

# From “Geocentric Theory” to “Heliocentric Theory”: The Transformation from Library-Centered to User-Centered in the Post-Print Era

**Authors:** Chu Jingli, Qin Xiaoyan

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## Abstract

[Purpose/Significance] This study summarizes and explores the fundamental connotations and theoretical framework of user-centered library services, promoting “user-centeredness” as a fundamental principle for library services. [Method/Process] Drawing upon astronomical theories of “geocentrism” and “heliocentrism,” and from three dimensions—the concept of user-centeredness, practicing user-centeredness, and enhancing user service capabilities—this study elaborates and demonstrates the important status and significance of the shift from “library-centered” to “user-centered” in the survival and development of libraries. [Results/Conclusion] It is imperative to be guided by user needs, establish the transformational change from library-centered to user-centered, build the core competencies of libraries, and construct a new service capability system that adapts to changes in user needs.

## Full Text

### From “Geocentric Theory” to “Heliocentric Theory”: The Transformation from Library-Centered to User-Centered Paradigms

**Chu Jingli<sup>1,2</sup>, Qin Xiaoyan<sup>1,2,3</sup>**

<sup>1</sup> National Science Library, Chinese Academy of Sciences, Beijing 100190

<sup>2</sup> School of Economics and Management, University of Chinese Academy of Sciences, Beijing 100190

<sup>3</sup> Beijing Beihang University Library, Beijing 100191

**Abstract:**

**[Purpose/Significance]** This paper summarizes and explores the fundamental connotations and theoretical framework of user-centered library services to promote “user-centeredness” as the basic principle of library service. **[Method/Process]** Borrowing from astronomy’s geocentric and heliocentric theories, this study expounds and demonstrates the critical importance of the shift from “library-centered” to “user-centered” paradigms for library survival and development across three dimensions: the user-centered philosophy, implementing user-centered practices, and enhancing user service capabilities. **[Result/Conclusion]** Libraries must establish a user-centered transformation guided by user needs, build core competencies, and construct a new service capability system that adapts to evolving user demands.

**Keywords:** library; user service; new service capability; user-centeredness

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As an integral component of human social and cultural activities, libraries’ development concepts and management models are closely linked to specific social environments, value systems, and cultural forms. With the evolution of the times and the transformation of the information environment—particularly the influence and impact of big data, cloud computing, artificial intelligence, and the Internet of Things in recent years—societal requirements for libraries and user expectations have undergone fundamental changes. Users constitute the very foundation of libraries’ existence. Regardless of how times change, the most core and critical value of libraries lies in embodying user-centeredness, a concept referred to abroad as “the user-centered revolution.” Only by establishing and practicing a user-centered service philosophy, truly guided by user needs, can libraries advance with the times and adapt to constantly changing new environments, thereby continuously expanding and deepening their social value. User-centeredness represents both the foundation for establishing libraries and the basis for their development. The transformation from library-centered to user-centered approaches is the key to library transformation and reform.

## 1. The User-Centered Philosophy

### 1.1 Establishing the Basic Principle of User-Centeredness

The essence of libraries, in reality, is the sum total of all their social relationships. In 1931, Ranganathan proposed the *Five Laws of Library Science*, which profoundly expounded the purpose of libraries’ existence and development. Throughout history, as social knowledge exchange institutions, libraries have continuously adapted to societal development needs to ensure survival and achieve their mission. The core of library development has always been users and services. The basic principle of user-centeredness manifests primarily in two aspects: First, users come first. For libraries, users represent the fundamental meaning of their existence. Users include not only in-person readers but also those who utilize library resources and services without physically visiting, as

well as other groups participating in all library activities. In the new business environment, libraries should embrace the concept of “ubiquitous users”—users exist everywhere and at all times. Libraries must excel at discovering and identifying users; anyone with needs for library resources and services should be incorporated into the user category and treated as a service target. The more users a library has, the more its service value is demonstrated. Second, service is paramount. Providing services is the fundamental mission of library development, encompassing both traditional and various new types of services. The starting point and ultimate goal of all library work is to excavate and analyze user needs and provide services centered on those needs. Whether a library is good or not fundamentally depends on whether its services are good or not. In the new business environment, libraries should establish the concept of “ubiquitous service,” utilizing all means to provide diverse services that fully satisfy users’ needs for documents, data, information, knowledge, and wisdom.

The Western concept that “the customer is king” places users in a supreme position. In China, we often say “users first, service supreme,” which should not merely be a slogan but rather a basic guideline directing all library work. Libraries must “address users’ urgent needs and consider users’ thoughts,” understanding their confusion, difficulties, and problems, and doing everything possible to help solve them. In the service process, libraries should demonstrate high user participation and interaction, making users feel their status and value, fully satisfying their needs while thereby realizing the library’s own value and function.

## 1.2 Understanding Changes in User Needs and Behaviors

Being user-centered requires attention to changes in user needs and behaviors to enable timely adjustments and responses. With the transformation of the information environment, library users’ needs and the behaviors arising from those needs have become increasingly diversified and complex, manifesting primarily in the following aspects: (1) **Multi-source information acquisition.** Physical libraries and even library portals are no longer the only channels for users to obtain information, leading to a decline in in-person visitors. Therefore, libraries should vigorously develop digital libraries, mobile libraries, and smart libraries to provide more diverse, convenient, personalized, and effective information access channels. (2) **Dependence on information platforms.** Users often rely on search engines as their preferred tool and heavily depend on various information platforms such as social networks. Consequently, libraries should strengthen the construction of “two micros” (Weibo and WeChat) and “one client” (mobile client), opening library resources and services to search engines and extending them to social network platforms. (3) **Instantaneity of need satisfaction.** Users hope to conveniently, quickly, and seamlessly obtain the latest and most relevant information anytime and anywhere to instantly satisfy their needs without time lags. Therefore, libraries must continuously optimize service methods, strengthen technological applications, and improve

service efficiency and effectiveness. (4) **Embeddedness of the need process.** Users pursue immediate access to needed information and continuity between information searching and their research or learning processes. Therefore, library services should be organically embedded into users' entire processes of teaching, research, management, and learning, efficiently and integratively managing various types of information and strengthening the application of academic management tools. (5) **Knowledge nature of information utilization.** For users, the essence of information needs is to acquire the knowledge implicit in information; users utilize information mainly to utilize the knowledge within it. Therefore, the content of library services must evolve from document services and information services to knowledge services, helping users discover knowledge from information through knowledge mining, analysis, and association.

### 1.3 Libraries Must Adapt Accordingly

Continuous progress and widespread application of information technology have caused tremendous changes in the information environment—networks are ubiquitous, resources are universally digitalized, and users' content and mode of demands for libraries have consequently changed. The distance between users and physical libraries is growing, directly impacting and profoundly challenging traditional library services. Moreover, as libraries' upstream field, the publishing domain is also experiencing enormous changes, with more and more resources existing in open access formats that readers can freely access without purchase. In this environment, societal expectations for libraries no longer remain at traditional levels but anticipate continuous innovation and expansion. Therefore, libraries must overturn the theoretical foundation of the physical-library-centered model and redefine what constitutes a library.

For years, libraries have provided services centered on the library itself, emphasizing buildings, collection size, resource funding, and visitor numbers, insisting that the library is the service front line serving only in-person users. This has confined library service capabilities and boundaries to limited spaces and resource scopes, inadequately satisfying user needs and hindering library survival and development. Due to extensive information technology application and major changes in the information environment, libraries must transform their thinking patterns and behaviors to become user-centered, need-centered, and service-centered—wherever users are, services should be there, transcending library walls, breaking traditional service paradigms, and shifting from “library-centered” to “user-centered,” guided by user needs, fully tapping into and utilizing all resources and capabilities to satisfy user needs.

Borrowing astronomy's “geocentric theory” and “heliocentric theory” appropriately illustrates these two different philosophies and the necessary change. In Ptolemy's time, it was believed that Earth stood still at the center of the universe, with the sun revolving around Earth—a theory later scientifically proven wrong. Copernicus's “heliocentric theory” proposed that the sun was motionless at the universe's center, with Earth and other planets revolving around it in

circular motions. The heliocentric theory powerfully broke the long-dominant religious geocentric theory, achieving a fundamental astronomical revolution. If the library-centered approach equates to the “geocentric theory,” then the user-centered approach equates to the “heliocentric theory.” Only by moving from “geocentric theory” to “heliocentric theory” can libraries truly establish scientifically correct basic theories and user perspectives. Foreign scholars proposed the existence of library “geocentric theory” and “heliocentric theory” as early as 2000, and Professor Zhang Xiaolin has also discussed this concept, yet such cognitive and theoretical establishment has never received due attention. If we ask what is the key to library transformation and reform, it is undoubtedly the shift from “geocentric theory” (library-centered) to “heliocentric theory” (user-centered). This requires both theory and practice.

## 2. Implementing User-Centered Practices

### 2.1 Confronting New Challenges in Library Services

There is no doubt that libraries’ service environment faces fierce competition and challenges. Search engines and knowledge mining tools in the commercial realm continuously impact libraries’ status as literature and information centers with their powerful functions, calling into question libraries’ existence value and social function. To remain invincible in competition, libraries urgently need to transform their business and service capabilities, reconsider their advantages and core competitiveness, break away from traditional librarians’ professional images, continuously enhance their service capabilities, and make themselves irreplaceable. Libraries’ core competencies must continuously evolve with the times—from initial literature collection and cataloging, to later reference consultation and subject services, and further to future think tank research and smart services—all closely revolving around more effectively solving user problems. Libraries’ core competency must be knowledge service capability, enabling librarians to use knowledge and wisdom to provide solutions for users.

### 2.2 Mining and Acquiring User Needs

The most direct starting point of “user-centeredness” is “user-need-centeredness.” If librarians rely solely on their own partial, imagined, or speculative understanding of users to determine service content and methods, the result will inevitably be one-sided and blind. The core of “user-centeredness” is emphasizing user experience. To improve user experience satisfaction, the primary task is continuously mining and acquiring user needs, analyzing both expressed and potential needs. Traditional approaches to understanding user needs mainly included year-end user symposiums, on-site or online suggestion boxes, and user surveys, providing channels for users to express their demands, resource needs, and service feedback. The information age offers more diverse new methods for acquiring user needs. On one hand, librarians can integrate into users’ virtual communities, embed themselves in users’ entire information utilization processes, and maintain constant contact with users through social

media technologies like WeChat, friend circles, and QQ groups to grasp user needs anytime and anywhere. On the other hand, libraries can use data mining technology to analyze user logs and other service-related data to discover and reveal users' expressed and potential needs from their daily behaviors.

While these approaches are important, they have limitations because solicited user opinions and suggestions are often simple and superficial, not necessarily representing users' complete, real needs. Understanding the deep reasons behind simple needs, excavating and stimulating users' potential needs, and even surpassing and leading user needs represent the highest goals libraries should pursue. Steve Jobs's view on user needs was: "People don't know what they want until you show it to them. Then they realize, 'That's what I wanted.'" Jobs attached great importance to user experience, using knowledge and wisdom to perceive, anticipate, and mine user needs, perfectly combining technology with user needs, and stimulating users' real needs by transforming those needs into products—a crucial user needs cognition worth libraries' emulation.

Currently, library users face two main problems: First, they don't know what their real needs are and cannot effectively express them; second, they don't know what libraries can provide for them. This information asymmetry requires libraries to be adept at judging, analyzing, and mining users' potential needs and adjusting their service and business systems to adapt to changes in user needs.

### 2.3 Accelerating the Transformation of Library Business Systems

**2.3.1 Accelerating the Shift in Library Business Focus** Libraries should actively transform with a more positive attitude, accelerating business focus shifts in four aspects: (1) **From emphasizing resource construction to emphasizing user services.** Resources are the foundation of libraries' existence and the guarantee for providing services. However, with certain resource guarantees, libraries should pay more attention to delivering resource value to users and transforming resource potential into user service capabilities—this is the fundamental manifestation of library capability and value. Resources are limited, while services are infinite. No library can exhaust all resources, yet the services that can be developed have great potential. Service capability is irreplaceable and represents libraries' core competitiveness. (2) **From emphasizing in-library services to emphasizing personalized services integrated into user front lines.** No matter how warm, thoughtful, and complete in-library services are, they can no longer fully satisfy new information age user needs. Greater emphasis should be placed on services that go to user sites, integrate into user processes, and embed into user environments. (3) **From emphasizing document services and general information services to emphasizing knowledge services.** As early as the 1990s, Professor Zhang Xiaolin proposed that the core competency of library and information work in the new century should be positioned as knowledge services. Knowledge services have different levels, contents, and models. Based on subject services and intel-

ligence services, libraries should accelerate the introduction and application of intelligent technologies, promote service intelligence and smartification, better combine librarians' wisdom with intelligent technologies, and provide users with deeper and more intelligent services. (4) **From emphasizing services that satisfy users' expressed needs to emphasizing research and services for users' implicit needs.** Expressed needs are those articulated by users and relatively easy to satisfy. Implicit needs are often potential, unexcavated, and undiscovered—more difficult to satisfy but of greater value and significance. Our understanding of users' implicit needs is still far from adequate, requiring strengthened research and services based on implicit needs.

**2.3.2 Reunderstanding the Relationships Among Library Development Elements** Library development comprises many elements: resources, services, space, technology, management, etc. How to understand these elements and their interrelationships in the new environment will affect libraries' work priorities and investment structures. Cheng Huanwen, Director of Sun Yat-sen University Library, believes that “resources are king, services are concubine, and technology is maid,” emphasizing resources' primary and dominant position while services and technology occupy subordinate positions. In fact, any library's resource guarantee capability is limited, while demands for services and technology are increasingly high. Therefore, a new understanding of library development elements is needed: **needs as foundation, resources as base, technology as wings, and services as king.** First, resources, technology, and services all originate from needs. Without user needs, all work becomes meaningless—needs are the origin and foundation upon which all other library elements depend. Resources are the foundation and base of libraries' existence, playing a fundamental and supporting role; without resources, services cannot exist. Technology's driving role in library development is irreplaceable; no matter how good the concepts are, without technological drive they remain castles in the air. Technology is like two wings that help libraries fly higher and farther. Service is libraries' essential attribute—library services must be based on needs, with resources and technology functioning through services. Services cannot be overemphasized among libraries' various elements. Whether a library is good or not is ultimately measured by its services, which hold supreme status.

The traditional cognitive concept is “resources determine services, services determine needs”—whatever resources a library has determines what services it provides based on existing collections, such as circulation, reference, interlibrary loan, etc., and users' needs are limited by what libraries can provide. Today's libraries must establish a new concept: **needs determine services, services determine resources.** Users' needs determine what services libraries provide, which must align with user needs. What services are provided will determine what resources libraries need, and resource construction must provide practical resource support and guarantee for user services through acquisition, sharing, and coordination. The shift from “resources determine services, services determine needs” to “needs determine services, services determine resources” is not

simply a change in word order but a fundamental transformation in library development philosophy, a new understanding of library development logic, and an important guiding principle for the National Science Library of Chinese Academy of Sciences over the past decade. Further extrapolation suggests that “needs determine existence, services determine success or failure”—user needs are the prerequisite for libraries’ existence; where there are user needs, libraries will exist. What truly determines libraries’ success or failure is service, which determines the ability and level of solving problems for users. Library evaluation is fundamentally service evaluation. Centered on user needs, libraries must rationally allocate funds, plan building spaces, excavate resource value, fully utilize technology and talent, and guarantee information organization, management coordination, and user services. All these factors ultimately fall upon services, which represent libraries’ capabilities and strength.

**2.3.3 Redesigning Library Service Systems** Driven by user needs, traditional library service systems can no longer satisfy modern users’ information needs and require redesign. A foreign academic report planned four major modules for university library services: First, **in-library services**, including reference consultation, user training, and providing learning spaces—the most basic and traditional services utilizing library buildings and spaces. Second, **network services**, including real-time reference consultation, mobile services, and database retrieval through digital libraries. Our basic understanding of library services often remains limited to these two modules: physical libraries and digital libraries. However, this is insufficient. For university libraries, two additional modules are needed: **teaching support** and **research support**. These two modules should become key expansion areas for library services, emphasizing more direct (rather than indirect) support roles, with dedicated personnel, teams, and special funds directly embedded in users’ teaching and research activities. Additionally, in China’s user environment, there is an important service: **management support**, using libraries’ resource, technology, and talent advantages to provide decision support services for relevant functional departments (such as personnel, research, strategic planning, and management). The essence of think tanks is providing ideas and action plans for managers and decision-makers—a new and higher requirement for libraries.

Some Chinese university and research institute libraries have already taken solid steps in service system reform. In 2015, Peking University Library proposed a five-year action plan for fundamental organizational and business layout reform. Among its six business departments, two specifically focus on teaching and research support: the “Learning Support Center” and “Research Support Center,” breaking the traditional resource-dominated library business organization model to build professional talent teams providing specialized user services. The National Science Library of Chinese Academy of Sciences explicitly stated in its “13th Five-Year” development priorities: “Facing new demands of innovation-driven development, establish an intelligence research service system covering the entire value chain of scientific and technological innovation, and strengthen

the construction of in-depth professional knowledge resource service systems for specific user groups,” fully demonstrating a new construction of user-needs-oriented service models.

### 3. Enhancing User Service Capabilities

#### 3.1 Establishing a Comprehensive, Three-Dimensional Library Service System

User service capability is a comprehensive reflection of library capacity. To enhance this capability, libraries must first combine knowledge infrastructure with users’ dynamic knowledge application to establish a comprehensive, three-dimensional service system focusing on four dimensions:

- (1) **Three-dimensional services for different application scenarios.** In the digital, networked, and informationized environment, services emphasize ubiquity—wherever users are, services should be there. Whether in the library, at the research front line, or even in virtual communities, library services should organically integrate with users’ spaces and processes, using modern means and professional knowledge and skills to provide services to users’ sides, to their desktops, anytime and anywhere.
- (2) **Personalized services for different user groups.** Library user groups are extremely complex. Different user groups, user groups at different times, and user groups at different task stages may have different information needs. Libraries should provide personalized and precise services tailored to specific user group needs.
- (3) **Diversified services through different service means.** With numerous users and unlimited needs, to effectively resolve the contradiction between limited library manpower and unlimited user needs, libraries must increase development and application of new technologies, providing diversified services including inquiry, borrowing, delivery, training, consultation, and intelligence through platforms and tools to continuously improve service levels and efficiency.
- (4) **Tiered services at different service depths.** As specialization varies, so should library services. Libraries should rationally adjust organizational structures, deploy librarian teams, and systematically carry out tiered services based on different need levels, constructing new knowledge service models from data to information, to intelligence, and then to solutions. This is the path to enhancing libraries’ visibility, contribution, and influence.

#### 3.2 Providing Dynamic, Innovative, and Value-Added Services

User needs are often variable and dynamic. Libraries must assess the situation, continuously conduct forward-looking planning and future strategic deployment,

dynamically adjust business layouts and capability structures, actively apply or develop new technologies, and constantly adapt to various user-driven demands. First, enhance librarians' capabilities—beyond knowledge and skills, special attention should be paid to emotional intelligence cultivation, as librarians' emotional intelligence level partly determines service level. Second, enhance user capabilities by helping users improve information literacy, media literacy, data literacy, and other relevant abilities for adapting to the times. Additionally, formulate service regulations and policies to guarantee and evaluate service levels, establish service professionalism, and maintain continuous learning and service capability improvement in the face of new environments, new demands, and new technologies.

To provide dynamic, innovative, and value-added services, libraries must construct new business paradigms: moving from library-centered to user-centered, from resource-centered to service-centered, from simple and extensive to in-depth and refined, from users entering the library to librarians going to users' sides, and from labor-intensive to intelligence-intensive. Library service evaluation standards must also be reestablished. Previously, we focused more on building area, collection volume, funding amount, and user numbers—standards established based on traditional libraries' "input" characteristics. In the new environment, libraries must consider not only "input" but also "output," measuring input-output ratios and evaluating cost-effectiveness. Therefore, service level and effectiveness are the most important indicators for evaluating a library. In China's 2017 public library evaluation standards, "service effectiveness" accounted for a large proportion, demonstrating significant emphasis on library service capability and benefits.

### 3.3 Building Future-Oriented Library Core Competencies

Libraries' and librarians' core competencies are crucial for establishing librarians' professional image and enhancing user satisfaction. Previously, librarian entry qualifications were low, with most librarians lacking advanced degrees, and librarians were typically viewed as document workers. Today, librarian professional access requirements are continuously rising, with corresponding demands for academic credentials and capabilities. Librarians now need not only subject expertise but also intelligence analysis capabilities, information tool application capabilities, and knowledge service capabilities. Thus, the core competency of the new generation of libraries manifests in: the ability to analyze, mine, stimulate, and satisfy user needs; the ability to transform literature resources into knowledge intelligence and wisdom; the ability to convert existing knowledge into capabilities that meet and exceed users' expressed and implicit needs; the ability to directly participate in user processes as collaborators; and the ability to intelligently, wisely, and creatively solve user problems. Through capability enhancement, libraries can continuously manifest librarians' value and role, transforming from knowledge repositories into knowledge fountains and converting the value of resource treasures into user service capabilities. Li-

braries' ultimate service capability will be reflected in smart service capabilities. So-called smart services require leveraging librarians' subjective initiative and creative power while fully utilizing intelligent technologies to provide users with high value-added problem solutions. Sun Yat-sen University Library's motto "Wisdom and Service" embodies this profound connotation.

Future librarians will primarily be intelligence research and knowledge service personnel, playing major roles in both physical and virtual knowledge spaces, establishing close connections with users and conducting in-depth cooperation, with their expert roles becoming prominent. Librarians will become leaders in the academic communication ecosystem, comprehensively participating in social life and knowledge innovation processes, focusing on issues of concern to all stakeholders including government, enterprises, and the public, and leading, guiding, and promoting the healthy development of the academic ecology.

With epochal development, users' information environment has undergone fundamental changes. Libraries must adapt accordingly, maintain high sensitivity to user needs, dynamically adapt to changes in user information behaviors, and conduct good future strategic planning. All of this fundamentally requires breaking free from the erroneous cognition of library-centeredness (geocentric theory) and moving toward the truly scientific theory of user-centeredness (heliocentric theory). To this end, libraries' service models and mechanisms require fundamental transformation by stimulating user needs and librarian capabilities to form positive interaction in service processes. Libraries must explore and establish a new library mechanism that promotes transformation from place to function. The core is whether libraries can establish and practice a user-centered service philosophy while enhancing library service capabilities and core competitiveness. Libraries' core competitiveness lies not in resources but in services, and more importantly, in knowledge services. Service is the foundation for establishing libraries, the cornerstone of development, the source of innovation, and the path to survival. If libraries cannot deliver good services, they lose their basis for existence and opportunities for development, making a better future impossible. In today's era, service has been endowed with much new connotation, requiring us to continuously adapt to user needs changes, improve service levels, and build new service capability systems centered on subject services, data services, think tank services, and smart services, accelerating the transformation from library-centered to user-centered paradigms.

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**Author Contributions:**

Chu Jingli: Conceived the research topic, provided main ideas and content, revised and finalized the manuscript.

Qin Xiaoyan: Located supplementary materials, organized and drafted the manuscript.

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

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