Knowledge Service Models of University Libraries from a Value Co-Creation Perspective: Postprint

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Abstract

[Purpose/Significance] Users, as stakeholders of university libraries, participate in constructing a knowledge service model for university libraries from the perspective of value co-creation, aiming to provide new ideas and approaches for the sustainable and innovative development of university library knowledge services. [Method/Process] By introducing value co-creation theory to integrate the components of existing university library knowledge service models, this study explores the architectural design and implementation process of a knowledge service model where university libraries and users jointly create service value. [Result/Conclusion] The study constructs a value co-creation perspective-based knowledge service model for university libraries comprising four components: participants, service content, service scenarios, and service means. Based on the service content mainline, it explores the implementation process of the university library knowledge service model through three stages: preparation, value action implementation, and value evaluation and innovation. Building a university library knowledge service model based on value co-creation theory is both necessary and feasible at the current stage. It can better adapt to knowledge service contexts, express users' knowledge service needs, improve knowledge service quality and user satisfaction, and provide reference and guidance for users' high-quality participation in value creation of university library knowledge services.

Full Text

Preamble

Title: Research on Knowledge Service Models of University Libraries from the Perspective of Value Co-Creation

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Abstract:
[**Purpose/Significance**] As key stakeholders of university libraries, users should be involved in constructing knowledge service models from a value co-creation perspective, providing new approaches for the sustainable and innovative development of university library knowledge services. [**Method/Process**] This study integrates existing components of university library knowledge service models by introducing value co-creation theory, and explores the architectural design and implementation process through which university libraries and users jointly create service value. [**Results/Conclusions**] A knowledge service model comprising four components—participants, service content, service scenarios, and service means—was constructed. Based on the service content framework, the implementation process is divided into three stages: preparation, value action implementation, and value evaluation with innovation. Building university library knowledge service models based on value co-creation theory is both necessary and feasible at present, as it better adapts to knowledge service contexts, expresses user needs, improves service quality and satisfaction, and provides a reference for high-quality user participation in value creation.

Keywords: value co-creation; university libraries; knowledge service model; user participation
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1 Introduction

Knowledge service models describe the constituent elements of knowledge service activities, their relationships, operational management, and innovation initiatives[1], with research encompassing the technical implementation of knowledge services. As a structured representation of explicit and implicit mechanisms in knowledge services[2], these models help enhance the logical coherence and goal orientation of university library knowledge services. However, existing research exhibits three shortcomings: first, limited investigation into university library knowledge service models from a value co-creation perspective; second, insufficient emphasis on user participation in knowledge services, leaving user collective wisdom underutilized; and third, inadequate specificity in explaining user participation methods.

Introducing user participation in value co-creation can deepen library-user interaction, promote knowledge flow through respective resources and technologies, and facilitate knowledge value-added and innovation. Existing knowledge service models fall into three categories: user-oriented, technology-oriented, and domain-specific approaches. The value co-creation perspective positions users as active participants who collaborate with libraries to solve problems, leveraging their own resources to achieve knowledge appreciation and innovation.

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2 Theoretical Foundation

2.1 Value Co-Creation Theory

The concept of value co-creation dates back to the 19th century when Storch proposed that service processes require cooperation between producers and consumers[3]. The theory has evolved into two main branches: the consumer experience-based theory by Prahalad and Ramaswamy[4], which emphasizes value generation during consumer experiences, and the service-dominant logic theory by Vargo and Lusch[5], which stresses that value is created and determined by consumers. Both highlight the importance of consumer participation, with interaction as the core mechanism where stakeholders create value through collaborative processes.

Scholars have applied value co-creation to university libraries from various perspectives. From knowledge management, Qin Fenglan analyzed the intrinsic links between knowledge management and knowledge services[12], while Niu Guiqing constructed knowledge service models using knowledge management principles[13]. Cheng Gang and others built models targeting technology-based SMEs[15], and Xing Fei developed precision information service frameworks[16]. Regarding the value co-creation process, Zou Zhenyu divided it into four dimensions: value consensus, co-creation, contribution, and diffusion[6]; Zhao Longwen segmented it into five stages: demand generation, action implementation, benefit attribution, and outcome distribution[7]; and Tu Yuhong demonstrated users' willingness to contribute knowledge alongside librarians[17].

The core elements of value co-creation include participants, content, and pathways[1], with driving factors comprising customer, enterprise, and interactive

scenario elements[2]. For university libraries, this theory emphasizes stakeholder collaboration, user-centricity, and satisfaction enhancement.

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3 Components of the Knowledge Service Model

The knowledge service model from a value co-creation perspective consists of four integrated components: participants, service content, service scenarios, and service means. These elements coordinate synergistically to form a stable framework where participants utilize service means to deliver or engage with different service content across various scenarios, completing knowledge service work.

[Figure 1: see original paper]

3.1 Participants

Participants include both knowledge service providers and users who share responsibility for service delivery. University libraries possess rich information resources, professional librarians, and advanced technologies, serving diverse user groups including faculty, students, administrative staff, enterprise users, and government departments. Users contribute multidisciplinary knowledge during interactions, forming complementary advantages with libraries.

In this paradigm, users transform from passive service recipients to active decision-makers, participants, and collaborators. For example, student clubs at Xi' an Jiaotong University Library assist in exploring new services[19], while research faculty and librarians form disciplinary teams for frontier tracking and report writing. Domain experts at the Beijing Historical Geography Database participate in resource selection and construction[20]. This collaboration alleviates staffing shortages, enhances service capacity, and promotes knowledge sharing and wisdom contribution.

University Libraries provide matched knowledge content through scientific methods, integrating resources, technology, and expertise. They facilitate four key improvements: (1) enhanced library-user interaction promoting knowledge flow and innovation; (2) better understanding of user needs and problem points; (3) user participation stimulating wisdom contribution and value-added; and (4) improved service effectiveness and user satisfaction.

Users include students, faculty, domain experts, and administrative staff who provide feedback, suggestions, and knowledge content. Their participation increases engagement, loyalty, and satisfaction. Students can participate in library management and consulting services, while experts contribute specialized knowledge to deepen disciplinary content and capture academic trends.

3.2 Service Content

Drawing on Li Yongming' s classification[22], service content comprises four types:

3.2.1 Knowledge Consulting Services

These interactive services address diverse user needs throughout research activities, including learning consultation, research consultation, and specialized knowledge resolution. User participation helps compile FAQs and build disciplinary knowledge bases[25]. High-quality consulting teams, formed by librarians and knowledgeable users, collect and analyze needs while users screen and select relevant content[50], creating shared value.

3.2.2 Disciplinary Knowledge Services

These support first-class discipline construction and research through services like disciplinary knowledge repositories, institutional repositories, and research data platforms[22]. By integrating domain expertise with library science knowledge[26], libraries treat users as internal collaborators. For instance, Wuhan Textile University Library engages users in building textile discipline resources[28], while Harbin Institute of Technology (Shenzhen) implements tiered incentive mechanisms for user participation[29]. User feedback continuously improves these services.

3.2.3 Intelligence Services

These specialized services include sci-tech novelty searches, patent analysis, and decision support[22]. By structuring user novelty search data, libraries can predict innovation trends[31]. Patent intelligence services support researchers through deep processing by expert teams comprising authoritative scholars and professional teachers[54]. Collaborative platforms co-managed by libraries and users promote patent transformation and utilization.

3.2.4 Education and Training Services

These encompass information literacy and research literacy development[22]. Information literacy education enhances users' information awareness, capabilities, and ethics for lifelong learning[34]. Xiamen University Library encourages students to share skills[35], while Tsinghua University Library invites users to share research experiences[36]. Micro-video formats with user-designed content and interactive feedback improve engagement and effectiveness[31].

3.3 Service Scenarios

Scenarios describe specific contexts or situations, including physical locations and user states[37]. Libraries deliver knowledge services across diverse scenarios:

- **Information Literacy Scenarios**: Designed to enhance students' capabilities through contextual learning[38]
- **Teaching Service Scenarios**: Metaverse technology enables simulated instruction and immersive practice[39]

- **Research Scenarios**: Virtual environments provide experimental equipment for hands-on research activities

Emerging technologies like knowledge graphs enable text mining and visualization for multi-dimensional knowledge discovery[43]. Intelligent robots increasingly handle general inquiries and navigation[42]. These technology-enhanced scenarios improve service efficiency and user experience.

3.4 Service Means

3.4.1 Data Mining Technology

Using clustering and association analysis, libraries integrate massive datasets to discover latent knowledge relationships, identify fuzzy needs, predict trends, and deliver personalized services[41].

3.4.2 Artificial Intelligence

AI enables intelligent user authentication through image recognition[42] and powers semantic web technologies for data processing. It supports smart recommendations and facilitates library-user interaction.

3.4.3 Cloud Computing

This distributed computing model reduces costs while enabling resource integration and sharing across regions[45]. Cloud infrastructure provides reliable storage and efficient access, supporting real-time response to user needs[46].

3.4.4 Virtual Reality Technology

VR creates immersive learning environments through sensory interaction with simulated worlds[47]. US libraries use VR to create authentic learning contexts[48], while AR technologies enrich service experiences and meet knowledge sharing needs[49].

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4 Architecture Design of the Knowledge Service Model

The architecture integrates the four components—participants, service content, service scenarios, and service means—into a cohesive framework. Through continuous interaction across service content and scenarios, libraries and users co-create value, with service means providing technical support. This collaborative process improves the model' s four elements, creating more humanized and intelligent knowledge services.

[Figure 2: see original paper]

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5 Implementation Process

The implementation process comprises three stages: preparation, value action implementation, and value evaluation with innovation.

[Figure 3: see original paper]

5.1 Preparation Stage

This stage involves understanding user needs, building platforms, and establishing collaborative mechanisms. Libraries must: - Collect and analyze diverse user needs through multiple channels - Integrate resources (print, digital, external) into unified platforms - Train librarians in communication and technology skills - Enhance users' value co-creation awareness and role transformation from passive recipients to active providers - Establish efficient communication channels to attract and guide participation

For example, knowledge consulting teams comprising librarians and users can provide targeted services via social media—offering entrepreneurship guidance for seniors, career advice for graduates, and administrative decision support for staff.

5.2 Value Action Implementation Stage

This critical stage involves value interaction and co-creation around specific service content:

5.2.1 Knowledge Consulting Services

Collaborative teams of librarians and knowledgeable users provide personalized consulting. Librarians handle needs collection and analysis, while users with professional backgrounds conduct content screening and preliminary selection[50], establishing high-quality consulting services.

5.2.2 Disciplinary Knowledge Services

Libraries support teaching and research by classifying subject librarians into technical, teaching, and research service types[51], matching them to user groups. For instance, Hebei Normal University Library tracks multiple courses in ancient Chinese literature, providing embedded lectures and tiered information services[52]. User participation transforms tacit knowledge into explicit knowledge, enabling mutual learning and continuous improvement.

5.2.3 Patent Intelligence Services

Libraries provide patent support for researchers by forming specialized teams with authoritative experts who understand technology domains and regional landscapes[54]. These teams conduct deep processing to develop practical, cost-effective intelligence products. Collaborative platforms co-managed by libraries and users promote patent achievement transformation.

5.2.4 Information Literacy Education

As the university' s second classroom, libraries offer live training on database searching, intellectual property, and other topics[55]. Inviting users to share personal research experiences and critical thinking skills enhances authenticity. User-designed micro-videos with interactive feedback loops achieve the goal

of "from users, for users" [31]. Collaborative content creation and promotion attracts broader participation.

5.3 Value Evaluation and Innovation Stage

This stage assesses and innovates the co-creation model to improve operations and enhance participation. Libraries and users continuously collect feedback during service delivery, conduct regular evaluation reports, and provide feasible solutions to emerging problems. In mature stages, libraries should identify high-quality users for long-term stable partnerships, creating win-win relationships that encourage sustained wisdom contribution and model refinement.

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6 Conclusion

Constructing university library knowledge service models based on value co-creation theory is feasible and necessary. It provides concrete pathways for user participation while enhancing library service profiles. By centering on users and leveraging their expertise, libraries can evolve from shallow to deep and stable interactions. Future research should further explore user participation modes and methods in university library knowledge services, continuously improving the four model elements to create more humanized and intelligent services.

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