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Exploration of Knowledge and Information Transfer Models for University Libraries Serving Rural Revitalization (Postprint)

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Abstract

Purpose/Significance: To better serve the rural revitalization strategy, it is worthwhile to explore how university libraries can tap into their existing resource potential to facilitate knowledge and information transfer for rural revitalization, thereby improving farmers' cultural and information literacy, enhancing agricultural productivity, and enriching their spiritual and material lives. **Method/Process:** This paper analyzes the primary factors influencing farmers' absorption of knowledge and information, the evolving characteristics of knowledge and information transfer in university library services for rural revitalization, and the main pathway models and shortcomings of current university services for rural revitalization. To more effectively deliver knowledge and information transfer services to the majority of farmers, this study selects university libraries, rural libraries, agriculture-related enterprises, and farmers as the key actors in the knowledge and information transfer process from university libraries to farmers, and proposes two novel pathway models and four process models for knowledge and information transfer. **Results/Conclusion:** The paper proposes strategies including innovating the institutional mechanisms of university libraries, constructing precision knowledge resource databases and dissemination systems for the three rural issues, enhancing rural residents' capacity to acquire knowledge and information, expanding knowledge and information transfer channels, and narrowing the contextual gap in knowledge and information transfer, thereby achieving efficient transfer of knowledge and information to farmers and contributing to the implementation of rural revitalization in China.

Full Text

Preamble

Title: Exploring Knowledge and Information Transfer Models for University Libraries Serving Rural Revitalization

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Abstract: *[Purpose/Significance]* To better serve the rural revitalization strategy, it is worth exploring how university libraries can tap the potential of existing resources to facilitate knowledge and information transfer that enhances farmers' cultural and information literacy, improves agricultural productivity, and enriches farmers' spiritual and material lives. *[Method/Process]* This paper analyzes the main factors affecting farmers' absorption of knowledge and information, the changing characteristics of knowledge and information transfer in university library services for rural revitalization, and the current primary pathways and limitations of university services for rural revitalization. To effectively deliver knowledge and information transfer services to the majority of farmers, the study selects university libraries, rural libraries, agriculture-related enterprises, and farmers as the main subjects in the knowledge transfer process from libraries to farmers, and proposes two new pathway models and four process models for knowledge and information transfer. *[Results/Conclusions]* The paper proposes countermeasures including innovating university library systems and mechanisms, constructing precise knowledge resource bases and dissemination systems for agriculture, rural areas, and farmers, enhancing rural personnel's ability to acquire knowledge and information, expanding knowledge transfer channels, and narrowing contextual gaps in knowledge transfer. These measures aim to efficiently transfer knowledge and information to farmers and contribute to China's rural revitalization strategy.

Keywords: rural revitalization; university library; knowledge and information transfer model; farmers; knowledge service

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1. Research Background

China's rural areas have entered a new development stage. The 2024 Central No. 1 Document calls for vigorous and effective promotion of comprehensive rural revitalization. While numerous channels exist for delivering beneficial agricultural information to farmers, several obstacles persist. Farmers, as the main participants in rural revitalization, have varying levels of cultural and information literacy that directly impact agricultural modernization. Research shows that improving farmer quality has a significant positive effect on farmers' income and represents an effective pathway for increasing their earnings

[?]. However, due to information overload and limited capacity to evaluate and receive needed information, farmers' existing knowledge structures create barriers in accessing agricultural information, and their precise needs for agricultural information remain unmet [?].

In January 2019, the Ministry of Education formulated the "Action Plan for Scientific and Technological Innovation in Higher Education Institutions Serving Rural Revitalization," positioning universities as important forces in rural revitalization strategy, science and technology innovation, achievement supply, high-level talent cultivation, and high-end think tanks for policy research. In response to national and Ministry of Education calls, researchers have actively studied how university libraries can serve rural revitalization, exploring topics such as the feasibility and necessity of university libraries' socialized services [?, ?], their resource and talent advantages [?, ?], strategic mechanisms [?, ?], rural public culture research [?, ?], participation in rural library construction [?, ?], and cultural poverty alleviation [?, ?]. These studies demonstrate that university libraries have the capacity and responsibility to serve rural revitalization by leveraging rich knowledge resources and talent to provide farmers with necessary knowledge and information transfer services, thereby improving farmers' cultural quality and productivity while enriching their material and spiritual lives.

2. Main Reasons Affecting Farmers' Absorption of Knowledge and Information

Knowledge transfer, a concept introduced by technology and innovation management scholar Teece in 1977, involves moving knowledge from possessors to recipients [?]. Domestic and international research primarily focuses on enterprise knowledge management, industry-university-research collaboration, and knowledge spillovers [?, ?]. Under the rural revitalization background, studies on university library knowledge transfer services have examined functions and strategies [?, ?], value strategies for strengthening rural grassroots training [?, ?], and approaches for promoting rural reading [?, ?]. However, knowledge transfer requires not only diffusion but also absorption to complete the entire process. Farmers, as the recipients in university library services for rural revitalization, have knowledge absorption capabilities that directly affect transfer outcomes. The main factors influencing farmers' knowledge absorption include:

2.1 Farmers' Awareness and Capacity to Receive Knowledge and Information

Due to historically formed urban-rural dual structures, farmers live in relatively closed environments with limited education and technological proficiency. They generally have low cultural levels, weak information awareness, and difficulty accepting new knowledge. The knowledge and information they need for produc-

tion typically come through limited channels: government and village committee training, limited books and magazines, promotional materials from exhibitions, CCTV programs, and information forwarded by friends and relatives via mobile phones. This results in poor information symmetry, lack of systematic knowledge, and an inability to convert received knowledge into needed spiritual and economic value. The objective reality is that farmers lack both the awareness and capacity to receive knowledge and information [?].

2.2 Farmers' Economic Conditions for Receiving Knowledge and Information

Since achieving comprehensive moderate prosperity in 2020, although absolute poverty has been eliminated, relative poverty persists in rural areas, and many families face difficulties in achieving stable long-term income growth [?]. Farmers' income primarily comes from three sources: migrant work wages, business operations, and land transfer income. After 40 years of reform and development, labor-intensive enterprises face increasing difficulties in both export and domestic sales, absorbing fewer migrant workers. Many face the choice of returning to their hometowns to start businesses. Small-scale operations in catering and trade face intense competition, with incomes barely compensating for labor and facing losses from poor management. Those operating agricultural industries struggle to obtain good business income due to lack of technology and increasing costs for materials [?, ?]. The limited economic conditions of farmers constrain their ability to spend on acquiring new knowledge and information.

2.3 Venues and Organizations for Farmers to Receive Knowledge and Information

With attention from governments at all levels and participation from various social organizations, venues where farmers can access culture and knowledge—such as rural libraries, “company + farmer” interest alliances, and agricultural training organizations—have developed significantly. However, substantial gaps remain in rapidly delivering sufficient knowledge and information to farmers. Rural libraries, cultural stations, and similar venues often lack sustainable funding from government or society, resulting in small scale, limited collections, low service management levels, and insufficient readable resources that farmers prefer. Due to scattered rural living and uneven population distribution, the market for agricultural knowledge and information services remains difficult to develop quickly, preventing market mechanisms from effectively supporting knowledge dissemination.

2.4 Equipment and Networks for Farmers to Receive Knowledge and Information

With the development of modern information technology and digital technology, an increasing amount of knowledge and information dissemination relies on digital and internet platforms. However, as of March 28, 2020, while China'

s netizen population reached 904 million with 897 million mobile netizens, rural netizens numbered only 255 million (28.2% of the total), with rural internet penetration at just 46.2% compared to 76.5% in urban areas—a significant gap [?]. Low rural internet penetration substantially restricts knowledge and information flow in rural China. Constraints include lagging rural mindsets, low household economic levels, incomplete rural logistics systems, shortages of rural e-commerce talent, and inadequate training in computer and network operation skills.

2.5 Knowledge Transfer Context for Farmers Receiving Knowledge and Information

Many scholars refer to the distance between knowledge senders and recipients as “knowledge transfer context,” encompassing physical, cultural, and institutional distances. Physical distance includes geographical separation and differences in technical systems and management environments. Cultural distance includes language differences and cognitive pattern variations. Institutional distance includes differences in technical systems and management frameworks. The greater these distances, the more difficult accurate knowledge transfer becomes, with more distortion during transmission [?, ?]. In university library services for rural revitalization, the substantial contextual gap between libraries and farmers creates constraints on knowledge transfer. Only by building intermediary platforms to bridge these distances can knowledge and information transfer be facilitated.

3. Changing Characteristics of Knowledge and Information Transfer in University Library Services for Rural Revitalization

University library knowledge transfer to students and faculty occurs primarily on campus, where physical, cultural, and institutional distances are small, enabling various transfer methods including paper document lending and knowledge lectures. However, knowledge transfer for rural revitalization differs significantly. The recipients are farmers with low cultural quality, scattered residence, and limited information access conditions, creating mismatches with existing transfer approaches. Drawing on the definition of library knowledge transfer [?] and analyzing the unique rural social background and farmers’ individual characteristics, the changing characteristics include:

3.1 Changes in Knowledge and Information Transfer Carriers, Types, Content, and Methods

The recipients in university library services for rural revitalization are farmers with significant physical and knowledge distances from libraries. This determines that transferred knowledge must focus on agriculture-related information

and basic cultural knowledge to improve farmer quality. Transfer carriers should emphasize online virtual documents, with knowledge types 偏向 ing information literacy training for farmers. The transfer environment is rural, with relatively poor conditions, conservative farmer mindsets, and more complex transfer processes.

4. Pathways and Process Models for University Library Knowledge and Information Transfer Services for Rural Revitalization

Current primary pathways for university services to rural revitalization include: (1) Science and technology commissioners dispatched to local towns and villages for targeted assistance; (2) Occasional organized trips by university colleges and research institutes to provide technical services; (3) Cooperative agreements for rural planning, professional training, and school-enterprise cooperation; and (4) Student summer programs for social practice and science popularization. While these have made substantial contributions, most are non-sustainable and cannot universally serve the majority of farmers.

4.1 Two New Pathway Models for University Library Knowledge and Information Transfer Services for Rural Revitalization

Selecting university libraries, rural libraries, agriculture-related enterprises, and farmers as subjects and nodes in the knowledge transfer process, this study constructs two new pathway models (Figure 1 [Figure 1: see original paper]):

Pathway 1: University library → Rural library (intermediary platform) → Farmers. This pathway primarily transfers general cultural knowledge to improve farmers' cultural and information literacy.

Pathway 2: University library → Agriculture-related enterprise (intermediary platform) → Farmers. This pathway primarily transfers agricultural science and technology, market information, and other knowledge to improve farmers' labor productivity.

These models feature strong practicality and sustainability, enabling farmers to acquire, digest, and apply knowledge and information while feeding back new needs to create a spiral knowledge reception process.

Roles and Functions of Participants:

External Knowledge Sources: These are external tacit knowledge sources for university libraries, including national policies, scientific research achievements, and agricultural technology information. Libraries transform this external tacit knowledge into explicit knowledge forms such as websites, creating specialized accurate knowledge resource bases for rural revitalization.

University Libraries: As knowledge senders, libraries: (1) Use professional talent to collect, organize, and integrate agricultural science popularization knowledge and information into specialized accurate knowledge resource bases; (2) Conduct online knowledge transfer to rural areas and farmers through established electronic information networks and digital equipment; (3) Organize offline training and knowledge promotion through rural libraries and agricultural enterprises.

Rural Libraries: As intermediary platforms connecting libraries and farmers (including rural bookrooms and cultural stations), they: (1) Strengthen facility and collection development to serve daily knowledge needs; (2) Actively collect and organize precise knowledge needed to improve local farmers' cultural and information literacy; (3) Cooperate with university libraries to organize offline training and promotion, enhancing their own knowledge transfer capacity and motivating farmers' reading interest.

Agriculture-related Enterprises: As another intermediary platform (including leading agricultural enterprises and demonstration bases), they: (1) Bridge libraries and farmers by collecting local production and market information; (2) Organize offline knowledge transfer to farmers; (3) Help improve local agricultural technology and market management levels.

Farmers: As knowledge recipients engaged in agricultural production, they currently have low cultural levels, poor reception capacity, and lack reading habits. The pathway models use rural libraries and agricultural enterprises as local links to effectively organize online and offline training, enabling precise knowledge transfer to improve farmers' cultural and information literacy and agricultural productivity.

4.2 Knowledge Information Transfer Process Models Under the Two New Pathways

Based on Nonaka' s SECI theoretical model of knowledge conversion (socialization, externalization, combination, internalization) [?], this study constructs four knowledge information transfer process models (Table 1) by analyzing transfer content, methods, objects, and knowledge types:

Model 1 (Tacit-to-Tacit): Face-to-face training and video production to teach farmers information retrieval methods, improving their information acquisition capacity.

Model 2 (Explicit-to-Explicit): Organizing and transferring library collection resources in coded form to rural libraries and farmers through shared websites and apps.

Model 3 (Tacit-to-Tacit): Hiring researchers for agricultural knowledge lectures and field demonstrations to improve farmers' agricultural technology levels.

Model 4 (Tacit+Tacit-to-Explicit and Explicit-to-Explicit): Coding and disseminating research achievements, agricultural policies, technologies,

and market information through agricultural characteristic websites, apps, and WeChat programs.

These four models collectively form a complete knowledge transfer cycle: from socialization (tacit-tacit) through externalization (tacit-explicit) and combination (explicit-explicit), to internalization where farmers digest and apply knowledge, which becomes new tacit knowledge. Farmers then feed back new needs, initiating the next cycle.

5. Implementation Strategies for University Library Knowledge and Information Transfer Services for Rural Revitalization

To implement the two pathway models and four process models, the following strategies are proposed:

5.1 Innovate Systems and Mechanisms for Knowledge and Information Transfer

University libraries should innovate their systems and mechanisms: (1) Adjust departmental and personnel structures to establish rural revitalization knowledge information service departments; (2) Establish budgetary systems guaranteeing funds for rural cultural revitalization services; (3) Create personnel incentive and support mechanisms to strengthen librarians' motivation for serving rural revitalization.

5.2 Construct Precise “Agriculture, Rural Areas, and Farmers” Knowledge Information Resource Bases and Dissemination Systems

Libraries should apply for special funds to build precise knowledge information resource bases and dissemination systems for rural revitalization. This involves: (1) Collecting and mining existing library information resources and tacit knowledge from various disciplines; (2) Organizing national policies, research achievements, and external knowledge sources; (3) Gradually building dissemination networks and platforms to transfer knowledge to rural areas.

5.4 Tap Rural Library Potential to Expand Knowledge Transfer Channels

Given farmers' preference for oral communication over reading, libraries should: (1) Guide and assist rural libraries in combining cultural knowledge with entertainment; (2) Use entertainment forms like live streaming and internet entrepreneurship as carriers for knowledge transfer; (3) Conduct lectures, film screenings, and other services to provide excellent spiritual and cultural products; (4) Establish active new rural cultural ecosystems.

5.5 Leverage Agriculture-related Enterprises to Narrow Knowledge Transfer Context Gaps

Libraries should utilize enterprises as intermediaries: (1) Implement an “Expert + University Library + Agriculture-related Enterprise + Core Farmers” model; (2) Use enterprise technicians and core farmers to influence and improve surrounding farmers’ agricultural knowledge; (3) Gradually stabilize an offline knowledge transfer model that narrows contextual gaps between libraries and farmers, achieving mutual benefit.

6. Conclusion

Achieving rural revitalization in China is a major undertaking requiring continuous exploration and improvement. University library services for rural revitalization demand joint efforts from university leadership, librarians, rural libraries, and agriculture-related enterprises. By leveraging rural libraries and agricultural enterprise platforms, and recruiting student volunteers with network technology expertise for summer services, libraries can help farmers master basic network and WeChat skills, improve rural personnel’ s overall knowledge reception capacity, and enhance knowledge transfer efficiency. Through practice, suitable models and implementation pathways can be continuously refined.

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