Exploring User-Driven Practices of Knowledge Services in University Libraries in the Context of "Double World-Class" Construction

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ABSTRACT
Starting from a practical perspective, as the entry point for implementing the "Double World-Class" Construction macro policy, the article takes the research library knowledge service paradigm under Science, Technology and Innovation Strategy to help guide the knowledge service practices of university libraries, driven by demands of specific users. Taking the innovation of knowledge services in Xiamen University Library as examples, the knowledge services in university libraries, which are driven based on the demand of users in the context of "Double World-Class" Construction, have been integrated into each specific teaching and research scene. The combination of theory and practice shows that the vision of "Double World-Class" Construction is the leader, the change of concept and operation mode is the core, the cognitive harmony match is the key, and the integration strategy is the direction.
Keywords: University Library, knowledge services, "Double World-Class" Constructions, demand-driven, Xiamen University Library

1. INTRODUCTION

From the perspective of macro value, against the context of the "Double World-Class" construction, the service of university libraries should be guided by clear thinking and direction, and play a role in talent cultivation, scientific research, social service and cultural inheritance to keep the consistency of the service tenet. From the perspective of micro-benefit, the services of university libraries which show the diversified development trends are to satisfy the different needs of users. How to promote the construction of the "Double World-Class" in the university libraries is a hot issue now. Taking the practice of Xiamen University Library as an example, this paper discusses the knowledge services innovation of university libraries by combining theory with practice, which expects to present a good situation of macro value and micro benefit.

2. KNOWLEDGE SERVICES OF RESEARCH LIBRARY ORIENTED TO INNOVATION STRATEGY

The "Double World-Class" Construction is a realistic need to strengthen the country's core competitiveness and support the Strategy of the National Innovation-Driven Development[1]. In the strategy of innovation-driven development, the "Double World-Class" Construction carries the four missions of supporting talents, supporting

science and technology, supporting disciplines, and supporting institutional values. It is emphasized that scientific and technological innovation and scientific research level are the core of the "Double World-Class" Construction. In order to implement the macro policy of the "Double World-Class" Construction from the perspective of practical work, this paper tries to grasp the relationship between technological innovation and the Construction of "Double World-Class". On the one hand, this paper relies on the knowledge service paradigm of the research libraries under the Science and Technology Innovation Strategy as the mesoscopic theory to guide university libraries, gives full practical direction and scope; On the other hand, starting from the needs of university knowledge services, the practices of knowledge services in university libraries at home and abroad are used as the basic of the practice analysis in this paper, and give the university libraries sufficient theoretical guidance to promote the transformation.

Faced with the Strategy of Innovation, Zhang Xiaolin proposed a supply-side structural reform to promote knowledge services, and chose to start with the libraries of important scientific research institutions and key universities to build a knowledge service mechanism that is compatible with the needs and status of the institutions[2]. From the perspective of strategic technological innovation, the library is a service mechanism for knowledge-intensive and data-intensive work. Faced with the demand for strategic knowledge, Zhang Xiaolin proposed three new knowledge service paradigms from different service modes and means: knowledge service paradigm, knowledge

management paradigm and cooperative and interactive knowledge service paradigm in his article " Research Libraries 2020: Embedded Collaborative Knowledge Lab"[3]. The knowledge service paradigm is mainly for research-oriented user groups, especially the first-line researchers in scientific research teams, including doctoral candidates or master degree candidates who are mainly engaged in research-oriented learning[3][4]. The service paradigm involves the construction of environment, resources, space and services, and presents a clear panorama of knowledge service for Innovation Strategies..

3. THE CONTEXTUALIZATION OF COOPERATION AND INTERATION KNOWLEDGE SERVICE PARADIGM IN THE LIBRARIES

The paradigm of cooperation and interaction knowledge service shifts the one-way information utilization mechanism to the interactive knowledge learning, research, communication and dissemination mechanism which becomes the cooperation of many subjects, element networking and dynamic content. Many subjects create knowledge together and the librarian's identity becomes diversified. Information consultation in university libraries is developing towards interaction and consultation space is virtualization. At the same time, the requirement for librarians' service ability becomes higher. The core competitiveness of library's knowledge services will be fully reflected by upgrading the service mechanism of embedded disciplines librarians to the support mechanism of teams of knowledge service experts and the cooperation and interaction.

The environment of scientific research used to be characterized by lonely scholars, but now it has evolved into a more collaborative and interdisciplinary approach which is fighting against large amounts of data [5]. This is also the need for librarians to be embedded as experts. Librarians at the University of British Columbia in Canada embedded in the entire knowledge development and dissemination process of the research team as information experts [6], and published reports and papers as co-authors. Librarians were invited to join the team as joint researcher early in the research process and played a role in preparing reports and reviewing grant applications before the results are submitted. Their service content is diversified, including providing the initial literature retrieval strategy in the scientific research process, screening relevant literature, writing literature reviews, dealing with copyright-related issues and funding institutions' open access policies, collating follow-up documents in the primary research, publishing papers as co-authors, and recommending periodicals for team members.

The practical examples of the libraries of university at home and abroad under the service paradigm show that the important features where new interactive service is different from the traditional information service system are: firstly, the service meets the personalized needs of the users;

secondly, the users are also the submitter of system information and innovative knowledge achievements [7]. This is the concept of the knowledge services in libraries of universities driven by needs under the background of "Double World-Class" Construction.
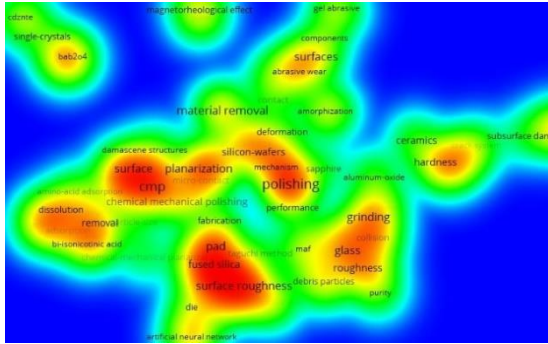
4. INNOVATIONS OF KNOWLEDGE SERVICES AT XIAMEN LIBRARY

Service innovation often crosses the above three types of service paradigm content to enhance libraries' service capabilities and expand libraries' influence. Based on the service paradigm, the paper takes the actual business as the entry point and explores the demand-driven knowledge service innovation of Xiamen University Library through a practice. The practice is a service for research scholars, which is a knowledge management service for research results assets.
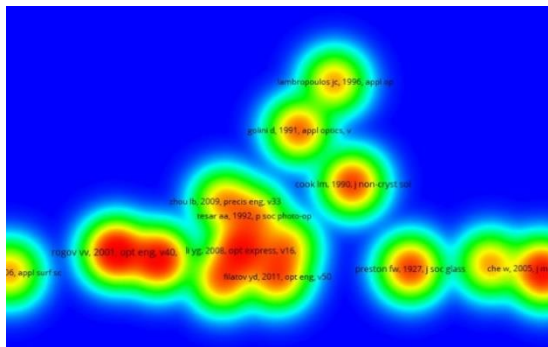
4.1. Knowledge Discovery Services Supported by Knowledge Maps

In the Practice 1, The service target is for the librarian to perform the title search for "TS=(bound and abrasive and polish*)" according to the search strategy provided by the teacher. In practice, librarians and teachers participate in visual analysis. It is a collaborative interactive knowledge service to discover classic references related to topics, and is a knowledge service based on knowledge of literature data.

The service content is the collaborative analysis method of the knowledge map and the collaboration method between the librarians and the users to determine the retrieval result, and realize the final knowledge discovery. The core collection data of Web of Science collected by the search strategy is placed in the knowledge map tool VOSviewer to obtain the keyword co-occurrence map. As shown in Picture 1, scholars and librarians can easily see the overall keyword distribution from the heat map, and the high-frequency co-occurrence words in the red region of the cluster quickly enter the user's eyes. According to the user's own knowledge, visual keyword clustering maps are easy for users to judge whether the initial search strategy is reasonable. If there are too many keywords with little relevance to the topic, or if more repeated keyword variants affect the search results, it is necessary for the librarians to renegotiate the search strategy with the users or reorganize the keywords. After the search strategy is determined through repeated negotiation and adjustment, the service results are obtained through the reference co-existing map function analysis—the reference co-exhibition map (Picture 5) and the subject-related reference list (Picture 3). In the list of listings, the literature can be displayed based on the sorting results of the fields "citations" (cited) or "total link strength" (correlation), from which users can find documents that are closely related to scientific research.

Picture 1 Key words co-occurrence knowledge map

Picture 2 References a total cited knowledge map

Picture 3 Final search results submitted to the teacher

The knowledge map open source tool quickly exchanges the knowledge discovery results obtained by cluster analysis with the user in a certain visual way. It is a service extension of the theme retrieval traditional business, and can be flexibly embedded into the actual scientific research work. On the other hand, the search requirements often come from scholars or laboratory individuals, presenting individualized and diverse characteristics. In the process of knowledge services, the interaction mode created by users together cultivates the user's independent knowledge mining and analysis ability[2]. The close integration of knowledge mining discovery with their own thinking and analysis is a necessary condition for the service to accurately locate the demand and realize the value-added knowledge.

4.2. Multi-terminal Extended Knowledge Service Marketing

Practice 2 is to use new media to provide knowledge management services for scientific research achievement assets: The library conducts knowledge service marketing for scientific research scholars through the WeChat public account "XMU Academic longitude and latitede"[8]. It is an extension service of Xiamen University Academic Library

(IR), which aims to promote academic achievements of colleges and universities, and provides industry dynamic tracking, industry intelligence competition and situation analysis, scientific and technological institutions or talent evaluation. The service mainly realizes knowledge management services through web-side and mobile-side multi-end expansion and data fusion:

(1) The interaction between the web and mobile terminal resources. The WeChat article uses limited text and graphic to inform scholars of changes in outcomes and outcome data, and attracts scholars to return to the Web to use valuable collection resources. After the scholars capture this information on the mobile terminal, click on the "Read Original" at the bottom of the page to get a richer data set and detailed data analysis report on the Web. The web content is a large part of the data integration and data visualization analysis that the librarians have carefully prepared for scholars.

(2) The information push tool of WeChat public account. The ESI High Citation Paper evaluation information can be obtained immediately by the WeChat public account dialog box. The content of the dialogue provided is short, but the amount of information is concentrated enough to attract scholars to use the function. The data source is not only the basic data of ESI, but also the valuable data sets such as the user identity, the number of documents and the time of the documents collected by ESI are reflected in the interaction results. Since the release of the function, there has been a certain amount of usage per day, indicating that it meets the individualized needs of users' attention to the influence of the literature. At the same time, from the perspective of interaction time, most of the time that users acquire information is at night or at weekends, indicating that the mobile terminal can actually serve as a tool for users to fragment consumption data.

With the help of WeChat public account, the library can interact with users for close-range knowledge services, and users can get the secondary processed data and data information in time, simplify the access to knowledge, strengthen professional services, and help solidify user habits. At the same time, IR has entered the stage of promoting the achievements of scholars, and it is not enough to conduct publicity in the IR portal. The transfer of service content to the mobile terminal is a new proposition. The advantages of new media and traditional media are complementary, and the rational integration, integration and common development of effective resources is a trend.

5. DISCUSSION

Through the practice of university libraries at home and abroad and the practice of library service innovation in Xiamen University, the author summarizes several thoughts: (1) Service innovation is unified in the "Double World-Class" Construction vision and user needs integration. Xiamen University Library's VOSviewer (hereinafter referred to as "VOS") and "XMU Academic Latitude and longitude " WeChat public account use new technology to

innovate on interactive information systems and new dimensions to interpret the roles and functions of university libraries in the "Double World-Class" Construction. VOS used knowledge mapping tools to make knowledge discovery together with scholars, WeChat public account used new media operation means and development technology to carry out marketing services for scientific research results. The service demand mainly comes from the unity of university users' understanding of the new knowledge environment and library service ability under the guidance of "Double World-Class" vision. It is not only the result of interaction with decision makers in the school, but also the result of the decision makers' desire to realize dynamic, visual, panoramic and intelligent demand of subject construction decision analysis. The decision support services of university libraries that help "Double World-Class" Construction are still deepening and gradually developing into a system [9].

(2) The core of knowledge service capability is the transformation of concepts and operational models [2]. On the one hand, the practice of VOS shows that although the librarians are constantly improving their knowledge service capabilities during the process of knowledge interaction, there is still a certain threshold for interaction with knowledge or data in the domain during the service process. It is a reasonable solution for librarians to strengthen their own advantages and embed knowledge discovery and knowledge innovation into scientific research. The VOS practice at Xiamen University further validates the feasibility of working as an information expert in the embedded research practice of the University of British Columbia Library librarians. The example of the WeChat public account operating users on multiple ports enables the data acquisition to be extended from the mobile terminal to the Web or library collection, and the service scope is extended to all places where users exist. With the help of technology, user demand drives the freedom of user knowledge supply and demand matching mechanism. By using the operational mode flexibly, the system and user bridge are built to dynamically reflect the needs of specific user groups, solidify user needs and improve service capabilities.

(3) Continuous interaction to obtain cognitive harmony matching[7] is the key to satisfying users' needs and improving their experience. Faced with a common vision, the acquisition process of user requirements is not just the result of a visit. The hidden requirements of users are often not clearly expressed. It is necessary to consider the interaction mechanism and technology to enable the librarians, systems and users to gradually assimilate the two sides in the process of interaction, and finally achieve the matching of cognitive structure. The interactive interface expressions of big data analysis dashboards and knowledge maps used in VOS practice have given great inspiration to universities, scholars and libraries. In the next few years, visualization technology will provide more technical and intellectual support for value-added data analysis services such as subject analysis, knowledge discovery and intellectual property analysis and evaluation, as well as provide great help for libraries to enhance their own

influence. Starting from these advantages, it is an effective way to clarify the needs of visual analysis to discuss the visual interaction mode with schools, scholars and students, to increase communication opportunities and expand discussion space. Since the spring of 2016, New York University Health Science Library librarians have carried out an innovation seminar named "Data Visualization Clinic"[10]. They provided venues for users to visualize disciplinary data from digital humanities projects to scientific papers and posters, and received constructive feedback and criticism from peers on digital visualization. Participants who are primarily engaged in academic research, such as emergency medicine or European history, are seeking to the way to improve their charts and programs. The discussion format of the seminar established the reputation of the library as a data visualization service center. At the same time, knowledge services for data visualization analysis rely on the participation of a wider academic community. The activity can also provide opportunities for researchers and librarians that interested in data visualization to build social networks and facilitate communication among researchers.

(4) Discipline-oriented knowledge service innovation requires integration strategy[11]. Subject situation tracking, knowledge discovery and new media knowledge service marketing are effectively integrated with knowledge service innovation of Xiamen University Library supported by scientific research results. It can form the achievement data service system with the core process of achievement data collection, processing, utilization, visual analysis and promotion. The integrated service function will be more powerful, and users' perception of the whole subject-oriented knowledge service will be enhanced, so as to enhance their sense of experience.

6. CONCLUSION

Under the background of Science and Technology Innovation Strategy, knowledge service paradigm brings the extension for the university libraries knowledge services which aims to accelerate "Double World-Class" Construction. In this framework, the demand –driven knowledge service innovation of Xiamen University Library is a process of continuous upgrading and renewal by new technology and model, and it is also a course which can enhance interaction and increase the influence of libraries. We hope what is said above could bring referential experience and deep thinking to other peers.

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