Discussion on the Improvement of Professional Competence of University Archivists under the Background of Artificial Intelligence

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ABSTRACT

After the full process of embedding artificial intelligence technology into archive management, the traditional archive work methods and concepts in universities have been overturned. However, due to the professional boundaries of university archives and the adherence of archive personnel to traditional archive management concepts, university archive personnel lack awareness of artificial intelligence technology and professional ethics in the new era of archives. This article explores the need to improve the professional competence of university archivists in the context of artificial intelligence, and discusses the content and methods of improving professional competence.

Keywords: Artificial intelligence, University archives, Archival, Professionalism.

1. INTRODUCTION

Artificial intelligence is a technical science that studies and develops theories, methods, technologies, and application systems for simulating, extending, and expanding human intelligence.[1] Artificial intelligence is sweeping across the globe in today's interconnected world, involving almost every industry and corner of social development. As a result, artificial intelligence has also been widely applied in the field of archives, which has changed the traditional way and concept of archive management and brought about profound changes in archive work. The transformation in the field of archives has also profoundly affected the work of university archives, and its management is facing an increasing amount of information and business complexity, which has brought a series of new problems and difficulties to university archives staff. In this context, studying the improvement of the professional competence of university archivists has positive significance for promoting the traditional management of university archives towards information-based management.

2. BACKGROUND OF IMPROVING PROFESSIONAL ETHICS

The drawbacks of traditional archive management work are increasingly hindering the development of the archive industry with the development of society, the widespread application of artificial intelligence and the promotion of its application in archive management by the country have profoundly changed the practice and concept of archive management. From the physical form of traditional archive resources to the organizational mode of archive work, and then to the mode and content of archive services, fundamental changes are taking place. [2]

2.1 The Transformation of Archive Management Work

2.1.1 The Drawbacks of Traditional Archive Management

University archives are the historical carrier of the school with the functions of "preserving history and educating students", and are the foundation of the school's work. Traditional university archive management faces problems such as difficulties in

collecting archive resources and strong subjective factors in archive classification, resulting in low efficiency and low quality of archive resource construction. At the same time, under the traditional archive management mode, archive personnel need to spend a lot of time and energy on manual sorting and filing, directory entry, proofreading, borrowing, and retrieval of paper archive resources, which makes the archive process cumbersome, boring, and inefficient. Various problems force university archivists to emancipate their minds in their work, courageously carry out changes in the management of university archives, fully introduce artificial intelligence technology widely used in society into archive management, and transform traditional physical management into information-based data management to solve the drawbacks of university archive management work.

2.1.2 The Comprehensive Application of Artificial Intelligence in Archive Management

Artificial intelligence is driving changes in management methods and concepts in the field of archives with the widespread and in-depth application of artificial intelligence technology in various industries, university archives management is gradually shifting from traditional paper-based entity management to artificial intelligence systematic and information-based management. Many technology development companies have fully developed artificial intelligence archive management systems, enabling AI to fully intervene in the entire archive management process. As a result, the carrier and medium of archival information have undergone a qualitative change, and traditional existing archives have also been transformed into informationized archives through artificial intelligence technology; The manual collection, classification, filing, and directory entry of traditional archival materials are also transformed into the collection, processing, handling, query and utilization of information resources, and external services through the front-end intervention of artificial intelligence technology, the entire archival process is smoother, more efficient, and more objective.

2.1.3 The Application of artificial intelligence in Archives Construction by National Policy

The "Fourteenth Five-Year Plan for the Development of National Archives" (hereinafter referred to as the "Plan") issued by the General Office of the State Council in July 2021 mentioned in its main tasks: "actively exploring the application of knowledge management, artificial intelligence (AI), digital humanities and other technologies in the deep processing and utilization of archive information...; strengthening the application of new generation information technologies such as big data and artificial intelligence (AI) in the construction of digital archives (rooms), and promoting the optimization and upgrading of digital archives (rooms) construction." [3] With the strong promotion of national policies, AI has been embedded in almost all aspects of archive management, fully integrated into the entire process of archive management, and promoted a disruptive change in traditional archive management and archive work. In today's information age, achieving archive informatization and intelligent management through artificial intelligence technology is the future development trend in the field of archives.

Therefore, possessing the ability to engage in information technology, comprehensively understanding and mastering certain artificial intelligence knowledge and technology, has become a new professional competence for university archivists. The new business literacy requires university archivists to proficiently use artificial intelligence technology to adapt to and support the intelligent and smart development trend of archive management in the information age.

2.2 Archivists Lack Information Literacy

University management continues to infiltrate the artificial intelligence management mode with the improvement of the development of artificial intelligence in society, and university archive management is also constantly being artificially intelligent. As university staff, their own literacy is still relatively high. As archive staff, due to the continuous strengthening of professional literacy, the artificial intelligence literacy and level of archive personnel have also been improved to a certain extent. However, from the perspective of archive personnel structure and comprehensive business level, there are still problems that do not fully match the intelligent management of archives.

Archives are records of the development history of a school, and their resource information is relatively lagging behind. Therefore, the work of university archives cannot keep pace with the central work of the school, such as teaching and scientific research. They are defined as auxiliary

departments by the school, and the archives department is basically unable to participate in major events and activities of the school. This inherent attribute determines that archive staff do not need to be backbone or young personnel of the school.

According to the 2007 Investigation Report on Archival Work in Directly Affiliated Universities of the Ministry of Education, the age structure of archive staff tends to be aging. Until today, when artificial intelligence technology has penetrated various social fields, the age structure of the university archive workforce has not changed significantly, with a large proportion of middle-aged and elderly staff and relatively few young people. Even if young people come, they only use the archives department as a springboard for promotion, with high mobility. At the same time, the knowledge, education, and professional ethics of archivists are relatively low, and due to their age, archivists tend to have rigid concepts and rigid processes, resulting in a lack of awareness of artificial intelligence and technical mastery.

As a result, the acceptance and application ability of university archivists towards the rapidly developing and applied artificial intelligence technology is relatively limited, and their artificial intelligence literacy is insufficient. Some existing archive workers use artificial intelligence technology as an auxiliary tool and can also complete practical operations of basic information tools, such as using artificial intelligence to search and query archives. But rising to the concept of artificial intelligence management for archives, utilizing artificial intelligence technology to capture archive metadata and collect archive resource information in a timely manner; the use of artificial intelligence technology for collecting and gathering oral historical materials, [1] creates a knowledge blind spot for artificial intelligence. The lack of artificial intelligence literacy among archive workers has to some extent limited the application of artificial intelligence technology in university archive management. As a result, the management level of university archives cannot achieve the national goal of "strengthening the application of new generation information technologies such as big data and artificial intelligence (AI) in the construction of digital archives, and promoting the optimization and upgrading of digital archives".[3]

3. THE CONDITIONS FOR IMPROVING THE PROFESSIONAL ETHICS OF ARCHIVISTS

3.1 The Intrinsic Qualities of Archivists

Most archivists are transferred to the archives department through cross disciplinary positions, they are relatively old, and their original business knowledge is not related to archive theory and business. However, they are all university staff who are selected through certain conditions and thresholds to enter university work. Although their academic education is not a master's or doctoral degree, they all have certain process learning and comprehensive application abilities. Artificial intelligence is ultimately the technical knowledge that enhances archive work. It can change the concept and physical methods of archive management work, but cannot change the essence of archives: the carrier of historical records. Therefore, as long as archivists can enhance their sense of responsibility based on their existing business knowledge system, and receive training and cultivation in artificial intelligence technology and certain professional knowledge, they can improve their professional ethics in the era of artificial intelligence and do a good job in role repositioning and job transformation.

3.2 External Environment of Archive Personnel

The promotion of artificial intelligence development by national policies and the rapid development of artificial intelligence technology are also driving the urgent need for archivists to enhance their professional competence in archives. In the entire process of embedding artificial intelligence into archive management, in terms of national policy formulation, the State Council issued the "New Generation Artificial Intelligence Development Plan" in 2017 to explore the basic theory and key common technologies of artificial intelligence. In terms of technical patents for embedding artificial intelligence into archive management, as well as patents for archive classification systems, archive access devices, and archive management robots based on artificial intelligence, they have been successively disclosed. [4] Meanwhile, in recent years, universities have also begun to transform and upgrade from traditional management to "smart campuses". In

order to adapt to this change, university archive management is constantly trying to use artificial intelligence technology to intelligently collect, manage, and utilize university archive information. Based on the construction of university archive service platforms, it promotes the deep development, utilization, and open sharing of high-quality archive resources, and enhances the ability of university archive information services in the new era. [5]

4. THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN VARIOUS ASPECTS OF ARCHIVES

The disruption of traditional physical archive management models and theoretical concepts by artificial intelligence, so, the entire process of traditional archive business practices such as collection and classification has also been optimized. However, no matter how intelligent the traditional archive management model is transformed, the core essence of archive management remains unchanged, and the entire process of archive management remains unchanged. Therefore, artificial intelligence technology has different applications in different archival processes. Therefore, there are different levels of artificial intelligence technology training knowledge at different stages.

4.1 Archival Resources Collection Process

This stage, artificial intelligence technology utilizes cloud computing, big data technology, and other technologies to capture metadata from various databases on the campus network, and collect required archival information such as digital archival information on school publications, teaching, research, and personnel; Artificial intelligence crawls information through web crawlers, analyzes and forms digital data and information in archive structures.

4.2 Archival Resources Organizing Process

This stage, the artificial intelligence based university archive service platform first constructs a scientific data relationship network through word embedding technology, neural network technology, and machine learning technology's multi-layer perceptron algorithm; [5] Secondly, AI technology such as natural language processing is used to

intelligently identify and analyze the theme words and key information of archive resources according to archive classification, and perform correlation mining and analysis on the text content of archive resources to form text source feature labels, then, artificial intelligence classification and organization are carried out to form digital archive forms, The pilot project of electronicization of accounting archives in Guangzhou Power Supply Bureau has utilized AI technology to achieve automatic sorting of archives and automatic generation of metadata. [1]

4.3 Archival Resources Service Utilization

This stage, the artificial intelligence technology deeply embedded in the university archive management platform has fully realized the intelligent retrieval of archive information, improving the accuracy and completeness of archive retrieval. When searching for archives, artificial intelligence technologies such as knowledge graphs, knowledge mining, and recognition can be used to not only retrieve, accurately locate, and capture text related images that match the retrieved archive data, but also automatically form various archive thematic meta databases based on utilization and query rates, thereby achieving precise, characteristic, and intelligent user recommendation services, transforming passive services into active services, and improving the quality of archive services.

5. THE CONTENT OF IMPROVING THE PROFESSIONAL ETHICS OF ARCHIVISTS

5.1 The Improvement of Intelligent Management Thinking of Archives

The archive industry itself has strong professional boundaries, and the adhesion between university archives and the archive industry is not strong, sometimes, an information island is formed in the archive industry, which leads to the solidification of archive management thinking among university archive personnel. Therefore, as artificial intelligence technology overturns the traditional physical management thinking of archives and gradually enters the intelligent management mode of digital archives, university archive staff should seize the opportunity to change the original traditional archive management thinking. Due to the ability of artificial intelligence technology to process large-scale unstructured text

and multimedia content data, university archive staff use data mining analysis thinking to deeply explore various types of information in archive resources, select and identify the correlations and patterns between categories, and thus enhance the intelligent management thinking of archives.

5.2 The Improvement of Knowledge of Artificial Intelligence Technology

Artificial intelligence technology is deeply embedded in all aspects of archive management, empowering intelligent archive management, changing the physical form of archives, optimizing and improving the efficiency of archive management. This also imposes new requirements on the knowledge structure and ability quality of archive personnel that are different from traditional archive skills: understanding and mastering the basic knowledge of artificial intelligence technology, and being able to use artificial intelligence tools to carry out archive management work. At this point, archivists still need to actively enrich their knowledge reserves, broaden the boundaries of the archival profession, cross disciplinary learn and master artificial intelligence knowledge, understand the concepts of big data, metadata, digital data information, web crawlers, natural language processing, knowledge graphs, and other related artificial intelligence technologies, related knowledge systems, and the degree of knowledge adhesion? How does artificial intelligence technology work and what is its process? University archivists should lower the boundaries of archives, actively engage in cross disciplinary knowledge learning and integration, and improve their professional ethics to become composite archivists in the era of artificial intelligence, thereby enhancing the efficiency and quality of their work.

5.3 The Improvement of Professional Ethics and Cultivation

The professional ethics of university archive staff should be strengthened. In traditional physical archive management, due to inventory archive management, archive information has the security and stability of archives, Under the intelligent management of artificial intelligence archives, When providing archival information for archival inquiry, the utilization of archival techniques such as photocopying is singular and not easy to cheat or falsify, even if there is falsehood, it is easy to identify and judge. But in today's information age,

due to the highly developed artificial intelligence technology, while improving effective archive management, it also brings many risks and hidden dangers that are difficult to detect and judge. At this time, the high level of professional ethics of university archive staff has a certain impact on the management of archives and the authenticity of archive information. At the same time, the professional ethics of university archive staff also determine the quality of service for the utilization of university archives. Therefore, strengthening professional ethics is also a part of enhancing the professional competence of university archive staff.

6. WAYS TO IMPROVE PROFESSIONAL ETHICS

Facing the constantly changing needs of archive query users in the era of artificial intelligence, it is necessary to continuously improve professional ethics, and there are many ways to do so in today's highly developed network.

6.1 Self-taught

Self-study is an ability, and university personnel have the ability to continue learning. In the information age, knowledge sources have become very abundant and convenient. Without guidance from teachers or others, knowledge and skills related to intelligent archive management can be obtained through textbooks or the internet for self-learning and self-improvement.

6.2 Conference Communications

The conference provides a platform for communication, while the Archive Academic Conference offers a professional exchange platform for archive professionals attending. University archivists should actively participate in academic conferences and engage in professional exchanges with experts and peers. This way, they can learn about the latest developments and hot issues in the field of artificial intelligence in the archival industry in a timely manner. So, they can broaden their knowledge and ideas on the integration of artificial intelligence and the archival profession, which is of great significance for improving the intelligent management of archives.

6.3 Archive Vocational Training

The principle of vocational training is "specialization in each profession". In order to

adapt the new requirements of the development of the archival profession in the new era, national and provincial archival institutions and departments often adopt online or offline methods to provide archival vocational training to archival personnel, improving their professional skills and technical level. The China Archives Joint Vocational Skills Appraisal Center often holds vocational skills training courses for archive personnel, covering topics such as digital transformation of archive work, construction of smart archives, archive informatization and its development direction.

7. CONCLUSION

The impact of artificial intelligence technology on the field of archives is becoming increasingly disruptive with the development of society and the country, and university archives are also deeply influenced. At the same time, in order to comprehensively promote the high-quality development of archival work in the new era, the country continuously adopts various ways to enhance the professional qualities and job skills of archival personnel. In order to adapt to the development of the archival industry in the new era, university archival personnel should actively improve their own archival professional nutrition.

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