

STUDY ON THE INFORMATION SERVICE EVALUATION INDEX SYSTEM OF UNIVERSITIES LIBRARIES BASED ON KNOWLEDGE MANAGEMENT

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Abstract: With the arrival of the era of knowledge and economy, as a new management mode, knowledge management emerges as the time requires. The libraries of universities both at home and abroad have also introduced the concept of knowledge management. How to apply the theory, technology and method of knowledge management in the practice of universities libraries management, and how to evaluate the effect of information service of the libraries based on knowledge management, are the problems which need to pay attention especially. First of all, this paper describes the connotation of knowledge management and the present situation of the information service of the universities libraries. And then, according to the design principle of the information service evaluation of the university libraries based on knowledge management and the definition, connotation, objectives and related activities of knowledge management, the author analyzes and compares the influence factors of the information service evaluation index system of universities libraries based on knowledge management from the six aspects of services infrastructure, service platform, service personnel, service content, service mode and service effect. Finally, the performance evaluation system of the libraries based on the knowledge management and the first level, second level and three level index system of the information service evaluation index system of universities libraries based on knowledge management are constructed.

Keywords: Knowledge Management; Universities Libraries; Information Service; Service Evaluation; evaluation Index

1. Introduction

Because the knowledge management is an emerging interdisciplinary research field, and the research purposes and angles of people are different, so the scholars in different countries have different understanding and the unified awareness has not formed to the concept of knowledge management. In this paper, the author agrees with the point of view of Dr. Sheng Xiaoping. He thinks that knowledge management not only includes the system management to the knowledge and creation, collection, organization, dissemination, utilization and other related process, but also includes the management to the variety of resources and intangible assets related to the knowledge, which involves the all-around and whole process management to the knowledge organization, knowledge service, knowledge assets, intellectual property, intellectual staff.

Library knowledge management refers to the process that the library uses the knowledge management theory, tech-

nology and method to allocate and use the knowledge and related resources reasonably, fully meet the user's changing information and knowledge requirements, as well as enhance the various function of the modern library to play its role better.

The study on the information service evaluation of library based on knowledge management can make the managers to understand the deficiencies that exist in management and the key factors that affect the development of the organization, providing a theoretical basis for the organization to improve the management. Therefore, the study in this area is very meaningful, which can effectively improve the situation of the organization and management, and lay the foundation for the successful implementation of knowledge management.

2. Analysis of Influence Factors of the Information Service of University Library

Evaluation Based on Knowledge Management

The key factors of success or failure to the implementation of knowledge service of universes' libraries are also the important evaluation points which should be grasped when evaluate the information service of libraries. And these factors affect the knowledge service and can be measured by the way of information service evaluation, as well as reflect the management level of knowledge management. This section will study on the influence factors of the implementation of the universities libraries knowledge service, aiming at to find out the relationship and performance way between knowledge service capability and information resources evaluation to look for a breakthrough point and basis for the establishment of the entire information service evaluation system.

This paper argues that, the good information service of universities libraries should be the result of the implementation of effective knowledge management. It is also

affected by the external environment factors and the own factors of universities libraries and these factors are keys to the success or failure of library knowledge service. In other words, it is to regard the process of the entire organization as the knowledge management process. The activities of the libraries are the functional activities which are carried out based on the knowledge management and these activities can be decomposed from the perspective of knowledge. And the resources of universities libraries are the resources that support the knowledge services.

This paper proposes a model to illustrate the relationship between knowledge service and universities libraries information service (Figure 1) to explain the role and the ways that display the role of knowledge services in these environmental factors and themselves factors of libraries, as well as the process that knowledge and other resources of libraries convert to the libraries information services.

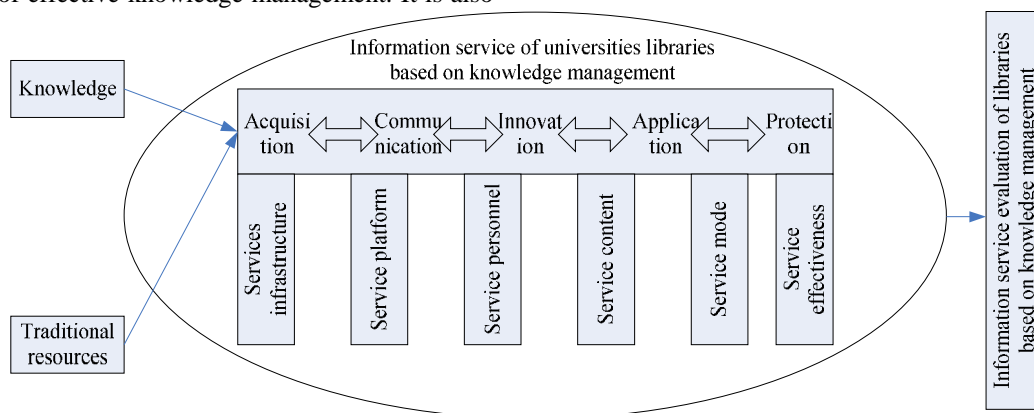


Figure 1. Diagram of the relationship between knowledge service and universities libraries information service evaluation

As shown in model of Figure 1: first, the universities libraries put the traditional resources (such as land, equipment and funds), knowledge resources and other elements into the internal operations of the libraries. Starting from the viewpoint of knowledge service, we can regard the whole process of universities libraries as a big knowledge management activity, but the knowledge management activity can be further divided into subdivisions which are services infrastructure, service platform, service personnel, service content, service mode and service effectiveness. These several parts not only are the main objects of the implementation of knowledge service in universities libraries, but also are the main factors to support the libraries information service effectiveness of knowledge management.

Therefore, to study the effect of the information service of universities libraries, the factors mentioned above can be evaluated from the acquisition, communication, application, innovation and protection of knowledge manage-

ment. In this way, the overall situation of the information service of universities libraries can be grasped.

3. Construction of the Information Service evaluation Index System of Universities Libraries based on Knowledge Management

The evaluation index system plays a role that controls the overall situation in the overall evaluation activity. Therefore, the establishment of scientific and reasonable index system is the key to evaluate the information service ability. The evaluation index system of information service ability is formed by the mutual restriction and related indexes which reflect the information service ability and it is used to evaluate the index system of information service ability.

3.1. Design Principle of the Evaluation Index

The choice and development of information service ability evaluation index of universities libraries has the important practical significance for the future guidance to the construction of information resources and the improvement of the information service quality. A perfect index system can help universities libraries to analyze the current situation objectively, and then make the right decision. Therefore, the establishment of evaluation index system should follow some principles.

(1) Scientific Principles

The scientific of the evaluation index system is the basis to ensure that results are accurate and reasonable. Whether an evaluation activity is scientific relays on the scientific of its target, standard and procedure. The design of evaluation index should not only consider the task of evaluation studies, but also in line with the characteristic, nature and movement principle of the objective phenomenon. The principle of "seeking truth from facts" should be followed, so that the quantitative description of the evaluation index as the qualitative understanding a precondition. In the index design, people should notice that the indicators do not repeat, do not miss, both independent but complementary.

(2) Principles combined by systematic and administrative levels

Since it is an evaluation activity, it means to carry out the evaluation and check to the entirety. The information service evaluation of universities libraries is a complex system, so to carry out the scientific evaluation; the principle of systematic must be adhered. At the same time, the evaluation index should have the administrative levels which are used to measure the effect of the system and provide a convenient for the determination of indicators weight. On the one hand, the design evaluation system should set up the indexes that are all-round and multi-angle. On the other hand, it should form a well-bedded and detailed index system in accordance with the subdivision of the various work of universities libraries information service, truly to reflect the universities libraries information service work systematically by the index system with distinct levels.

(3) Principles combined by objectivity and subjectivity

In the process of evaluation, the principle that the combination of subjective evaluation and objective evaluation of the scientific design should be followed to complete each other and further improve the evaluation system. The construction of information service of universities libraries can collect some relevant data and process the data to improve and perfect the services. The information service evaluation system of universities libraries must be based on the fact existed objectively. And, the selected indicators should be objective and reasonable. Just insist-

ing the evaluation combined by subjectivity and objectivity, the evaluation can be more comprehensive, which can promote the progress of the evaluation.

(4) Principles combined by qualitative and quantitative

Correct handle should be done to the two evaluation methods, qualitative and quantitative. The principles combined by qualitative analysis and quantitative evaluation must be upheld. Quantitative evaluation uses the scientific tools to collect and analyze the data and it regards the data as the evaluation foundation which has the scientific rigor and can objectively reflect the real status of the evaluation object. Using the qualitative evaluation method to interview and investigate the experts and users of the libraries can collect more intuitive evaluation information. Only the combination of qualitative and quantitative indicators can realize the scientific and reasonable evaluation.

(5) Principles combined by versatility and flexibility

The construction of the comprehensive evaluation system of information service capability should take into account the different types and nature of the universities libraries. And the established comprehensive evaluation system of the libraries' information service capability should have some versatility and can make cuts, choices and combinations flexible according to actual needs.

In addition, there should be some flexibility and scalability in the construction of the evaluation index system. For example, for the specific evaluation index, people should consider the information service carried out by the universities libraries to determine or adjust the weight coefficient to the index.

3.2. The Sets of Evaluation Index

(1) Types of index

The elements that show the individual information are called index. The second part analyzes that there are a lot of factors influencing the libraries information service based on knowledge management. And the selection of evaluation indexes is appropriate or not will directly affect the evaluation results. According to the difference of objectivity, evaluation indexes can be divided into the following three categories: objective index, semi-objective and or semi-empirical index and subjective or purely empirical index. Usually, objective index refers to the objective data related to the actual situation of the libraries; semi-objective or semi-empirical index is the semi-objective data that obtained by calculating or comparing the experience and formula; subjective or purely empirical index is the data item that is established by the analysis in accordance with certain rules or experience.

Each of the above three indexes must be defined clearly in order to achieve the accurate information. The types of the index in this paper are the three mentioned above. In

the evaluation, some indexes are divided into two steps, namely: the first step is to give a fuzzy quantified level concept; the second step is to give a relatively proper score from the fuzzy quantization range (such as A is defined as 90 - 100; B is defined as 80 - 89).

(2) The selection steps of the information service evaluation index of universities libraries based on knowledge management

According to element set that effects the knowledge management evaluation and the design principle of evaluation index, Delphi method was used to choose a performance evaluation index set of libraries based on knowledge management. In this study, the person, some university library curators and experts are invited to join in the program. They are asked to fully understand the library management model based on knowledge management and fully analyze the related theory at the very beginning. Then, each index is screened which is scored in pairs.

The scoring procedures specifically as follows:

- ① To distribute relevant information to the experts (consisting of elements and the index system of this study), and ask the experts to read and analyze the data in a month.
- ② Convene the experts to discuss the related issues of libraries management based on knowledge management, so that to reach a certain consensus between the relevant theory and logic relationships among “knowledge management, library, performance evaluation” and to reach a basic consensus in the two basic questions that “knowledge management and libraries’ development” and “knowledge management performance foundation”.
- ③ Require every expert to choose the most important and least important index from the index set.
- ④ If there is a significant difference (more than 70% experts believe it is the most important, but 20% experts believe it is the least important), then the index will be removed and form a new index set.
- ⑤ Repeat the step3 and step 4 above, until there is no index can be eliminated, then gets a preliminary selected index set.
- ⑥ When obtain the preliminary selected index set, according to the survey data we obtained and the theory and practice of libraries’ management based on knowledge management, the integrity analysis of index should

be carried out. If it is found that the index is not perfect, the expert group should have a discussion and add the lacked index, then repeat the step3 and step 4 to continue screening to guarantee to get a complete preliminary selected index set.

- ⑦ Each expert needs to scores every index independently, and the scoring criteria are “equally important, more important, much more important, more important, extreme important.”
- ⑧ If there is no significance difference between the scores the experts give, then carry out the matrix operation of the scoring results to test the all consistency ratio CR.
- ⑨ If $CR > 0.10$, then analyze the point which has the greatest influence to the scoring results and feedback it to the experts, and turn to step 7, to ask the experts consider the results and give a new score.
- ⑩ If $CR < 0.10$ in all the conditions, then collect and summarize the scoring results and to take on value weighted by CR reciprocal average for the subtle differences. In such way, the integrated scoring results are obtained, which is the combination of the experts’ wisdom and in accordance with the consistent conditions.

3.3. Index Evaluation System

Library management based on the knowledge management has its own uniqueness, which knowledge management goal is not the same with enterprises, so the evaluation indexes are different between them. In the guidance of the goal, according to the definition, connotation, objectives and related activities of knowledge management, following the five principles of designing information service evaluation index of knowledge management, in accordance with the actual situation of library management, this paper argues that the library performance based on knowledge management mainly consists of the service infrastructure, service platform, service personnel, service content, service effectiveness. These six elements are the six dimensions that constitute the first-level index of the index system. And, these six aspects are reflected by different elements and every element has the index that characterizes its attribute. The combination of these elements constitutes the twelve second-level indexes and forty-eight third-level indexes of the library information service evaluation based on knowledge management (see Table 1).

Table 1. Three levels index of information service evaluation of universities libraries based on knowledge management

Evaluation target	First-level index Ai	Second-level index Bi	Third-level index Ci
Information service evaluation index of universities libraries based	A1 Services infrastructure	B1 Technical support	C1 Stability of hardware C2 Stability of software C3 Response speed
		B2 Structure	C4 Organizational improvement degree C5 Organizational learning capability

on knowledge management		C6 Leadership
		C7 Degree of knowledge exchange
		C8 Organizational innovation atmosphere
		C9 Completeness of information resources
	B3 Resource construction	C10 Availability of information resources
		C11 Pertinence of information resources
		C12 Timeliness of information resources
A2 Service platform		C13 Usability of the system
	B4 Knowledge management system	C14 Knowledge-sharing capabilities of the system
		C15 System maintenance capabilities
		C16 System intelligence agent capabilities
	B5 Quality of librarians	C17 Information awareness
		C18 Service specification
		C19 Professional quality
		C20 Service attitude
A3 Service personnel		C21 Education and training of librarians
		C22 Librarians satisfaction
	B6 Competitiveness of librarians	C23 Match degree between librarian's knowledge structure ability and his/her post
		C2 The amount of per capita value creation of librarians
	B7 Service content of traditional knowledge	C25 Borrowing and returning books service
		C26 Periodical service
		C27 Knowledge push service
A4 Service content		C28 Knowledge consulting service
	B8 New knowledge service content under Web2.0	C29 Knowledge navigation service
		C30 Knowledge retrieval service
		C31 Knowledge personalized service
	B9 Traditional service mode	C32 Knowledge novelty
		C33 Interlibrary loaning
A5 Service mode		C34 Education and training of users
	B10 New knowledge service mode under Web2.0	C35 Unified search platform
		C36 Integration of library resource
		C37 Timeliness of information
		C38 Accuracy of information
	B10 Information quality	C39 Usability of information
		C40 Pertinence OF information
		C41 Effectiveness of information
A6 Service effectiveness		C42 System Compatibility
	B11 System quality	C43 System functionality
		C44 System availability
		C45 User information security
	B12 Service quality	C46 Smooth of obtaining information
		C47 Personalized customer service
		C48 Customer satisfaction

At present, no matter from the perspective of concept, connotation, mode, or the management system, profound changes have taken place, which determines the service mode of universities libraries knowledge service institution serviced for the multi subject. And the management system and operation mechanism will be changed. Therefore, the evaluation to the universities libraries should also take the standpoint of advancing with the times, adapt to the changes of the times, to evaluate the knowledge service of universities libraries with the view of development. Enhance the innovation capability and effi-

ciency of universities libraries to achieve the optimal allocation of information resources.

5. Conclusion

In this paper, through the study of knowledge management and knowledge management information service evaluation theory, the first-level, second-level and third-level index of information service evaluation of libraries based on knowledge management are established. The information service evaluation method of libraries based on knowledge management proposed in the paper has

strong operational and practical. It combines the evaluation information of language form and numerical form to make the final evaluation results comprehensive. But the libraries information service evaluation based on knowledge management is a systematic engineering which involves a lot of complex elements. So, it need the support of the large amounts of collected data, the guarantee of the expedite information discussion and communication channel. As well as it need to modify the evaluation index through the constantly experiment and feedback in the practice of libraries' knowledge management.

The research of this paper just is a preliminary study on the information service evaluation of libraries based on knowledge management. It tries to establish a more complete and reasonable information service evaluation index based on knowledge management, aiming to help library

managers to make knowledge management strategy and explore a feasible and technical route for the quantitative research of libraries management based on knowledge management.

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