

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(15), 2014 [8875-8879]

Research on the role of learning, memory and adaptive abilities in the process of building library evaluation model

Langyu Xiong

Information Resources Management College of Renmin University of China, Beijing, 100872, (CHINA)

Visiting scholar of the Indiana University of States

ABSTRACT

With the development of information technology, library website has become the window of the modern university library to show yourself, the traditional library service quality evaluation standard and evaluation method has been difficult to meet their needs, and the aim of library service has changed to "reader first and service first". To improve the construction quality of modern university library, it is necessary to establish a scientific, reasonable and perfect evaluation model, so as to y improve the quality of its service effectively. As a kind of advanced technology, BP neural network model applied to the evaluation of university library in the process of building model, which can realize rapid and accurate evaluation of the university library website from the aspects of learning, memory and adaptive, it also can improve the quality of library website construction. This article mainly expounds the necessity of library service quality evaluation, and proposed the ways and methods of the library evaluation model based on the user.

KEYWORDS

Library; Evaluation model; Neural network technology; BP neural network model; Learning; Memory; The adaptive ability.



INTRODUCTION

In traditional library service quality evaluation standard is mainly based on the museum's business level and the working conditions, the service quality evaluation is not really reflect the demand of people's attention, which also do not take the user satisfaction survey, and the traditional library service quality evaluation method needs a lot of manpower and material resources, and also has a low efficiency. With the rapid development of information technology, great changes have taken place in the role of university library, the service concept is from the traditional "based on books management" into "people-oriented", in the center of the service concept is more and more attention to the user's position. In this case, the traditional library service quality evaluation criterion has not accord with the requirement of the era of library, which requires the library must develop a set of more scientific and reasonable, flexible and intelligent service quality evaluation standard to evaluate the library work and guidance, and improve the work efficiency and quality of library. Neural network technology is applied in the construction of university library service quality evaluation model of intelligent can effectively improve the quality of evaluation system, which has important meaning for the development of the library in the future.

THE NECESSITY OF LIBRARY SERVICE QUALITY EVALUATION

Library is an academic institution with research and teaching, so it has an important role in college teaching infrastructure, the construction and development level of higher school library can fully reflect the overall level of schools, therefore it should strengthen its management and construction, so as to make it adapted to the construction and development of school. Now the society has been advocated "people-oriented", pay attention to person's demand, university library as a collection of scientific research and teaching as a whole, which should play its important role in the construction of a harmonious society and building a harmonious campus, a focus on the needs of the care, adhere to the "people-oriented" service concept, on the basis of respect for the readers, readers care provide convenience for readers to the greatest extent, but also actively communicate with readers, in communication always gems equal attitude, kind, warm, so that they can make the reader service in the library of spiritual life of joy and harvest, to find a spiritual home full of humanistic care in^[1]. For a long time, all countries in the world for a lot of research on the evaluation work of the library, also made a lot of effort in our country, and through a variety of assessment activities for the library management goal and direction of management to provide the correct guidance, to a large extent, promote the development of library cause. But these evaluation content mainly around the library organization management and the working conditions and so on, especially focuses on the working condition, in the construction of literature resources construction, fund input, etc. thus ignore the construction of the library is the most important goal of people. Readers as an object of library service in the library service quality evaluation should play the role of the most important, if the library service evaluation in the reader's feeling and perception evaluation excluded, so will lead to the library in the improvement of service quality is difficult to achieve good effect, to enhance the efficiency of service also is impossible, let alone to objectively reflect the real library "people-oriented" service concept. Overall electronic resources evaluation model of library based on the user satisfaction is shown as Figure 1.

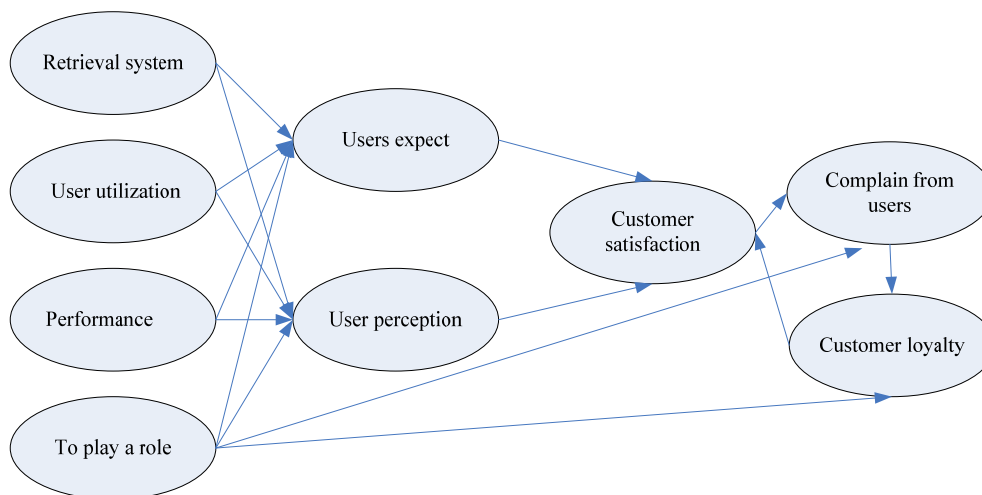


Figure 1 : Overall electronic resources evaluation model of library based on the user satisfaction

So, to really improve the quality of service of university library, which is the key point is must establish a scientific university library service quality evaluation method (shown in Figure.1). Only using scientific methods to evaluate quality of service, the library can only be from the reader's position to carry out evaluation, based on the real implementation of the service of the supervision and management mechanism, incentive and constraint function, to constantly improve the level of library service and quality for readers.

THE ANALYSIS OF THE BUILD OF LIBRARY EVALUATION MODEL BASED ON USER

The basic principle of BP neural network

Neural network is a kind of good self-learning and adaptive, associative memory and parallel processing ability and other characteristics of the network system, it mainly through simulation's brain information processing methods, implementation of information receiving, processing and nonlinear transformation, which contains a large number of interconnected neurons, therefore is more complex. At this stage of the neural network model of BP neural network is one of the most popular, has received the widespread attention. Study of BP neural network can be done from its structure, through the observation, we can find it belongs to the typical forward network, a part is more complex, mainly including the input layer and output layer and several hidden layers, between layer and layer, namely the neurons are connected, and in the neighboring neurons form full interconnection relations. In BP neural network, the most typical and the most common type is composed of input layer, output layer and three layer network composed of a hidden layer, this is mainly because it has a relatively perfect theory^[2]. BP algorithm is mainly refers to adopt the method of error back propagation calculation. The working principle is shown in Figure 2. Its working principle is shown in figure 1. In the work process, each sample a network of desired output and the actual output value and expected output and there is a certain deviation between the actual input vector, and thus to reduce the deviation error, requires connection between nodes in each layer of the weight and threshold of regulation and control, and through continuous learning training, determine the weights and thresholds, such indicators is effective, can provide guidance for the evaluation model, and then establish the linear relationship between user satisfaction evaluation and its influencing factors, finally realizes the evaluation of reader satisfaction^[3]. By means of library evaluation based on BP neural network model can maximum limit eliminating human and weight values are uncertain factors in the process of the correlation coefficient and the influence of subjective factors.

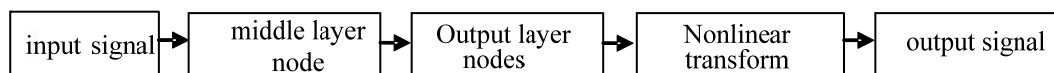


Figure 2 : The working principle of BP algorithm

Intelligent library service quality evaluation methods

User is the ultimate users of the library service, library resources and services in the evaluation of their optimal age of voice, and the most practical, only in this way can truly achieve the purpose of service effect. Therefore, the university library service quality evaluation should be based on user experience, by comparing the user expectations of the library service and the actual feeling of services to improve the service work.

According to the well-established library overall electronic resources evaluation model based on user satisfaction, the evaluation index system is divided into four levels, each level of evaluation is launched by a layer of evaluation, and on a level evaluation results of the evaluation by the evaluation of the next layer and is reflected. The "customer satisfaction" is the total of the assessment objectives for a target. User expectations and user perception are two indicators, namely the second level. The second layer is expanded into specific three indicators, namely the third level. Three indicators can expand the key point for questionnaire design, forming a four-index evaluation system, namely the fourth level. Four indicators can form specific and complete a questionnaire based on the designed key points. To apply the BP neural network technology application in library service quality evaluation, can implement the intelligent of the evaluation system from the aspects such as learning and memory, adaptive ability^[4].

The construction of library service quality evaluation system

In order to build the most perfect, the most scientific and practical library service quality evaluation model, in its service quality evaluation index system we must give full consideration to all aspects of the factors, which mainly includes the following several aspects: one is that the level of comprehensive evaluation in the process of information service, service ability, information resources and service effect, etc.; The second is to make the, to pay attention in the evaluation system of "three unified", the unity of the subjective factors and objective factors, respectively, the unification of the recessive and dominant factors, and the unity of the dynamic factors and static factors^[5]. The specific indicators are shown in Figure 3. In this structure system, X1, said the x1 ~ x3, respectively, represents the service personnel quality, infrastructure, as well as the library homepage, x4 ~ x6, subject portal, respectively, represents the database as well as the literature resources, x7 ~ x12 respectively represent digital reference consultation, personalized service, a remote service, information retrieval and interlibrary loan and document delivery and subject information service, x13 ~ x15 respectively represent information completeness, information needs satisfied rate and timeliness information service^[6].

BP neural network model of library service quality evaluation

From the above we can see in the service quality evaluation system of it has 15 indicators for evaluation of the quality of service, each index and evaluation target with excellent, good, poor, but, in the five grade evaluation [8]. Evaluation indexes in the process of evaluation, we will award to him for 1 ~ 5 corresponding numerical differential regulation, TABLE 1 is in the data of the measurement from the user's part of the learning samples. The BP neural network, the number of input layer consists of 15 units respectively represent different evaluation index; Output layer consists of five elements, they respectively

represent five evaluation target level. In the process of research we select 30 samples as the training sample, the sample were under different conditions, we can get by calculation when the number of neurons for 24, its effect will be the best.

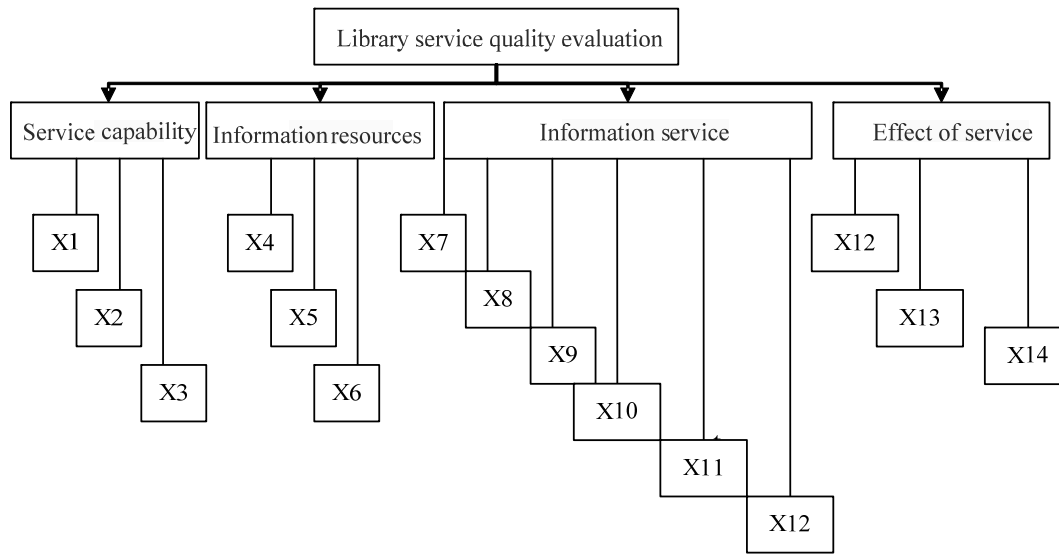


Figure 3 : Library service quality evaluation index system

TABLE 1 : Part of learning samples

N	Evaluation index															X	al	go
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
1											1	1	1	1	1	2	Be	
2											1	1	2	1	1	1	Be	
3											1	1	1	2	1	1	Go	
4											1	1	2	1	1	1	Go	
5											1	3	1	1	2	1	Mi	
6											2	1	1	1	3	4	mi	
7											1	4	5	3	2	2	pre	
8											4	3	4	5	4	3	po	

Which can be determined based on the BP neural network structure of library evaluation model is shown in Figure4.

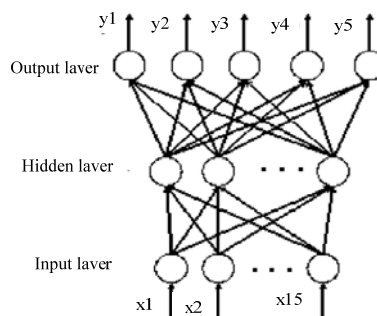


Figure 4 : Model diagram

CONCLUSION

University library is an efficient operation of the comprehensive service system, it not only has strong comprehensive, high degree of specialization of the technical department, but also has high creativity, personality color strong services sector, its inner link is very complicated. All along, the library is very concerned about the library service quality evaluation. At present domestic studies of college library service quality evaluation method mainly is for the reference to the existing evaluation system abroad, more with the method of self-assessment, this leads to its evaluation has some limitations, and imperfect, assessment result is lack of horizontal and vertical comparison. In the process of building the library evaluation model based on user we offered to the user experience and perception as library service quality is the decisive factor, is a kind of easy to longitudinal analysis and interlibrary transverse comparison of the general evaluation tools, to promote the improvement of library service quality has a positive meaning.

REFERENCES

- [1] Zhang Xiuhua, Gao wei; The performance evaluation and empirical study on the library based on the GA BPNN combination model [J], *Journal of intelligence*, **31(8)**, 890-896 (2012).
- [2] Sun Dacheng, Sun Yingyan, Sun Changli etc; Evaluation model based on BP neural network readers meet rate research [J], *Computer and modernization*, **7**, 155-156159 (2012).
- [3] Zhang Xiuhua, Xin Jiangmei; The study of the compound library collection quality evaluation based on rough sets and BP neural network of the [J], *Journal of theory and practice of intelligence*, **32(11)**, 107-111 (2009).
- [4] FuBing Chen Lianmei; Reference librarians quality based on BP neural network evaluation model [J], *Modern intelligence*, **31(8)**, 91-93 (2011).
- [5] Jia Jie, Peng Zhi-qi; The study of the evaluate system library reader satisfaction based on BP neural network. [J], *Journal of library intelligence*, **21**, 84-87 (2010).
- [6] Sun Dacheng, Sun Changli, Lu Guoqiang etc; The electronic data library's services evaluation model Based on the BP neural network [J]. *Value engineering*, **31(7)**, 119-120 (2012).
- [7] Kang Lifeng; Research on the library reader satisfaction evaluation system based on RBF neural network [J], *Journal of intelligence research*, **11**, 34-37 (2012).
- [8] FuBing; Library website evaluation method based on BP neural network [J], *Modern computer: the second edition*, **16**, 31-9 (2012).