

Knowledge Transfer in Archival Institutions from the Government-Industry-University-Research Collaborative Innovation Perspective: A Case Study of National Archives Administration Science and Technology Projects (2018-2020) (Postprint)

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Abstract

[Purpose/Significance] Based on the cooperation among archival institutions participating in the science and technology project approval of the National Archives Administration, this study explores the knowledge interaction among archival institutions in the collaborative management process of government-industry-academia-research, constructs a social network diagram of knowledge transfer in the cooperation process of archival organizations at various levels in China, and provides references for archival institutions to seek strong collaborative partners and draw on relevant project experiences. [Method/Process] Using complex network analysis methods and Gephi software, this study investigates the subjects, objects, and pathways of knowledge transfer among the approved units of the National Archives Administration's science and technology projects from 2018 to 2020. [Results/Conclusion] Knowledge transfer among archival institutions under the government-industry-academia-research background is characterized by diversified subject patterns, forward-looking content themes, and fixed pathway development, while simultaneously facing issues such as unsaturated knowledge transfer and limited transfer scope.

Full Text

Research on Knowledge Transfer in Archives Institutions from the Perspective of Government-Industry-University-Research Collaborative Innovation: A Case Study of Science and Technology Projects of the National Archives Administration (2018-2020)

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Abstract: [Purpose/significance] Based on the cooperation of archives institutions participating in the establishment of science and technology projects under the National Archives Administration, this study explores knowledge interaction among archives institutions within the collaborative management framework of government-industry-university-research. It aims to construct a social network map of knowledge transfer in the cooperation process of archives institutions at various levels in China, providing references for archives institutions to identify strong collaborative partners and learn from relevant project experiences. [Method/process] Using complex network analysis methods and Gephi software, this paper examines the subjects, objects, and pathways of knowledge transfer among units undertaking science and technology projects of the National Archives Administration from 2018 to 2020. [Result/conclusion] Against the backdrop of government-industry-university-research collaboration, knowledge transfer in archives institutions exhibits characteristics such as diversified subject modes, forward-looking content topics, and fixed path development. Simultaneously, problems exist including unsaturated knowledge transfer and limited transmission scope.

Keywords: government-industry-university-research collaborative innovation; knowledge transfer; National Archives Administration science and technology projects; complex network analysis

Introduction

Government-industry-university-research collaborative innovation represents a crucial mechanism for responding to the innovation-driven national development strategy and promoting institutional construction through technological advancement. This model adopts collaborative innovation concepts, primarily featuring government guidance, university leadership, and enterprise participation. It relies on science and technology projects to enhance national economic development [1], facilitate knowledge transfer and technological innovation, and improve scientific research and talent cultivation [2]. Archives are defined as “historical records in various forms such as text, charts, and audio-visual ma-

terials, directly created by state organs, social groups, enterprises, institutions, other organizations, and individuals during economic, political, cultural, social, ecological civilization, military, foreign affairs, and scientific and technological activities, possessing preservation value for the state and society” [3]. Consequently, archives institutions, as primary responsible entities for archives undertaking construction, exhibit strong political, confidentiality, and cultural characteristics, emphasizing “managing archives for the nation” and “governing archives according to law.” The innovative development of archives business encompasses two dimensions: first, promoting the development and utilization of archival resources to enhance their role in policy decision-making, serving people’s livelihood, knowledge transfer, and cultural construction; second, managing the relationship between archival confidentiality and development to advance knowledge mining and management of open archives.

Archives science and technology projects serve as an important window for archives business innovation by state organs, social groups, enterprises, institutions, and other organizations, exerting forward-looking and long-term impacts on promoting innovative application of scientific and technological achievements, improving standardized archives management, facilitating modernized archives governance, and strengthening social participation in archives services. Conducting cooperative research based on science and technology projects themselves helps achieve knowledge complementarity among institutions, highlighting a three-dimensional collaborative development of “knowledge interaction—thinking construction—technical implementation.” On June 20, 2020, the revised Archives Law of the People’s Republic of China [3] proposed that “the state encourages and supports scientific research and technological innovation in archives,” emphasizing the application of scientific and technological achievements in archives management, and “encourages social forces to participate in and support the development of archives undertakings,” providing affirmation, commendation, and rewards to relevant units and individuals, thereby demonstrating the important value of knowledge transfer in archives science and technology projects for strengthening archives informatization construction and improving modernized archives governance capacity.

In November 2020, the 11th Electronic Records Forum introduced pilot reforms for science and technology projects in Zhejiang Provincial Archives, China Petroleum, Shanghai Supreme People’s Court, and other units, emphasizing innovation and promotion of multi-subject collaborative management in data governance, technology empowerment, and business optimization for archives construction [4]. In December 2020, the National Archives Bureau Directors and Archives Directors Meeting further emphasized the need to “solidly advance enterprise archives, project archives, agricultural and rural archives, and specialized archives and people’s livelihood archives in related industries and fields” [5], strengthening business guidance and technological application. In February 2021, the National Archives Administration issued a notice on the 2021 science and technology project establishment, publicly selecting a new round of science and technology projects to form new government-industry-university-research

collaborative cooperation chains.

Facing the “14th Five-Year” strategic planning [6], promoting the construction and development of archives governance systems, resource systems, utilization systems, and security systems, emphasizing participation of social forces in archives undertaking construction [7], enhancing co-construction and sharing of cooperation and coordination among universities, enterprises, and administrative units, and further advancing enterprise pilots and science and technology project innovation play significant roles in improving archives work development. The declaration and design of science and technology projects carry the painstaking efforts and dedication of each unit. The participating institutions in National Archives Administration science and technology projects serve as important forces driving archives science and technology reform, playing vital roles in promoting knowledge transfer, enhancing technological application, driving business innovation, and achieving win-win cooperation. In an era of rapid economic and informatization development, adopting the four-in-one collaborative innovation thinking of government-industry-university-research helps expand economic benefits, achieve resource advantage complementarity, strengthen knowledge transfer among different institutions, and promote the growth of scientific and technological research achievements [8].

In this context, this study uses National Archives Administration science and technology projects as data sources, employing complex network and visualization tools to explore cooperation among different institutions, analyzing knowledge transfer and sharing among archives institutions from the perspective of government-industry-university-research collaborative innovation, and deeply investigating the social network relationships [9], phenomenon representations, and related issues of knowledge transfer among different archives institutions, aiming to enrich research perspectives on knowledge transfer and provide insights for archives institutions to conduct cooperation and knowledge transfer under government-industry-university-research collaborative development.

1 Theoretical Interpretation

1.1 Domestic and International Research on Government-Industry-University-Research Collaborative Innovation

Government-industry-university-research collaborative innovation is the main operational form under the current innovation-driven development background. Through achieving knowledge interaction and sharing among different knowledge groups in extensive collaboration, it improves resource integration and promotes management innovation. Research finds that government-industry-university-research is mainly applied from economics and management perspectives to explore knowledge transfer, knowledge transition, and collaborative benefits under multi-party interest cooperation and game situations. M. Sutrisna et al. [10] used questionnaire surveys and focus group interviews to explore an influencing factor model for industry-university cooperation, proposing that

such cooperation has become an important development trend. Y. L. Bakouros and E. T. Samara [11] explored cooperation mechanisms between enterprises and universities, using interviews and case studies to investigate how government-industry-university-research collaborative innovation innovates university knowledge structures and promotes technology and education development. Wu Jie and Che Xiaojing et al. [1] constructed a three-party collaborative innovation game model with government guidance, university leadership, and enterprise participation, using simulation analysis to explore influencing factors of government-industry-university-research innovation management. Li Yang et al. [12] studied key elements of government-industry-university-research collaborative innovation in enhancing enterprise competitiveness and revealed the dynamic evolution process of government-industry-university-research in promoting enterprise innovation development from organizational theory.

1.2 Domestic and International Research on Institutional Knowledge Transfer

With economic development and scientific-technological progress, institutional cooperation formed through scientific research exchange and project research for knowledge transfer and sharing construction has become a common phenomenon. Knowledge transfer typically includes three aspects: knowledge transfer subjects (enterprises, universities, research institutions, government, etc.), knowledge transfer objects (knowledge itself), and knowledge transfer paths (intermediaries and channels), forming a specific knowledge transfer network relationship map to enhance knowledge's role in improving economic benefits and promoting innovation development. S. C. Goh [13] proposed that knowledge transfer is an important component of knowledge management and used qualitative analysis to explore effective knowledge transfer in organizational structures. N. Thomas [14] emphasized that knowledge transfer is valuable for integrating organizational resources and improving performance management, deeply studying two major modes of knowledge transfer. Qiao Zhiqiang [15] explored supply chain information, knowledge, and collaboration issues, proposing that information flow and knowledge transfer are prerequisites for knowledge management and innovation, emphasizing that supply chain structure is the path and key to knowledge transfer. Qiu Jiangnan et al. [16] studied knowledge systems and semantic transfer rules based on the multi-path characteristics of semantic networks in knowledge systems, enriching semantic transfer content. Shao Ruihua [17] and Li Changling [18] also used bibliometrics and social network analysis to explore institutional cooperation in China's library and information science field, finding characteristics such as insufficiently close cooperation, regional communication patterns, and limited knowledge dissemination. Ba Zhichao et al. [21] analyzed patent data in the energy field from the USPTO database, finding that technological creation capabilities are mainly distributed in Europe, America, and Japan, with knowledge innovation positively correlated with patent output. Niu Li and Du Lihua [22] used complex network analysis, social network analysis, and bibliometrics to explore the construction and evolution trends of

domestic archival science subject networks, analyzing that information services, knowledge services, and interdisciplinary research will become important directions for future archival science development.

In summary, cooperative relationship nodes among organizations can generate knowledge-based social relationships, making social networks important paths for explicit and implicit knowledge transfer and innovative development among institutions [23]. As an analytical tool, complex networks are often applied in institutional cooperation analysis to explore knowledge transfer and sharing, which is valuable for understanding collaborative patterns and knowledge diffusion mechanisms in the archives field.

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

Source: ChinaXiv — Machine translation. Verify with original.