resource Control[J]. Library and Information Science Knowledge, 2007(9): 34-41.
[5] Ke Ping. Digital Bibliography—The Development Direction of Contemporary Bibliography[J]. Library and Information Science Knowledge, 2005(3): 19-22.
[6] Wang Meng. Research Progress on Digital Age Bibliography Theoretical Systems at Home and Abroad[J]. Library, 2014(6): 32-36.
[7] Wang Meng, Zheng Jianming, Chen Ya. Formation and Content Analysis of Digital Age Bibliography Theoretical Systems[J]. Library and Information Knowledge, 2015(1): 41-42.
[8] Wang Meng. Analysis of Issues in Digital Age Bibliography Theoretical Research[J]. Library Work and Research, 2016(1): 21-24.
[9] Si Li, Peng Feizhang, He Jianfeng. Network Information Resource Organization and Bibliography Innovation and Development[J]. Library and Information Work, 2001, 45(9): 21-23.
[10] Yang Xinya. Research on Library Literature Search[M]. Chongqing: Chongqing University Press, 2015: 33-34.
[11] Mo Shaoqiang. Research and Practice on Digital Library Metadata and Resource Sharing—A New Research Topic for Bibliography Development in Network Environments[J]. Library and Information Work, 2002, 46(1): 54-58.
[12] Sun Rui, Yang Xinya, Wei Qunyi, et al. Research on Key Issues in Literature Asset Metadata Repository Construction—A Case Study of Chongqing University Library[J]. Journal of Academic Libraries, 2018(2): 18-19.
[13] Li Xiaoxin, Fu Lu, Wang Kai. Public Library Services for Group Users—A Survey of Tianjin Area[J]. Library Work and Research, 2009(11): 16-20.

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