

Research on the Path of Improving the Sharing and Utilization Efficiency of Archives Information Resources

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Abstract: Under the background of the deepening of digital China strategy and the diversification of public archives demand, the insufficient sharing and inefficient utilization of archives information resources have become a prominent bottleneck restricting the release of archives value. This paper systematically combs the policy evolution, platform practice and technology application status of file sharing in China, and finds that the lack of metadata standards, vague boundaries of powers and responsibilities, weak security prevention and control, and the interweaving of the concepts of "valuing custody and neglecting utilization" have formed systematic obstacles such as poor cross-domain circulation and mismatch between supply and demand. Therefore, this paper proposes four-dimensional collaborative paths: first, technology empowerment, deployment of alliance chain and zero-knowledge proof to achieve "availability and invisibility", and construction of multi-modal retrieval and personalized recommendation engine; Second, institutional innovation, the development of open value assessment guidelines and "negative list+white list" mechanism, the establishment of joint meetings and third-party performance audits; The third is management optimization, implementing the dual-track talent project of "archives +IT" and reshaping the accurate service process driven by user portraits; Fourth, social coordination, building a digital community of "urban memory" of archives, libraries and museums, and introducing the feedback mechanism of crowdsourcing and cultural and creative income. The research provides an operational framework for the government to formulate an open policy and the digital transformation of institutions, and promotes the archival resources from "physical concentration" to "value aggregation".

Keywords: Archives Information Resources; Sharing and Utilization; Utilization Efficiency.

1. Introduction

Under the background of accelerating the digital China strategy, archives, as a basic resource to record social memory, support government decision-making and serve cultural inheritance, its value release highly depends on the improvement of sharing and utilization efficiency [1]. At the same time, the public's demand for archival information presents a diversified trend, extending from the traditional verification service to cultural consumption, academic research, intelligent decision-making and other scenarios. However, the existing sharing model has a low utilization rate of archival resources due to problems such as backward technology and fragmented management. This imbalance between supply and demand not only restricts the improvement of the public service capacity of the archives department, but also hinders the improvement of the digital society governance system. Therefore, exploring ways to improve the efficiency of sharing and utilization of archival information resources has become a key proposition to promote the high-quality development of archival undertakings and release the value of data elements. This study explores the ways to improve the efficiency of sharing and utilization of archival information resources, provides decision-making basis for the government to formulate archives opening policies, provides operational guidance for the digital transformation of archival institutions, and finally promotes the transformation of archival resources from "physical concentration" to "value aggregation".

2. Present Situation and Problem Diagnosis of Sharing and Utilization of Archival Information Resources

2.1. Present Situation of Sharing and Utilization of Archival Information Resources

(1) The policy system has been gradually improved, and the sharing foundation has been continuously consolidated

China has established an institutional framework centered on the Archives Law and its implementing regulations, and 14 provinces (autonomous regions and municipalities directly under the Central Government) have completed the revision of local laws and regulations on regional archives, providing legal support for sharing and utilization. Through the 14th Five-Year Plan, the National Archives Bureau made clear the development direction of informatization, openness and modernization of archives, promoted the coordinated development of the "four systems", and all localities responded to the requirement that "going to the cloud is the norm and not going to the cloud is the exception", accelerated the digital transformation of archives management and laid a solid policy foundation for cross-domain sharing [2].

(2) More breakthroughs were made in platform construction, and the service efficiency was significantly improved

The national and local file sharing platforms have developed in coordination, and the national file query and utilization service platform was launched in 2022, marking the national comprehensive service entering a new stage [3]. Benchmarking cases have emerged at the local level. For

example, the Beijing-Tianjin-Hebei People's Livelihood File Sharing and Utilization Platform has realized the mode of "online application-instant approval-on-site certificate issuance", covering 46 comprehensive archives at or above the prefecture level in three places, gathering nearly 10 million marriage registration file directory data, and reducing the file search time from "day level" to "minute level" [4]. Through the "Provincial Archives Data Sharing Center System", Zhejiang Province has connected 31 business system interfaces of 12 provincial people's livelihood departments, collected more than 60 million shared files, and greatly expanded the service coverage [5].

(3) The digital transformation has been deepened and the technical application scenarios have been expanded

The digital infrastructure of archives has been continuously upgraded. By the end of 2023, there were 369 digital archives certified at the provincial level and above, and the electronic archives collected by comprehensive archives at all levels in China were 2289.6TB. Although the digitization rate was only 40%, the growth rate was remarkable [6]. Artificial

intelligence, cloud computing, blockchain and other technologies have gradually landed. Fujian Province has completed more than 1.2 million file audits with the help of the artificial intelligence file open audit system, and some platforms have introduced blockchain technology to strengthen the data authenticity guarantee, and promoted the transformation of file services from passive response to active empowerment. In 2023, comprehensive archives at all levels in China received 6.49 million users and provided 28.44 million volumes and files, with outstanding social value [7].

2.2. Diagnosis on the Sharing and Utilization of Archival Information Resources

Although the sharing and utilization of archival information resources has achieved initial results, there are still many obstacles in technical adaptation, system guarantee, management mechanism, security prevention and control, which restrict the utilization efficiency and sharing breadth. The specific problems are shown in the following Table 1.

Table 1. Specific problems of sharing and utilization of archival information resources

Problem dimension	Incorporate	Core influence
Technical standard level	The metadata specification is not uniform, and it is difficult to integrate heterogeneous data; The application depth of blockchain, federal learning and other technologies is insufficient, and most of them stay at the basic level.	Form an "information island", cross-regional and cross-departmental data flow is not smooth, and sharing efficiency is low.
Institutional mechanism level	The boundary of shared rights and responsibilities is not clear, and there is no unified benefit distribution mechanism; Management authority conflicts frequently, and cross-agency collaboration lacks rigid constraints.	The enthusiasm of institutional sharing is insufficient, the phenomenon of buck passing is prominent, and the standardization of sharing work is low.
Resource management level	Archives resources are stored in a decentralized way, and the integration of paper and electronic archives is weak under the dual-track system; There is a shortage of professional talents, and the technology and management ability do not match.	The supply of resources is insufficient, and the quality of shared content is uneven, which makes it difficult to meet the needs of diversified utilization.
Service utilization level	The service mode is still dominated by passive response, and the ability of active mining and accurate push is weak; Users in the field of scientific research generally face the problems of difficult data set search and low availability; Some platforms are complicated to operate, and the public and teachers and students in colleges and universities have poor experience.	The value transformation of archives is insufficient, and the utilization efficiency is low, so it is difficult to adapt to the service needs of the new era.

(1) The security prevention and control system is weak, which restricts the sharing depth

Archives information involves sensitive data, and security risks become an important constraint for sharing and utilization. On the one hand, some institutions have insufficient investment in security protection, hidden dangers in file outsourcing services are prominent, and network attacks and data leakage risks occur from time to time; On the other hand, the balance mechanism between security and openness is not perfect, and the hierarchical authorization access control system is not perfect. Most institutions limit the sharing scope because of security concerns, especially in cross-regional and cross-border file circulation, it is difficult to balance compliance and security, which affects the realization of the sharing goal of "available and invisible".

(2) Cultural cognitive deviation, sharing atmosphere has not yet formed

Some institutions have the traditional concept of "valuing custody and neglecting utilization" and "valuing ownership and neglecting sharing", and regard archival resources as core secrets or departmental exclusive assets, lacking the awareness of global resource allocation. In the field of scientific research, the incentive mechanism of data sharing is not perfect, and scholars are not willing to share actively because they are worried that the results will be published first, and the data collation will be time-consuming and laborious. Even if there are policy requirements, there are problems such as incomplete data sharing and nonstandard document description, which restrict the reuse value of resources.

To sum up, the sharing and utilization of archival

information resources has entered a new stage of digital collaboration, but multi-dimensional problems such as technology, system, management and cognition are intertwined, forming systematic obstacles. Only by accurately solving these problems can we promote the transformation of archival resources from "sleeping" to "active use" and effectively improve the efficiency of sharing and utilization and social value.

3. Efficiency Improvement Path Design

With the rapid development of information technology and

the increasing social demand for archival information, improving the efficiency of sharing and utilization of archival information resources has become the core issue in the modernization and transformation of archival work. This paper will systematically elaborate the path design of improving the efficiency of sharing and utilization of archival information resources from four dimensions: technology empowerment path, system innovation path, management optimization path and social synergy path (Figure 1).

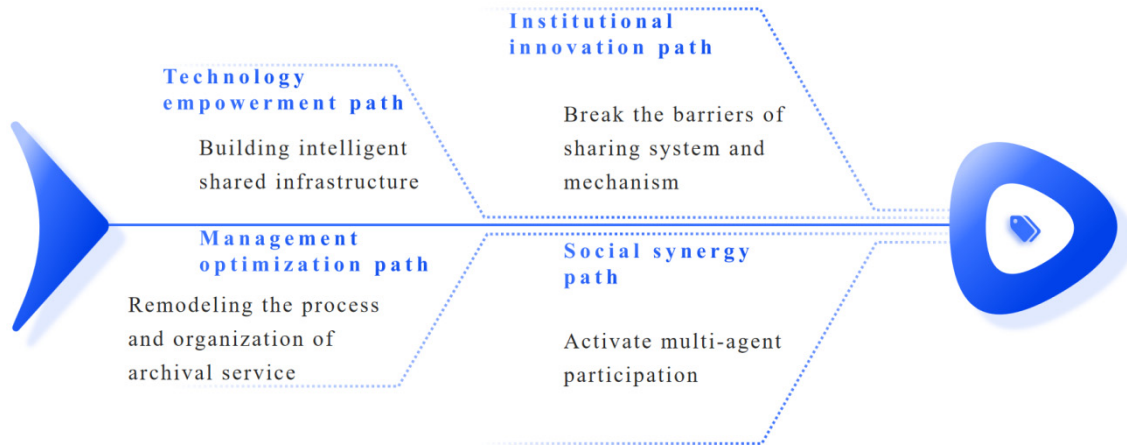


Figure 1. The path design of improving the sharing and utilization efficiency of archival information resources

3.1. Technology Empowerment Path-Building Intelligent Shared Infrastructure

Deploy the alliance chain architecture to realize the whole process of file generation, circulation and utilization, and solve the problem of cross-institutional data mutual trust. Automatic implementation of open access rules through smart contracts. Develop privacy protection technology based on zero-knowledge proof, and realize the sharing mode of "available and invisible" for sensitive files. NLP (Natural Language Processing) technology is introduced to build a multimodal file retrieval engine, which supports mixed retrieval of keywords, semantics, images and audio [8]. Based on the analysis of user behavior data, a personalized recommendation algorithm is developed to actively push related file resources. For example, push "archives from different perspectives of the same event" for historical researchers, and "archives on the timeline of policy changes" for enterprise users. Formulate national standards such as Archives Data Metadata Standard and Archives Open Interface Specification, and unify metadata format and API interface protocol [9]. Establish an evaluation model of archival data quality, dynamically monitor the data quality from three dimensions: completeness, accuracy and timeliness, and automatically trigger the cleaning process for low-quality data.

3.2. The Path of Institutional Innovation-Breaking the Barriers of Sharing System and Mechanism

Formulate the Evaluation Guide for the Open Value of Archives, and divide archives into three categories: "open immediately", "open upon application" and "temporarily closed" according to the sensitivity of archives content, time span and utilization demand, and adjust them dynamically.

Give priority to the opening of files related to people's livelihood, and partially open confidential files through desensitization technology [10]. Establish a "negative list+white list" management mechanism to clarify the types of files that are prohibited from sharing and the conditions for allowing sharing.

The implementation of the joint meeting system of archives work, led by the competent department of archives, combined with government services, data management, confidentiality and other departments, regularly negotiated to solve problems such as division of powers and responsibilities and security review in sharing. Establish a "file+government" collaborative platform to realize the automatic call of marriage registration, birth certificate and other files and government services [11]. Third-party evaluation agencies are introduced to conduct performance audits of cross-institutional shared projects, and the evaluation results are linked to departmental assessments. Give financial subsidies or data feedback to the contributors of archives resources, and return the digital processing fees according to the number of times the shared archives are used. Incorporate sharing efficiency into the annual assessment index of archival institutions, and give policy preference to the top ranked units.

3.3. The Path of Management Optimization-Reshaping the Process and Organization of Archives Service

The implementation of "Archives +IT" dual-track training requires archivists to master basic programming and data analysis skills, and technicians to learn archival business norms. Cooperate with universities to set up the major of "Archives Information Management" to cultivate cross-border talents who know both archives management and information technology. Establish a "portrait of users" library to record users' occupation, research fields, utilization habits

and other information, and provide customized services. For example, push the "file compliance inspection tool" for enterprise users and provide the "file document quantitative analysis report" for academic users [12]. Archives need to implement "online+offline" integration services, develop file sharing apps, support the demand of uploading and searching files with mobile phones, and browse the archives exhibition hall with VR panoramic view. Construct a three-dimensional evaluation index system including technical efficiency, management efficiency and social benefits. Using big data analysis technology, real-time monitoring of the operating data of the shared platform automatically generates improvement suggestions. By analyzing the user's stay time, it is found that the directory information of a certain type of file is incomplete, and then the metadata field is optimized [13].

3.4. The Path of Social Coordination-Activating the Participation of Multiple Subjects

Promote the deep integration of archives, libraries and museums in resources, technology and services. For example, jointly develop the digital platform of "city memory", integrate local chronicles, ancient books and cultural relics archives, and provide one-stop cultural services [14]. Sharing user resources, archives users can access library digital resources for free with their accounts, and vice versa. Introduce crowdsourcing mode to encourage the public to participate in archival cataloging and restoration. Cooperate with enterprises to develop archival cultural products, documentaries, games and cultural products based on historical archives, and the proceeds will feed back archives protection in proportion. Excavate the story content in the archives and create a cultural IP with communication power. Joint media to carry out archival theme publicity activities to enhance public awareness of archives. Promote the revision of the Archives Law, and clarify the data property rights and security responsibilities in sharing. Set up a special fund for file sharing to support technology research and development, standard setting and pilot promotion. Establish a "classified protection+ dynamic audit" security system, and implement encrypted transmission, access control and log tracing for shared data.

4. Conclusion

Driven by the strategy of digital China, the improvement of the efficiency of sharing and utilization of archival information resources needs a multi-dimensional breakthrough through systematic reform. Although the current archival resources have formed a policy framework and digital foundation, they still face core challenges such as inconsistent technical standards, insufficient system coordination and weak security prevention and control. Therefore, this paper constructs a four-in-one path system, solves the problem of cross-institutional mutual trust by deploying alliance chain and zero-knowledge proof technology, and improves the efficiency of data flow by smart contract and NLP search engine; Relying on the "Guide to the Evaluation of the Open Value of Archives", establish a dynamic hierarchical opening mechanism, implement the "negative list+white list" management model, and clarify the boundaries of powers and responsibilities; Implement the

dual-track talent training of "archives +IT" and build a user portrait library to achieve accurate service; We will promote the deep cooperation between the government and Industry-University-Research, and introduce crowdsourcing mode to build and share the ecology with social forces. The research further points out that only through the deep integration of technical standardization, rigid system, intelligent management and social co-governance, can we break the "information island", release the value of archival data elements, promote the transformation of archival undertaking from "physical concentration" to "value aggregation" and provide core support for digital social governance.

References

- [1] Jiang Qiufeng. Research on Optimizing the Dual-Set Management Model for Personnel Archives in the Context of Digital Transformation [J]. East China Paper Industry, 2025, 55(11): 159-161.
- [2] Ouyang Huifang. Research on the Construction Path of an Archive Information Resource Sharing Service Platform from the Perspective of Governance Theory in the Digital Era [J]. Industry and Technology Forum, 2025, 24(22): 229-231.
- [3] Lin Baole. Research on Pathways to Enhance the Utilization Efficiency of Filed Review Archives [J]. East China Paper Industry, 2025, 55(10): 133-135.
- [4] Zhu Lihong. Research on Strategies for Constructing Information Resource Sharing Platforms for Archives in Higher Vocational Colleges [J]. China Management Informatization, 2025, 28(16): 218-220.
- [5] Li Xin. Problems and Countermeasures in the Utilization of Archives in Higher Vocational Colleges [J]. Journal of Puyang Vocational and Technical College, 2024, 37(05): 109-112.
- [6] Wang Yaru. Exploring the Application of Intelligent Technologies to Enhance the Efficiency and Quality of Paper Archives Management [J]. China Paper Industry, 2024, 45(12): 131-133.
- [7] Jiang Chao. Review of the Current Status and Countermeasures for Archive Resource Sharing in the Yangtze River Delta Region [J]. Science and Technology Horizon, 2024, 14(35): 16-19.
- [8] Gao Shiqi. Research on Pathways for Integrating Artificial Intelligence Technology into University Archive Information Management [J]. Journal of Liaoning Vocational Colleges, 2024, 26(11): 91-95.
- [9] Xia Xiaomei. A Brief Discussion on Sharing and Co-construction of University Archival Resources in an Information Resource Sharing Environment [J]. Journal of Puyang Vocational and Technical College, 2024, 37(06): 110-112.
- [10] Zheng Qiuxia. Strategies for Cross-departmental Sharing of Public Security Archival Information Resources [J]. Office Automation, 2024, 29(21): 16-18.
- [11] Zhang Wenjing. Research on Information Resource Integration and Sharing Mechanisms in Archival Digitization [J]. Office Automation, 2024, 29(17): 24-26.
- [12] Xiao Qiuhui, Zhang Bowen. Research on Supply-Demand Matching and Optimization Strategies for China's Archival Access Policies and Regulations [J]. Library and Information Work, 2024, 68(15): 81-92.
- [13] Yang Jianyun. Innovative Research on Archival Information Resource Service Models in the Context of Artificial Intelligence [J]. High Technology and Industrialization, 2024, 30(07): 11-13.
- [14] Shao Ali. Optimizing Archival Retrieval Services to Enhance Archival Utilization [J]. East China Paper Industry, 2024, 54(07): 85-87.