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Construction and Application of University Library Research Think Tank Service Models under the Life Cycle Paradigm: Postprint

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Date: 2023-08-27T00:00:00+00:00

Abstract

[Purpose/Significance] University libraries' involvement in think tank development and service to scientific research constitutes a new requirement in the new era, as well as a primary direction for service innovation and identifying new growth points. This paper explores research think tank services from the university library perspective.

[Method/Process] The study defines university library research think tank services, analyzes their strengths, weaknesses, opportunities, and threats using SWOT methodology, positions the service content, constructs a service model based on research data lifecycle theory, and proposes implementation strategies.

[Result/Conclusion] University library think tank services hold distinct advantages and opportunities. Libraries should focus on research strategy and policy research services, support researcher development, conduct science popularization to promote comprehensive research literacy enhancement, and actively develop and promote research think tank services through both commissioned and push-based models.

Full Text

Construction and Application of University Library Scientific Research Think Tank Service Models Under the Life Cycle Paradigm

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Abstract

[Purpose/Significance] University library participation in think tank construction and scientific research services represents a new requirement for university libraries in the new era, as well as a primary direction for service innovation and identifying new growth points. This article explores research think tank services based on university libraries. **[Method/Process]** By defining the concept of university library research think tank services, this study employs SWOT analysis to examine the strengths, weaknesses, opportunities, and threats of such services, positions the service content, constructs a service model based on the life cycle theory of research data, and proposes application strategies. **[Result/Conclusion]** University library think tank services possess distinct advantages and opportunities. Libraries should focus on research strategy and policy research services, position themselves to support researcher development, and conduct science popularization to enhance comprehensive research literacy. Through both commissioned and push models, they should actively construct and promote research think tank services.

Keywords: university library; scientific research think tank; library service; think tank service

Classification Number: G251

Introduction

In 2015, the Ministry of Education issued the *Regulations on Libraries in Regular Institutions of Higher Education*, which explicitly stated in Article 13 that libraries should actively expand information service domains, embed themselves in teaching and research processes, and develop subject-based services [1]. In the same year, the General Office of the CPC Central Committee and the State Council issued the *Opinions on Strengthening the Construction of New-Type Think Tanks with Chinese Characteristics*, emphasizing the need to promote the development and improvement of university think tanks in building such institutions [2]. The Hoover Institution, a renowned American public policy think tank, originated as a library before becoming a prestigious think tank through focused research [3]. As university libraries continue to develop and progress, they should respond to new era demands through innovative services.

Currently, some domestic university libraries have already implemented research think tank services in practice [10]. For example, Shanghai Jiao Tong University Library, relying on the university's "120 Technology Foresight" special project, has conducted development trend analyses in specialized fields such as marine engineering equipment and high-temperature superconducting power technology, producing eight reports. Peking University Library has participated in the university's project on "Research on Hotspots in Basic and Frontier Disciplines' Strategic Development," completing trend analyses in 21 directions aligned with

national strategic needs and international disciplinary frontiers. Zhejiang University Library, commissioned by the Ministry of Science and Technology, conducted the *Comparative Study on Science and Technology Development in Major National Economic Industries*, establishing objective and effective evaluation indicator systems to enable quantitative comparisons of science and technology development levels across major national economic sectors. While both theory and practice have laid foundations for university library research think tank services, research on service models remains insufficient, necessitating richer model studies to facilitate broader implementation.

1. Connotation and Value of University Library Research Think Tanks

1.1 Connotation of University Library Research Think Tanks The term “think tank” translates the English phrase “Think Tank,” first appearing in a June 1967 *New York Times* series about the RAND Corporation, the world’s first think tank research institution [11]. At present, think tanks are generally defined as comprehensive teams composed of experts from multidisciplinary fields that provide comprehensive or specialized policy research and consulting services to governments, enterprises, and social organizations, featuring relatively stable and independent operations. Think tanks constitute an important component of national “soft power” and have been termed the “fifth power” [12].

A university library research think tank refers to an institution that relies on the university library as its main body, comprising a comprehensive team of multidisciplinary experts from both within and outside the library. It focuses on the entire scientific research process—including project selection, research investigation (data collection), experimental research, project completion and evaluation, and achievement development and promotion—to provide comprehensive and specialized research policy research and consulting services to government research planning and management organizations, enterprise research development organizations, university research management organizations, and university researchers.

1.2 Value of University Library Research Think Tank Construction

From a demand perspective, university library research think tank services hold significant meaning. The primary demand subjects include: (1) Government research planning and management organizations at all levels. For government users, research think tanks facilitate more scientific and implementable research management policies through data analysis and information technology, enable research strategic planning that better aligns with actual research capabilities and social development, and guide research communities’ understanding of research policies and strategies. (2) Enterprise research development organizations. Research think tanks can provide consulting services related to research

achievement transformation for small and medium-sized enterprises, avoid redundant research processes, and offer higher-quality consulting through analysis of research data—especially patent intelligence—to assist in making correct and forward-looking decisions that ensure enterprise development direction and sustainability. (3) University research management organizations. Research think tanks help these organizations understand the scientific research status of schools and related departments to identify strengths, weaknesses, and distinctive growth points; comprehend the research work status of internal research teams to provide theoretical and practical foundations for internal research policy formulation; and better guide research teams in understanding and implementing research policies.

University library research think tank services represent an innovative, cutting-edge, and intelligent service. In an era where digitalization, networking, and intelligence are redefining university library functions, research think tank services constitute an optional transformation direction. However, this choice requires university libraries to conduct comprehensive assessments of advantages and disadvantages and clarify service positioning based on the organic integration of internal resources and external environments.

2. SWOT Analysis and Service Positioning of University Library Research Think Tanks

2.1 SWOT Analysis of University Library Research Think Tanks

2.1.1 Strengths Analysis From the development history of think tanks, producing influential think tank products requires rich information resources and strong expert team support—both essential conditions for think tank construction. Correspondingly, university library research think tank construction benefits from not only the library's inherent resource and talent advantages but also effective resource and talent guarantees provided by alliance-based development models. First, regarding research data, university libraries possess the advantage of accumulated research resources from annual research projects and objectives since each university's establishment, forming important original research data over time. Second, from a talent perspective, some librarians themselves conduct scientific research and are even experts in certain fields, possessing certain data mining and intelligence analysis capabilities. The strong service spirit and objective, neutral professional ethics of librarians provide innate advantages for think tank services. Simultaneously, universities have massive numbers of disciplinary experts who, while enjoying think tank services, can also participate as think tank builders. Third, from an alliance perspective, the vast majority of university libraries currently operate within alliance frameworks, enabling effective sharing of conventional research data across libraries and joint construction of think tank talent.

2.1.2 Weaknesses Analysis

- (1) Insufficient development funding. University libraries are non-profit institutions with limited funding primarily from their host universities, which cannot support robust think tank construction and development, thereby restricting research think tank initiatives to some extent.
- (2) Think tank service concepts require improvement. Currently, most library managers and librarians have not conceptually integrated think tank services with library services, with many not even believing that university libraries possess the capacity to develop think tank services. Some librarians have even lost the ability to accept new concepts and challenges.
- (3) Poor international alignment of service technologies. Compared to mature foreign research think tank technologies, the knowledge structure of current general university librarians remains somewhat backward in terms of think tank technology, without established transnational databases, making domestic think tanks slightly inferior to their foreign counterparts.

2.1.3 Opportunities Analysis

- (1) Clear policy support. The 2012 *Several Opinions of the Ministry of Education on Comprehensively Improving Higher Education Quality* emphasized that universities should focus on major international issues, target national development strategies, and strengthen think tank construction [13]. In 2014, the Ministry of Education further formulated the *Plan for Promoting the Construction of New-Type University Think Tanks with Chinese Characteristics*, clarifying goals, directions, and pathways for university think tank construction [14]. In 2015, the CPC Central Committee and State Council promulgated the *Opinions on Strengthening the Construction of New-Type Think Tanks with Chinese Characteristics*, proposing to “leverage universities’ advantages of comprehensive disciplines, dense talent concentration, and extensive external exchanges, deeply implement the plan for promoting the construction of new-type university think tanks with Chinese characteristics, and promote the overall improvement of universities’ intellectual service capabilities” [2]. As important university institutions, university libraries should respond to national needs and conduct think tank construction by combining their own advantages.
- (2) Government-established fund guarantees. The State Council’s *Twelfth Five-Year Plan for National Strategic Emerging Industries Development* explicitly stated that establishing think tank industry funds is a key link in supporting think tank industry implementation and promoting high-end industry development, as well as an important step in exploring financial support pathways for think tank industries and constructing benign industry development models. The establishment of think tank industry funds facilitates accelerated coordination and promotion of think tank industry investment cooperation projects [15]. University libraries should seize development opportunities and circumvent shortcomings to better

fulfill their functions.

2.1.4 Threats Analysis

- (1) Threats from mature foreign think tank technologies. Although China's think tank construction is flourishing, the domestic and international influence of Chinese and foreign research think tanks remains unequal. Foreign research think tanks started early, have sufficient funding, advanced technology support, and rapid development. Domestic research think tanks started late, have insufficient funding, inadequate technology, and low public demand, resulting in slow development.
- (2) Threats from other consulting companies. The vigorous development of think tanks has enabled some civil organizations to grow and develop, which can also be called consulting companies. These consulting companies not only have strong financial guarantees and technical support but can also hire experts and scholars at high prices to ensure think tank product quality and even advertise to expand their visibility. This poses another major threat to university library research think tanks.

2.2 Service Positioning of University Library Research Think Tanks

The main service targets of university library research think tanks are government research planning and management organizations at all levels, enterprise research development organizations, and university research management organizations. Based on the needs of these three types of organizations and the SWOT analysis results, the primary service directions can be positioned as research strategy and policy research, supporting researcher development, and promoting comprehensive research literacy enhancement.

2.2.1 Positioning in Research Strategy and Policy Research A crucial function of research think tanks is to assist research decision-making, serving as the logical starting point for various research management institutions and departments. University library research think tanks must first effectively collect and conduct intelligence analysis on research development policies of various research management institutions at home and abroad, regionally, and within universities, and provide targeted policy recommendations and strategic planning based on audience characteristics. (1) For government research management departments, research think tanks can help formulate research development strategies that align with social development, research laws, and international frontiers, ensuring policy rigor, scientific validity, foresight, and implementability for healthy social and livelihood development. (2) Enterprises can utilize research think tanks to formulate research development policies related to enterprise development, ensuring policy competitiveness and better grasping enterprise development directions. They can also purchase relevant patents through think tanks to achieve research achievement transformation and produce more new products. (3) University research management departments can rely on think tanks to understand internal and external research

development status, grasp school research development patterns, and formulate scientific research development plans. For university researchers, think tanks can help them better understand national, regional, and university research policy content and trends, providing directional guidance and specific policy implementation assistance for their scientific research.

2.2.2 Positioning in Supporting Researcher Development For researchers and research teams in various organizations, research think tanks can better help them identify research topics and track project progress, promote the transformation of years of research accumulation into intellectual achievements to form think tank products, and assist researchers in effective research achievement transformation. The main scientific research process includes topic selection, research investigation, experimental research, project completion and evaluation, and achievement promotion. (1) During topic selection, research think tanks can effectively collect research data within limited timeframes, disciplines, and researcher scopes, and use intelligence analysis techniques to deduce development trends and patterns in specific thematic areas, providing effective guidance on researchers' topic innovation, feasibility, and competitiveness. (2) During research investigation, think tanks can provide direct and specialized literature guarantees and research resource support, primarily through conventional information retrieval services and access to various domestic and international databases. (3) During experimental research, think tank personnel can embed themselves in research teams to provide project-specific services and intelligence analysis, achieving seamless integration and full-process service for researchers' scientific work. (4) During project completion and evaluation, think tanks can provide interpretations of specific research completion policies from research management departments and assist researchers in completing the completion process. (5) During research achievement promotion, university libraries should leverage their extensive alliance advantages and service targets including government and enterprise institutions to assist researchers in publicizing research achievements and support the legal procedures for research promotion, providing neutral consulting and guarantees for both parties.

2.2.3 Positioning in Science Popularization for Comprehensive Research Literacy Enhancement Scientific research is not only a concern for researchers or research management departments, nor merely a tool for enterprise profit development. The spirit of scientific research should be a capability and literacy possessed by every citizen. The Ministry of Education's *Plan for Promoting the Construction of New-Type University Think Tanks with Chinese Characteristics* explicitly identifies talent cultivation as one of the functional orientations of Chinese university think tanks. As university library research think tanks, they should naturally include talent cultivation in their service content. University library research think tanks should widely conduct science popularization work: first, targeting all university students to help them preliminarily

acquire research capabilities and spirit, understand the development status and trends of their disciplines among universities and internationally, develop initial research abilities and ethics, and cultivate deeper research aspirations; second, targeting broader citizen groups, using new technologies, new carriers, and accessible methods to help more audiences understand the research process, possess research ethics, and develop scientific reverence.

3. Construction of University Library Research Think Tank Service Models Under the Life Cycle Paradigm

Differences in research think tank services primarily manifest in four aspects: topic selection and user targeting differences, research data positioning differences, expert selection orientation differences, and achievement output intelligence differences—all derived from service positioning differences. However, regardless of positioning in research strategy and policy research, supporting researcher development, promoting comprehensive research literacy enhancement, or other orientations, the service foundation is research data, which is an indisputable fact. Therefore, the construction and service process of university library research think tanks must be conducted regularly in combination with research data life cycle models.

Based on investigations of research data life cycle management models proposed by five foreign universities (the Inter-University Consortium for Political and Social Research, Cambridge University Library, Harvard University Office of Management and Services, National Autonomous University of Mexico Library, and University of Essex), research data life cycle management should include six stages: management planning, data collection management, data description and archiving management, data processing and analysis management, data preservation management, and data sharing and utilization management [16].

In the university library research think tank service process, four stages—management planning, data collection management, data processing and analysis, and data sharing and utilization—will change according to different service positioning. (1) During management planning, different types of research think tank service positioning directly affect research data management plans—for example, commissioned project perspectives generally differ from push project perspectives, and different disciplinary thematic perspectives generally differ. (2) During data collection management, positioning also influences collection, as internal university projects generally differ from external projects, and domestic projects generally differ from international projects, often requiring alliance cooperation to complete comprehensive information collection and management. (3) During data processing and analysis, because these are intelligence services requiring expert collaboration, domain expert elements need to be added. (4) During data sharing and utilization, because think tank services typically have clear service targets, research achievement

users are often relatively determined, and whether sharing can be achieved requires determination after identifying think tank achievement ownership subjects and their willingness.

Based on the above analysis, this study constructs commissioned and push-type university library research think tank service models, as shown in Figure 1 [Figure 1: see original paper] and Figure 2 [Figure 2: see original paper].

3.1 Construction of the Commissioned Service Model The commissioned university library research think tank service model operates on the library foundation, where librarians receive user commissioning for project initiation, search for required resources in the university research database, and if unavailable, utilize library alliance functions to obtain needed research information. Through organization and screening, usable research data is submitted to think tank experts, who integrate and analyze the data, write research reports, form think tank products, and submit them to users to complete the think tank consulting project.

This model represents a conventional passive reception-type think tank service model. During application, it should fully consider the characteristics of the commissioning party's research needs, as the ability to meet commissioning party needs is the most important factor in evaluating think tank service capabilities.

3.2 Construction of the Push Service Model Different from the commissioned service model, the push service model is an active service. For university libraries without government or university commissions for think tank decision support, they should adopt the push-type research think tank service model, demonstrating value through innovative service development. By courageously transforming and using services to earn more services, a virtuous cycle of research think tank services will be promoted.

This push model represents an unconventional active think tank service model. During application, it is significantly influenced by the intelligence elements of think tank product designers and the promotion capabilities of think tank product promoters, placing higher demands on university library think tank services. University librarians collaborate with government, enterprise, research teams, and think tank experts to develop research plans, acquire required research data information from their universities and alliance libraries. After organizing and screening research data, usable data is submitted to relevant think tank experts, who integrate and analyze the data and write research reports to form think tank products. In addition to upstream demand users, university library research think tanks can also utilize various information media to publish think tank products and services on push platforms, expanding their influence and attracting potential research users.

4. Application of University Library Research Think Tank Service Models

4.1 Prerequisites for Model Application

4.1.1 Deepening Think Tank Concepts Among Management and Courageously Building New-Era Libraries Scientific management is the fundamental guarantee for the efficient operation of university library research think tanks [17]. Currently, except for documentation and information institutions such as the Documentation and Information Center of the Chinese Academy of Sciences, the Library of the Chinese Academy of Social Sciences, the National Library of China, Guangdong Science and Technology Library, and Qingdao Institute of Science and Technology Information—which have played think tank roles to varying degrees [9]—no university library has explicitly proposed think tank service projects. Many library builders have not conceptually connected libraries with think tanks, and some even believe university libraries lack the capacity for think tank construction. For university library management, without cognition and recognition of think tank services, the spring of think tank construction will never arrive. Therefore, we should strengthen the transmission of think tank construction concepts to university library management, enhance their forward-thinking on think tank services, and stimulate their sense of responsibility and mission in library construction, courageously leading the construction and innovation of university library research think tank services.

4.1.2 Breaking Library Physical Patterns and Multi-Channel Co-Construction and Sharing of Research Think Tank Services Think tank construction cannot be separated from resources, talent, and funding, and the same applies to university library research think tank construction. Regarding resources, university libraries should leverage their extensive alliance advantages to strengthen co-construction and sharing of research data with various types of libraries. Only a broad-coverage research big data pattern can provide resource guarantees for subsequent services. Regarding think tank experts, university libraries should recognize their own talent advantages and shortcomings, hiring university disciplinary experts as think tank experts and attracting external domain experts through alliance channels to guarantee high-quality think tank services. Regarding funding, because think tank services belong to the category of intelligence services and are therefore paid services, in addition to charging users certain fees, they can also apply for special funds from government research management departments, establish agency services with enterprise research development institutions, and seek funding support from university research management organizations and libraries.

4.1.3 Supporting Research User Development and Achieving a Long-Term Mechanism for Expert Transformation Scientific research is a

cyclical process involving multiple disciplines and fields that continuously develops and updates. Therefore, in the process of research think tank services, we must focus on the needs of service targets and promote research user development through service provision. Only by enabling research user development can the value of university library research think tank services be demonstrated and long-term development promoted. Simultaneously, as research users develop, their roles can transform from ordinary research think tank demanders into research think tank service experts. Therefore, in constructing university library research think tank expert teams, we should not only focus on existing think tank experts but also emphasize the discovery and cultivation of new, potential, and future research think tank experts, laying a talent foundation for the long-term development of university library research think tanks.

4.2 Application Strategies for Service Models

4.2.1 Government Service Dimension: Leveraging Data Advantages to Enhance Think Tank Credibility and Influence For governments, research think tank policies must be scientific and forward-looking, and must also be thoroughly investigated for feasibility. Only such policies can ensure the healthy development of research think tanks. Research think tank construction should rely on cutting-edge data analysis technology and strengthen intelligence analysis capabilities to ensure more scientific analysis and greater realism when formulating policies for governments, guaranteeing policy implementability and long-term viability. Simultaneously, we should emphasize publicity work for research think tank services, promoting the capabilities and economic and social benefits of research think tanks to governments, society, enterprises, and the public. By expanding the influence of university library research think tanks, we can form a positive interactive and generative development environment.

4.2.2 Enterprise Service Dimension: Focusing on Economic Benefits and Achieving Seamless Integration with Enterprise R&D University library research think tanks are formed on the basis of rich multidisciplinary research data in universities and can transform relatively diverse types of research achievements to enterprises. However, focusing on enterprise production R&D and conducting targeted integrated research think tank services is the foundation for establishment and source of development. Especially during the initial period of university library research think tank construction, with limited funding and personnel, there is greater need to focus on enterprise research needs [18]. In addition to one-dimensional single-enterprise focus, they can also focus on foundational research achievements commonly needed by enterprise clusters and conduct platform-type research think tank construction.

4.2.3 Think Tank Builder Dimension: Strengthening Standardization, Legalization, and Communication Research Currently, there are no unified reference standards for research think tank service quality. The academic

community should establish evaluation standards for think tank service quality, enabling university library research think tanks—non-profit institutions—to clarify their advantages and win a place in the think tank service market. Second, think tank construction subject management institutions should establish relevant legal guarantee systems, incorporating research think tank consulting into legal procedures for major government decisions, establishing and improving government decision-making consultation, hearing, and publicity systems, and strengthening the organizational construction of research think tanks on science and technology policies [19]. Finally, university library research think tanks should enhance communication capabilities, especially by closely following various new media technologies with strong user binding to achieve effective communication of research think tank value.

4.2.4 Individual Researcher Service Dimension: Providing Personalized and Convenient Services For each scientific researcher, scientific research is a personalized process. Therefore, in university library research think tank services, drawing on embedded subject service models, university library research think tank services should also be a process embedded in the full research process of researchers. Convenient services are also the continuous demand of every information user from library services and the inexhaustible driving force for library service development. Therefore, university library research think tank services should utilize the latest information dissemination methods with high user acceptance, such as new media, to effectively enhance the convenience, push capability, and coverage of research think tank services.

Conclusion

China has issued multiple documents guiding universities in think tank construction and university libraries in research services. Based on defining the connotation of university library research think tank services, this article analyzed the value and significance of implementing think tank services from a user perspective. Using SWOT analysis, it systematically examined the strengths, weaknesses, opportunities, and threats of university library research think tank services. On the basis of positioning service content, it constructed commissioned and push-type university library research think tank service models and explored prerequisites and strategies for model application. This article theoretically enriches the research perspectives on university library services and think tank construction, and practically provides reference schemes for university library construction, aiming to offer reasonable suggestions for university library development.

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Author Contributions

Li Fei: Determined the paper framework, wrote and finalized the manuscript; **Lin Tong:** Collected materials and organized some content; **Yu Jinping:** Collected materials and organized some content.

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

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