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## The exploration of library knowledge service based on the information ecology

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### ABSTRACT

Knowledge service is a kind of value-added services. It bases on all information resources and aims at needs of users. The research on the library information ecosystem can solve the problem about the disorder of library information ecological environment and the information ecological unbalance of modern library service. According to the continuously large contradictions between knowledge service and unbalanced information, this research analyzes the basic principles of library knowledge service based on the information ecology, including the principle of information ecological balance and the principle of the knowledge service. The key component of this essay is the research of both of them, which are the theoretical basis of systematical construction and management of library knowledge service based on information ecology. In the end, this research establishes the knowledge service platform based on the analysis above including resource database of information, business platform of librarian, knowledge base, and service platform of user. And four management measures are proposed that are the building user-centered evaluation system of ecology, the realization of ecological management of knowledge, the improvement of the main quality of information ecology and the establishment of the ecosphere of library information.

### KEYWORDS

Information ecology; Ecology; Library; Knowledge service; Management.



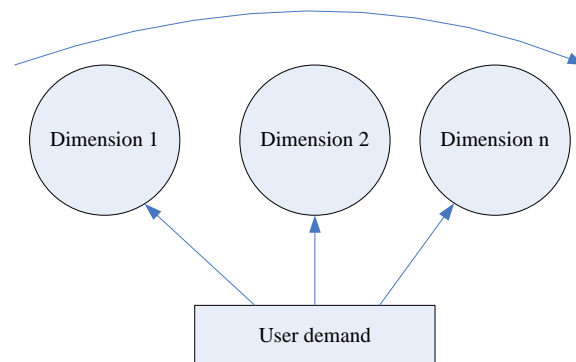
## INTRODUCTION

The integration of information science technology and ecology forms the modern information ecology. Information ecology is a new science about interactional process and rules between society or organization of human being and information environment. It uses the experience of ecological system theory and method, and starts from the idea that harmonious development in human-information-information environment and researches the interactional relationships and mechanism among them. It aims at realizing the information ecology through optimizing ecological environment and the analysis of the nature of information ecology.

In China, Academician Zhang Xin-shi is one of the first experts who study the information ecology. He thinks that information ecology not only has the advantages of ecology but also develops and inherits the traditional theory and high-tech of information science. Overseas, many scholars think that the information ecology should integrate with the ecological system, while the information ecology is the subject of information in a certainly environment and the information environment and the combination of both. This research analyzes the basic principles of library knowledge service based on the information ecology and discusses the features of knowledge service as well as the nature and the features of ecosystem. In the end, this research establishes the knowledge service platform based on the analysis above including resource database of information, business platform of librarian, knowledge base, and service platform of user. And four management measures are proposed that are the building user-centered evaluation system of ecology, the realization of ecological management of knowledge, the improvement of the main quality of information ecology and the establishment of the ecosphere of library information.

### THE BASIC THEORY OF THE LIBRARY KNOWLEDGE SERVICE BASED ON THE INFORMATION ECOLOGY

Information ecosystem is composed of human, information and information environment and other factors related with them. It aims at realizing the organic unit with the function of social information. As a service institution to process, establish and transmit information resource, library actually belongs to the information ecosystem. From the point of territorial scope, we can divide the library into the microcosmic, the medium, and the macrocosmic. The microcosmic library information ecosystem refers to the information system of a single library whose internal components contacts and promotes each other through the information. The medium library information ecosystem refers to the information system established by library union in a certain range. And the macrocosmic one is set up by the international libraries or libraries of a country, realizing the information sharing, optimization of resource allocation of material resources or human resources and the circulation of information. Thereby, it improves the development of the information system of the whole library union. Now is the time with the explosion of knowledge, thereby the users are more and more who increasingly have special needs and want more knowledge service. There are increasingly abundant kinds of knowledge service, and the upgrade of the needs of knowledge means the upgrade of knowledge service. The Figure 1 explains the dimension of user's needs:



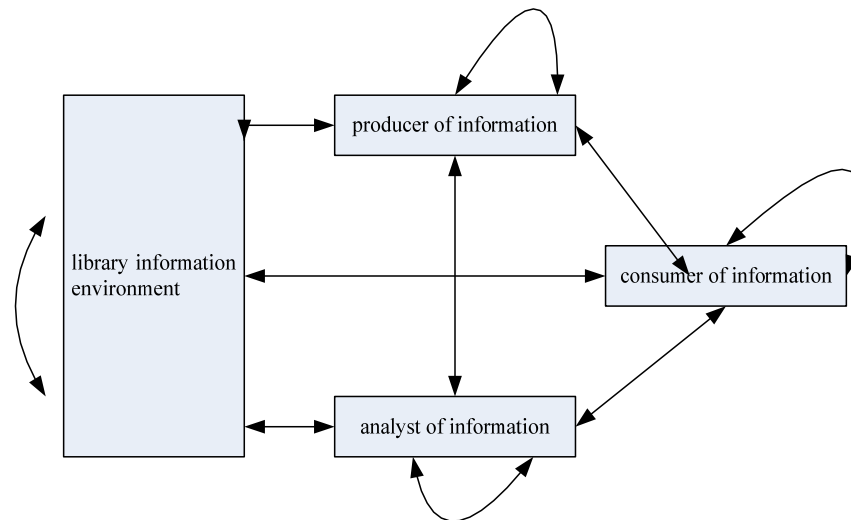
**Figure 1 : The change of the dimension of user demand**

From the diagram, we can find the tendency of the increase of the dimension of user's need which develops from the single dimension to a multi dimensions. The increase of the dimension just explains the large need, which directly influences the level and the development of the knowledge service. Library knowledge service is just a direct and specific expression of knowledge service. If the development of the information ecosystem is fine, the knowledge management is fine and the knowledge service system will provide user a better support in knowledge.

#### The nature and the feature of library information ecosystem

Information ecosystem is borrowed from the theory of ecology. In this thesis we analyze the research-oriented library information ecosystem. In order to analyze the information from the microcosmic view, it sets up a library information ecosystem which is a new method to research the ecosystem, including three factors which enable the information

environment to realize the dynamic balance and enable the manual system to self-regulate and to realize the information transmission and communication. Information, data, library and information ecosystem are a integrated external environment while the energy exchange among the whole information system.



**Figure 2 : The structure of the information ecosystem's relation**

Library is influenced by the various information subjects, complex information, varied information environment factors, so library information ecosystem owns various features. Owing to the failure of one factor of information ecosystem, these functions are important to sound and sustainable development. Because the simple information ecosystem may destroy the whole information ecosystem, and if a complex information ecosystem is destroyed, though some information will be loosen or damaged, the ecologic factor can supply the same functions through other proper species to improve the function of information ecosystem. Below there is a simple introduction of the features of library information ecosystem.

#### **(1)Systematicness**

Generally, ecosystem is composed of many ecologic factors which are related with each other complexly. If one factor is changed, it will not only change the whole factors, but also influences other factors. Because their relations are complex, including the dynamics is realized openly. And the openness also optimizes the level of the system, just because of which the whole system can be stable and harmonious.

#### **(2)Cooperative evolution**

The ecosystem faces many influential factors and living beings continuously adjust themselves to adapt to the changes of the ecosystem by the rule of the survival of the fittest. The benign information ecosystem is not constant, but need new things and eliminating the bad things and internal factors properly change through the mutual influence. The factors of the development of information ecosystem frequently are from new technology and new invention. And the important is that the knowledge service offered by library (like data and materials) should adapt to the big environment with its change and further realizing the dynamic balance of the ecosystem.

#### **(3)Territoriality**

Social environment is a key factor influencing the ecosystem including the factors of society, culture and environment etc. Because different places have different life styles, correspondingly the components of library information ecosystem are different from each other. And library information ecosystem must be influenced by local social environment, and thereby the system shows certain regional characteristics.

#### **(4)Artificiality**

Dynamic balance system is the important self-regulated one of the ecosystem. When the natural ecosystem is disturbed by the outside world, it will realize the relatively stable balance through the dynamic self-regulation and development. Library is different from the nature, and the library information ecosystem is a manmade system. So people are the subject of the library information and the key factor of the library information quality. In the ecosystem, the establishment of a balanced and stable library information ecosystem is closely linked to the people's decision and capacity. So people absolutely influence the library information ecosystem.

### **The principle of library knowledge service**

Service knowledge is a kind of value-added services based on the all the information data facing the knowledge. It aims at meeting client's needs, and integrating user's decision and helping user to find the solution. According to this definition, this thesis summarizes the several requirements of the knowledge service (1) it is a kind of service facing the knowledge; (2) it faces the value-added services; (3) it is user-driving service. Knowledge service is based on the searching, organization, recombination and analytical capacity of information and knowledge. According to the problem and environment of user, it integrates into the process of solving problem and offers service of effectively supporting the

innovative application of knowledge. The construction of society of knowledge depends on the innovation of knowledge; the innovation of knowledge depends on knowledge service. So the establishment of scientific and reasonable knowledge service platform has specific meaning on modern library. Including, knowledge service has following features:

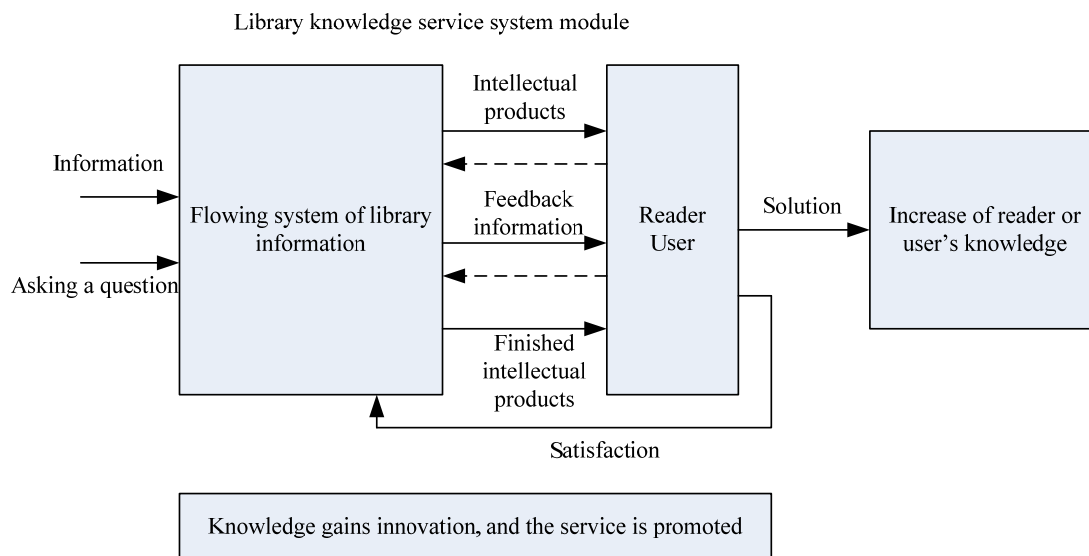
(1) Knowledge service is continuous and dynamic service. Knowledge is changing constantly; different time point might lead to the different effects of knowledge service on the same problem. So according to various problems of information service, we should make use of knowledge and consider user's new needs. And the collection, recombination, process and analysis of information, through integration of resource and system, realize the dynamic and sustainable service and meet the user's requirements.

(2) Knowledge service is the specific group-oriented service. It indicates that the service of knowledge must provide specific service and service contents should change according to different client's requirements. The specific service and the specific pattern is the intelligent expression of serving specific clients.

(3) Knowledge service owns instability. During the service, different subjects of service have differences in capacity, intelligence, and education background. And different fields also have distinctions, though the subject of service has high level in major, he/she may behave badly in a certain period. So the uneven level of service is a common phenomenon and correspondingly we only set up some standard measures to reduce the level of service. In this way, we can ensure the quality and standard of the knowledge service.

(4) Knowledge service is specialized. Firstly, the staffs who work on the knowledge service must have a good grasp of professional knowledge and learning ability. More specialized lead to better service and effects; Secondly, knowledge service is organized and implemented in the specific professional field. It is required to form multi-layered and systematic product to satisfy the user's multifaceted needs. Different user has different need, so does the different field. So knowledge service should has hierarchy and give better service; Thirdly, the division of labor should be clear-cut. This society pay attention to teamwork, and need the cooperation of talents form different fields. So dose the corresponding knowledge service, it not only needs the specialized solution but also needs the normal operation from support crew without any faults. So the division of labor must be clear, and we can create a good knowledge service system.

Through reading related articles, and according to the introduction of knowledge service, it is very easy to draw a picture of library knowledge service system shown as Figure 3.



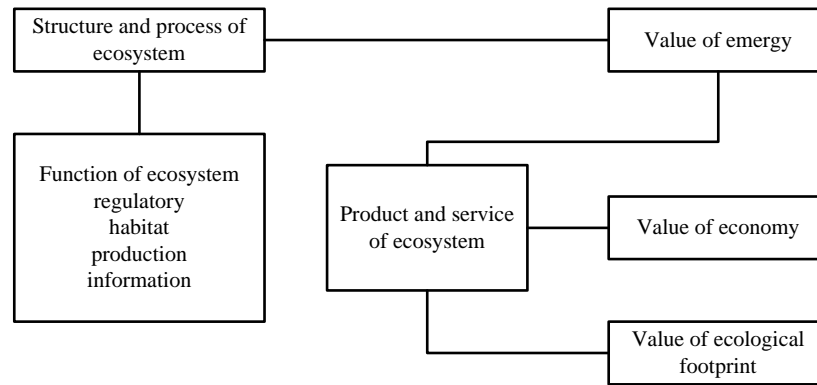
**Figure 3 : Library knowledge service system**

**Object and function of library ecological service system based on the information ecology**

The development of the world is diversified gradually. The research on library information ecological system is applied to solve the problem about disorder of library information ecological environment and to improve the balance and stability of the modern library information ecological system. The construction and management of library information ecological system should achieve following goals: (1) promote the corresponding service and improve the quality; (2) the information of library service should be updated quickly and realize the modernization; (3) strengthen the cultivation of attitude and quality of service. In a word, information ecological system aims to elevate the competitiveness of library, and just the coordinated and balanced information ecosystem can have more competitiveness. People will have a harmonious information environment and library information ecological system will gain a sound and sustainable development.

The function should be realized by library ecology service system based on information ecology: (1) avoid the creation of junk information and develop the information as much as possible and rationally apply them; (2) through the library information ecological system, information environment, people and society have a considerable progress; (3) the

main structure of the library information ecological system is reasonable, including the quality and capacity and other factors of information subject can satisfy reader's needs;(4) information ecological factor gain a mutual development through interaction.



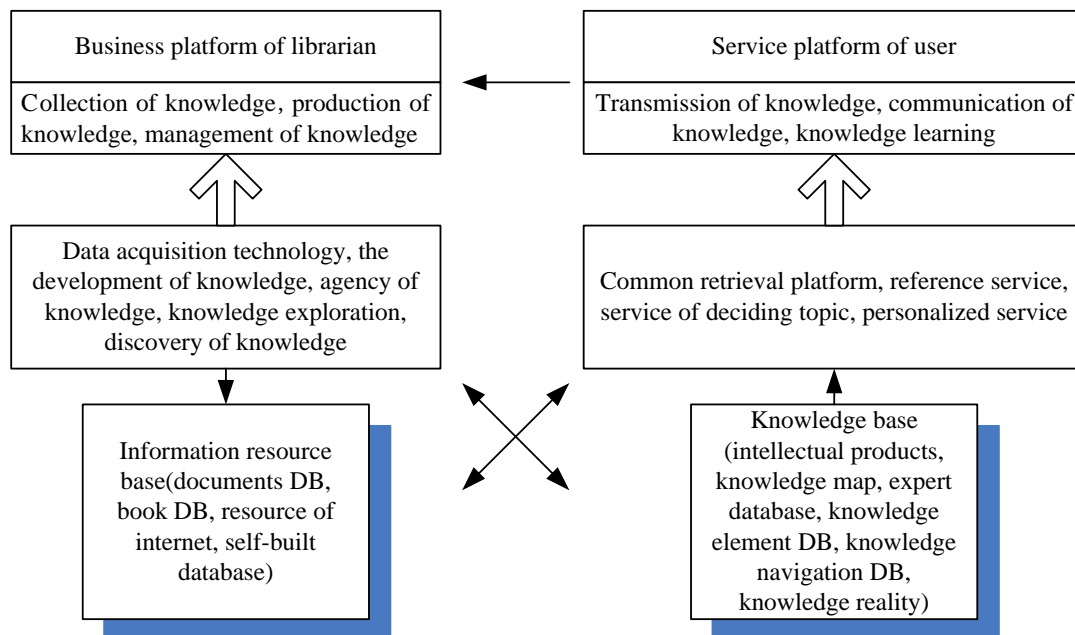
**Figure 4 : The function of library ecological service system**

Through Figure 4, we can find that the library ecological system can create value of energy, value of economy, and value of ecological footprint. And its function is more diversified including the regulatory, habitat, production, and information. Its functions and values are related to each other and influence each other.

**CONSTRUCTION AND MANAGEMENT OF THE LIBRARY SERVICE SYSTEM BASED ON INFORMATION ECOSYSTEM**

**Analysis of construction of library knowledge service ecological platform**

In terms of the establishment of information ecosystem, this thesis mainly divided into service platform of user, business platform of librarian, information resource base, knowledge base. The service platform of user is the most basic platform which provides basic knowledge service to user. Business platform of librarian is an important media between user and librarian, through which librarian can communicate with user, and promotes the process of development of service. Knowledge base offers a way and knowledge navigation that gives user a intelligent search, virtual reference service, and customized service and so on. Knowledge base guarantees the integration of user and the need of tracing. Different user has different need. Knowledge base provides personalized service and user's environment to receive information. Information resource base can integrate the related business platforms and offer service of contact and other special resources, such as the service of organizing, regulating. And it also issues the material of basic service and database. The ecosystem of library knowledge service system is shown as Figure 5.



**Figure 5 : The ecosystem of library knowledge service system**

### Management measure of library information ecosystem

Informatization management can ensure the sustainable development of information ecosystem, and plays an important role in the knowledge service as much as possible. In order to make the information ecosystem balanced, I combine the reality of library work. This thesis summarizes the following management measures:

#### (1) User-centered evaluation system of ecology

Evaluation system of ecology is to evaluate the ecosystem according to the requirements of the users before the establishment. And the result is related to how to make a plan. The social development provides a basic configuration to scientific and reasonable revolution of the resources in library. We should develop and explore both internal and external resources in the library and in the future guide the development of information ecosystem with the help of the library knowledge service.

#### (2) Ecological management of knowledge

The goal of management of knowledge is to give knowledge service. The normalized management of knowledge is also good at offering better service to users. It can create the maximum value of library information. So we need a database, knowledge base and expert database. We should integrate the resource and strengthen the management of knowledge. We reasonably import concepts from other fields and combine them properly and guarantee a close combination. The ecological management is more effective and the management can be more standard to lead the management of library knowledge service into an optimum level.

#### (3) Promotion of quality of the subject of information ecosystem

People are the subject of both information and its innovation, which influences other factors related to the quality of information. So the subject of information needs to guarantee its high specialization and capacity of learning wide knowledge and more quickly adapt to the society. In this way it can meet the requirements of service in each field. So we must pay a great attention to the cultivation of talents and the update of human resource in time.

#### (4) Establishment of library information ecosphere

Information sharing is a general trend of the era of knowledge explosion. Therefore how to share information and how to apply the method to facilitate the transmission of knowledge and information is a big question. According to the information ecosystem, this thesis plants to set up a kind of macroscopic system of information sharing aiming at forming an information ecosphere. The concrete operations are through the cooperation among libraries to realize the sharing and the macro-control of resources, and to reasonably distribute resources to ensure the equal distribution of resources. These are also good at the sharing in each places and the coordinated development. Its goal is balanced development and library information ecosystem gain competitiveness and vitality.

## CONCLUSIONS

This thesis research the current situation of library service, the situation of user's needs of library, the demand theory, the research progress of ecosystem, application of ecosystem in other fields. From the point of ecology, the thesis explains the library knowledge service and library information ecosystem with the help of theories related to ecology and knowledge service. It also analyzes the connotation and feature of library knowledge service system based on the information ecosystem and studies the meaning and features of information ecosystem and knowledge service. And according to the disadvantages of current library knowledge service, the thesis summarizes the management measures such as promotion of quality of the subject of information ecosystem, user-centered evaluation system of ecology, improvement of rules and regulations etc. Finally, based on the research of the constitutive principles of library knowledge service system based on the information ecosystem, the thesis establishes library information ecosystem and its structure and meanwhile proposes the management measures of information ecosystem which is better at the library's service. From the user's point, it completes its own work better and facilitates understanding and mastering the operating principle, importance of work, dimension of function, systematic construction and the development tendency of library ecologic service system.

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