

Research on the Personalized Service Status and Optimization Strategies of Information Resource Sharing System

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Abstract: By surveys on the network, there are some problems existing in the personalized service of the domestic and foreign typical information resources sharing systems. They are: the resource integration is limited; interactive services lack of talents support; customization service is not perfect; lack of space for users to communicate, etc. And this paper will propose optimization strategies for users' personalized features analysis, resource acquisition and integration, recommendations of personalized information customization, and user communication platform and so on. I hope it will help improve the level of personalized service of information resource sharing system.

Keywords: information resource sharing; personalized service; optimization strategies; Features analysis

1. Introduction

The establishment and development of OhioLINK, NSTL, CASHL, the National Cultural Information Resources Sharing Project and some other domestic and international information resource sharing systems,[1] provide a lot of information resources for the information users, but this does not fully meet the needs of users. They need a highly efficient service which can obtain useful information from the mass of information, therefore, personalized service of information resource sharing system come into being [2]. It is the trend of information resource sharing system development, but also an important method to improve the quality of service of information resource sharing system.[3]. The personalized service of information resource sharing system is based on the integration of information resources, through the deep-level organization of a special resources and analysis of users' needs, and on this basis, dynamically provide the information to meet users' interest and need. In order to understand the current status of the personalized services of information resource sharing system, this paper investigates some domestic and overseas information resource sharing systems online and explores personalized service optimization strategies for information resource sharing system.[4]

2. The Current status of Personalized Service of Information Resource Sharing System

In order to show the current status of personalized service of Domestic and overseas information resource sharing system, the author adopts web-based survey to inspect a number of domestic and overseas representative information resource sharing systems about their personalized service status. The service functions as shown in table 1, with “√” mark as provided services. [5-8.]

2.1. OhioLINK Personalized Service

OhioLINK (Ohio Library and Information Network), originated in 1986, and was formally established in November 1992 [9]. OhioLINK is the Ohio University and the University Library jointly established which is a statewide literature information network and connects 74 libraries from universities and colleges in electronic network environment [10]. OhioLINK provides union catalog search, electronic resources navigation services, main disciplines' navigation library services, heterogeneous database uniform retrieval services [11]. Despite of these, OhioLINK launched a variety of new services in August 2001 including that different readers can choose their own necessary "Express Links", which allows personal resources under the OhioLINK resources or choose to establish a number of databases and connect to the computer of the reader side. On August 6, 2001, the users of Periodical Abstracts, the Electronic Journal Center and PsycINFO can via "Ask Us" link to the database. In this way, the reference librarians' service is improved. These links include: reference service phone number, e-mail service, or chat rooms connecting [12]. In addition, the e-magazine center also offers "online SDI (Selective Dissemination of Information service)" feature. In this certain service way, the system will be based on user s' demand, periodically automatically run query software searching topics from e-magazine library on behalf of the users and send the searched results to users' e-mail [13].

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Table 1. the Personalized Service Status of Domestic and Oversea Main Information Resource Sharing System

<i>Service functions</i>		<i>Ohio-LINK</i>	<i>NSTL</i>	<i>CASHL</i>	<i>the National Cultural Information Resources Sharing Project</i>
<i>Integrated search navigation service</i>	Resource navigation	√	√		
	One-stop search	√	√	√	
	Data	√	√	√	
<i>Interactive service</i>	Real-time consultation	√	√		√
	E-mail consultation	√	√	√	√
	Users' rating		√	√	
	Users' recommendation		√	√	
<i>Custom service</i>	Information transfer	√	√	√	
<i>Communication service</i>	Group space	√			
	Personal space				

2.3. NSTL personalized service

National Science and Technology Library (referred to as NSTL) is a kind of virtual scientific literature service that founded on June 12, 2000 basing on the instructions of the State Council, using modern network technology to provide multi-level services, promoting scientific literature information resource sharing; NSTL not only provide the union catalog search, Internet Navigation, hot-spot portal navigation service, heterogeneous database unified retrieval service, real-time consulting, non-real-time information, advice and suggestions, resources recommended service, but also provide personalized customization service for Registered users, which composed of my library and self-help center two parts. My library functions include: my database, my journal, my category, SDI service, my searching strategies, my bookshelf, etc. It also provides SDI service and personal library service for specific users. In SDI service, users can choose document type; enter search criteria and choose Save, the system will be updated periodically to notify the user the latest data and sends the latest 20 pieces of literature information. The function of individual library is that users can add the interested document to personal library in the retrieval process, preparing for future queries. In the personal library, the user can review and delete the literature,

forever, and can order literature directly in personal library [14].

CASHL personalized service

China Academic Humanities and Social Sciences Library (referred to as CASHL) is under the unified leadership of the Ministry of Education, composed of two national centers, five regional centers and ten centers of academic. On March15, 2004, it was officially launched and began to provide comprehensive literature information service to national universities, philosophy and social science research institutions and workers. GASHL provides humanities and social sciences foreign journals table of contents data query, university humanity and social sciences foreign literature unify query contents, foreign humanity and social sciences core journals pandect, foreign humanity and social sciences key periodicals order recommendations, expert advisory services, and e-mail subscriptions. foreign humanity and social sciences key periodicals order recommendations provide more than 9000 kinds of humanity and social sciences journals directory for users to order, the journals with "recommended" logo can be recommended order. The user's recommendations will serve as an important basis for CASHL subscribing periodicals. Expert advisory service was served by professional qualified consultants. They

will provide users with information and project inquiries.

2.4. National Cultural Information Resources Sharing

Project personalized service National Cultural Information Resources Sharing Project was carried out in 2001 led by the Ministry of Culture. Its construction goal is to make full use of modern high-tech means & national backbone communications network; integrate the fine traditional Chinese culture and all kind of available cultural information resources to achieve the goal of excellent cultural information through the network to serve the public. By 2010, we should basically complete a digital cultural service system of rich resources, advanced technology, convenient services and urban & rural coverage, in effort to achieve "villages' connection. Now it has formed service system by the National Center, the provincial sub-centers and the county-township- community-based branches and basically realized the building and sharing of the excellent cultural information within the country. National Cultural Information Resources Sharing Project started late so the personalized service is not perfect now. It only has the reference service.

3. Optimization Strategies of Personalized Service of Information Resource Sharing System

After investigation, we find that the personalized service of each information resource sharing system has following problems: resources integration is limited; interactive services lack of personnel security; customization service is not perfect; lack of space for users to exchange, etc. In order to solve the above problems and optimize personalized service of information resource sharing system, we must start from the following aspects.

3.1. Analysis of users' personalized feature

Analysis of the feature of user personalization, including an analysis of the information that users need, an investigation about the methods users taking for searching & accessing information and an exploration of the mental and cognitive state when users using the information resource system. The surveys and analysis of user personalized feature are the starting point of personalized service of information resource system, and it should be service through the entire process. The analysis of users' personalized feature includes two aspects: ① the collection of users' preferred information. First, the user registration information, including name, age, profession and other basic information; Second, track and analyze users' searching terms, browsing and downloading behavior. ② The establishment and application of user models. Actually, user model is structured description of user behavior, needs and preferences, in this way to determine the type of information service.

3.2. Resource Acquisition and Integration

The development trend of personalized service system is resource integration and service integration. That means that the user can obtain all resource and service through one time operation. Information resource sharing system should not only obtain external network resources, but also integrate network resource and internal resource. Network content mining is reflected in the mining of web content and web structure. Web content mining is to find valuable information from the network in methods of classification, clustering, etc. and retrieve the information by some form that can meet some searching method. Web structure mining is to create a web link structure model itself through analyzing a web page link and the number of links and the object. This link structure is helpful to achieve intelligent navigation. Internal resource includes the purchased or self-built digital resource and related resource that users upload. Based on the integration of a variety of resource, information resource sharing system further excavates the information deeper and transmits the information to the user through a one-stop searching interface.

3.3. The recommendation of personalized information customization

The recommendation service of information customization can be regarded as the key of personalized service. Currently, the technology type of the recommendation system includes collaborative filtering / social filtering system, based on association excavating technology and so on. Collaborative filtering system is the most widely used and most successful one. Information sharing system can use the collaborative filtering system, or integrate it into other technologies to provide the recommendation of information customization to the users; or aggregate the users who have similar preference, combining with the evaluation of other users, and recommend them the resource that they may like; or use the recommended techniques to filtrate the newest or the latest updated information that the information resource sharing system got, and then proceed the personalized information customization.

3.4. Personalized interactive service

With the development of Web2.0, to provide users with information exchanging and sharing space becomes trend of information resource sharing system personalized service. Information resource sharing system should provide real-time interactive service and platforms on which users can publish and share information. Users and consultants, through logging in the server, enter the real-time advisory system to resolve the puzzling problems occurring during the process that users get the information by methods of trouble shooting, email, online chatting, co-browsing and so on and help users develop acquisition strategies, and, if necessary, send them valuable pages providing them with solution ways. To provide platforms

for communication between users first is to cluster users who have same preference, or to establish sharing space in specific fields by users themselves. In this space, user groups can discuss the related topics and evaluate information resource as well as recommend resource to other users. Permitting by the user, the system can also track and extract valuable information available to other users of the system.

The survey data of "Report of the Fifth Survey of China Internet Community Development" showing: "Currently, nearly 90% users of the network community in our country are using or want to use Social Networking Service (SNS). 53.3% of users are using SNS service; 36% of users do not but would like to use SNS and only 10.7% do not use or are not interested with SNS. "The result speaks for the current users' strong demand for "interaction ". Therefore, based on this, the library must actively reform the service concept based on different users' preferences on demands for knowledge and information. It is necessary to retain the traditional face-to-face consulting service, but also carry out a variety of interactive service modes relying on the Internet. For example, offer the FAQ routine advisory service on the website of Library to solve some general problems of users without time and space constraints. The registered users of the library can send their questions to the librarians by e-mail, phone, SMS, fax, etc. According to the analysis results, professional librarians then send appropriate feedbacks to the user and provide readers with any-time searching service. Library can also offer users with some characteristic services, such as recommendation of books, book reviews, etc. through notice, email and others. Library can achieve to provide a timely question and answer to users through voice, QQ and other communication tools. So that library can provide readers with a comprehensive multi-level personalized service by organically combining these different services and content in the space, time and form.

3.5. Personalized Knowledge Discovery Service

Data mining is emerging computing technology and method in recent years and is widely used in scientific discoveries, commercial retail and credit management, medical and other fields and shows great influence. Over the years, along with the diversification, higher-level, personalization of users' demands, data mining areas played a very important role in the library. It not only greatly meets the needs of users. The library and thus find a sustainable development approach. Taking an example, the knowledge mining services which CNKI, VIP, etc. provide to users are quite successful. The implementation of library knowledge mining service not only requires that the service providers can accurately grasp the needs of users, with abilities to search, organize, analyze and re-structure the information and knowledge. And it also requires the library to have ability to comply with the advanced changes in users' demands and find users'

potential demands. Therefore, while completing their own resource integration, the library should actively use network technologies to follow changes of users' interest and be aware of users' needs, potential and long-term needs and discover the users' interests and preferences according to the users' choice of browsing information. The library then should timely carries out the collection, extraction, integration, and innovation of its own resource and gets new products through knowledge mining, achieving the effect of "old products, new features; new products, new features; new products, old functions" effect [5], to meet users' demands for personalized information service in maximum.

3.6. The "One-stop" service

The "One-stop" service takes customer consumption demands as center, providing customers with total solutions. The service model is the inevitable product of modern business services. In different field, the forms of the overall solution are not the same, but its purpose is to provide a full set of services to meet the consumers' demand. At present, the information management platforms in the compound libraries of our country mostly focused on the trading session, looking on users' money with eager eyes and ignoring the provision of satisfactory "one-stop" service to users. Therefore, because of the pressure of loss of users that it currently bears, the library should take providing convenience and saving time for customers and improving efficiency as the goals. Fully taking the different needs of users into account, the library should screen, regroup, classify, process and output the disordered and dispersed academic information, such as books and periodicals in collection, electronic books and periodicals, online reference books and so on. It is quite necessary to carry out the coordinated-process service including borrowing, searching and collecting. Moreover, the library should base on the new features of users' demands for information, constantly carrying out the innovation of the service, to provide users with personalized service which is more intelligent, more humane, more selective and cohesive. For example, document delivery service; push service, self-service, digital reference advisory service. [6] This not only allows the formation of chain structure between the collection resource and the service enabling the complementarities of the two to achieve the overall value-added benefit, that is " $1 + 1 > 2$ ". Also to meet the demands for diversification, high level, and personalized service required by users, and thus enhance the sustainable development of the library.

4. Conclusion

The rapid development of information technology has changed the traditional collection structure of the library. The diversification of social culture has given birth to the demands for personalized service. Thus, modern libraries

should consider the library resource, functional structure, technologies and customer needs at full range and reform actively the division between management and service. It should make full use of network platform to establish personalized push service taking “user driver” as center to provide users with personalized customization service and personalized interaction service and follow the actively the changes of users’ interests. Provide “one-stop service” to gain the supports of users, and then the survival and development opportunities to the library itself.

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