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Study on the evaluating indicators and the methods of sports websites

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ABSTRACT

This paper makes a classification of the resources of sports websites as well as a summary of its basic characteristics. Besides, it optimizes the evaluation program to determine the evaluating indicators based on the research achievements of information resource evaluation, medical information evaluation and so on. Especially for the choice of evaluation methods, more attention about transfer and innovation will be paid on. Then The AHP-FCE, the combination of qualitative and quantitative methods, is proposed to overcome the weaknesses of common evaluation methods such as network user evaluation and network measurement method. And the reliability and scientific are tested by expertise experience as well as mathematical models, in this way can we fill the theoretical gaps of information resource evaluation about sports network of our country, promote the innovation and reform of information resources evaluation, and expand its new ideas. It is also expected to arouse the enthusiasm about sports network information resources by showing the research process, encouraging researchers to find new ideas from a novel research perspective and method.

Key words: Sport, network, evaluation, indicators, method

INTRODUCTION

China's sports circle has attached great importance to the construction, development and use of online information resources since China's formal connection to the Internet in 1994. And nowadays, the fast development of network wills definitely results in the hot research on the evaluation of information resources network.

Some achievements about the research and exploration of website evaluation have been made abroad both in practice and academic fields, especially in the U.S, whose website resource evaluation has set up separate research institutions and researchers have made a comprehensive study. Such as the Current Web Contents, founded by the ISI (Institute for Scientific Information), and Reference Librarian, a subsidiary of the American Library Association, as well as the Machine Assisted Reference Section of User Services Association, all have kept evaluating the internet information resources since 1999. From 1994, Australian National University makes an evaluation once a year about some academic website forms the aspects of quality, structure, design and so on. For evaluation indicators of network information resources, relatively more perfect evaluation systems have been put forward by some foreign researchers such as Robert Harris, the American professor at the University of California, David Stoker and Alison Cooke, who all proposed the evaluation indicators of network information resources from different angles.

At present, the domestic researches only focus on the development of sports information networking and the introduction of development situation of network information resources abroad, lacking relative researches on the evaluation of sports websites resources. Therefore, a lot of effects needed to be made both theoretically and practically. This paper attempts to make research on the basic evaluation of sports network information resource, in order to fill the domestic research gaps as well as provide a reference model and valuable experience for the evaluation in other fields.

THE SELECTION PROCEDURE OF THE EVALUATIONG INDICATORS ABOUT SPORTS WEBSITES RESOURCES

2.1 The primary indicator

The evaluation preliminarily proposed is of large amount, so they should be screened for fear of missing any important factor. It should classify and merge the indicators which do not meet the requirements of the design principles or fail to reflect the essential characteristics of an object, such as the ones which are mutually included, mutually contrasted, or mutually reinforced, while preserve the indicators which gear to the need of the principles and reflections.

The principles of screening are: the indicators of the same system or level should be merged; the indicators which have causal relationship should be left out the results; the indicators which are mutually contrasted should prefer the reasonable one; and the indicators of poor operability should be replaced. The specific methods which are commonly used are: the methods of experience, survey statistics, and correlation analysis.

2.2 Screening indicator

It can initially form indicator system for the screened indicators. In order to ensure the quality, they should be further tested by experts, during which the Delphi method will be used. Also known as the expert consultation, the method named after Delphi, a place situated the temple of Apollo in ancient Greek, and reflects the revelation of God. With the control of feedback, it can make the expert opinion gathered more reliable.

Delphi method avoids the weaknesses of the expert meeting during which experts lack face to face interaction and direct exchange of views. Therefore, consensus can be reached without mutual influence and special influence of some authorities, in this way it can not only guarantee the formation of deliberated thoughts but also ensure the appearance of original insights. In addition, the popular approach uses the method of mathematical statistics and carries out the quantitative processing about expert advice, which will reach agreement at last.

Using the form of questionnaire, Delphi method at first seeks the views of experts anonymously, and then distributes the views to the experts again as reference materials after collection. It will not determine the evaluation unless the consensus is reached even through repeated process.

2.3 Index reduction

Delphi method, with a high degree of validity, reliability, simplicity and broad applicability, also has its limitations which mainly reflect in that its results are only aimed at the evaluation factors from the layer and also easily influenced by subjective judgment. Although fully reflecting the characteristics of the study, multi-index will increase the difficulty and complexity of analysis as well as application. To the contrary, the principal component analysis can not only retains the information reflected by the indicators as much as possible, but also uses a relatively small number of indicators to replace the numerous ones. Using the eigenvalues of correlation matrix (The variance contribution of the main component), the principal component analysis calculate the contribution rate of the main component and streamline the existing index system according to the rate.

THE SELECTION OF THE EVALUATION METHODS OF SPORTS WEBSITES RESOURCES

3.1 The analysis of the common evaluation methods

3.1.1 The network user evaluation method

By using the method of user evaluation, relevant evaluation index system and methods are provided to the user by the professional bodies associated with network information resource evaluation, and then the user will select their evaluation index and method which they needed to evaluate the information resources. Instead of replacing the users, the evaluation bodies only inform or guide the user to evaluate, which will helps the user to collect information in full compliance with its own specific needs and improve the quality of the network information filtered. However, the method will also increase the burden of the user as it requires the identification and evaluation of every physical network information resources (websites, web pages, web documents, etc.). What's more, it also affects the development and the full use of network academic information resources to a certain extent for it is the user but not professional organization who will assume the responsibility of resource discovery and evaluation.

3.1.2 Network measurement method (cyber metrics or web metrics)

Currently, the Network measurement method represents the developmental direction of information metrology. It belongs to the quantitative evaluation methods and listed separately in this paper owing to lack of classification standards.

Network measurement method to some extent overcomes the subjectivity and bias of user method and has a quality

of more convenient, faster, more objective and more extensive. In recent years, some foreign scholars have begun to explore the methods about the quantitative research of network characteristics. For example, LaPorte [4] emphasizes the importance of network information resources through calculating the frequency the information retrieved or referenced. Kleinberg [5] has developed a software system, which mainly used to find the excellent sites among the specific topics and compare them with the commercial site directory complicated by human. And this system can show more quick and complete ability in resource discovery. The system distinguishes two types of websites: the websites which mainly publish original information and the websites which contain a large number of links of the former. And the more authoritative sites have more links within their subject area.

From the analysis above, the evaluation of network information resources can not fully get rid of the qualitative methods, and both qualitative and quantitative methods should be combined. Therefore, in order to overcome the weaknesses, this paper adopts both the two methods into the study.

3.2 The study of the evaluation method about comprehensive integrated quantitative (AHP-FCE method)

AHP - FCE method is suitable for the evaluation of information resources and its evaluation process are following: First, it calculates the weight of each layered body to eliminate the influence of subjective bias of expert evaluation with the Analytic Hierarchy Process (The Analytical Process, AHP). Then it processes them with FCE (Fuzzy Comprehensive Evaluation, FCE). And finally, it gets the evaluation results by non-dimensional treatment and weighted synthesis according to some certain rules.

Step 1:

According to the actual situation of research evaluation system, it should establish evaluation index system from the aspect of representative, system and application, then builds subjectively fuzzy evaluation matrix of single evaluation index based on the sample data of each evaluation. The ultimate aim of the fuzzy evaluation matrix is to make comparison among various m schemes in a domain and choose the more suitable one, which has no relation with other schemes outside the domain. And it can determine the relative membership degree, relatively excellent program and relatively inferior program. Usually, supposed that n evaluating indicators constitute data sample set $\{x(i,j) \mid i=1\square n, j=1\square m\}$ of evaluation index m and each index values $\{x(i,j)\}$ are non-negative. In order to determine the fuzzy evaluation matrix of single evaluation index and eliminate the dimensional effect of each evaluating indicators, it should carry on the standardized processing of sample data sets $\{x(i,j)\}$. For keeping the changing information of each evaluating indicator, the standardized formula for much bigger and much better type of indicators can be taken:

$$r(i,j)=x(ij)\Big/\left[x_{\max}(i)+x_{\min}(i)\right] \tag{1}$$

The standardized formula for much smaller and much better type of indicators can be taken:

$$r(i,j)=\left[x_{\max}(i)+x_{\min}(i)-x(i,j)\right]\Big/\left[x_{\max}(i)+x_{\min}(i)\right] \tag{2}$$

The standardized formula for more middle and much better type of indicators can be taken:

$$r(i,j)=\begin{cases} x(i,j)\Big/\left[x_{mid}(i)+x_{\min}(i)\right], x_{\min}(i)\le x(i,j)\le x_{mid}(i) \\ \left[x_{\max}(i)+x_{mid}(i)-x(i,j)\right]\Big/\left[x_{\max}(i)+x_{mid}(i)\right], \\ x_{mid}(i)\le x(i,j)\le x_{\max}(i) \end{cases} \tag{3}$$

In this formula, $x_{\min}(i), x_{mid}(i), x_{\max}(i),$ are respectively the minimum, middle optimum and maximum of the i-th indicator in the scheme. $r(i,j)$ is the evaluation value after standardization, or the relative membership value of the i-th evaluating indicator in the j-th scheme., $i=1\square n, j=1\square m$. These values $r(i,j)$ can constitute the fuzzy evaluation matrix $R=(r(i,j))_{n\times m}$ of single evaluation.

Step 2:

According to the structure of fuzzy evaluation matrix $R=(r(i,j))_{n\times m}$, it can determine the judgment matrix of the weight of each evaluating indicator $B=(b_{ij})_{n\times m}$. The essence of fuzzy comprehensive evaluation is the optimization process. From the perspective of comprehensive evaluation, if the degree of change of samples $\{r(i1,j)\mid j=1\square m\}$ in evaluating indicator i1 is greater than the samples $\{r(i2,j)\mid j=1\square m\}$ in evaluating indicator i2, the evaluation information i1 transmitted are more than that of i2. Based on this, sample standard deviation $s(i)=\left[\sum_{j=1}^{m}(r(i,j)-\bar{r})^2/m\right]^{0.5}$ of each evaluating indicator can be used to reflect the degree of impact on the comprehensive evaluation by each evaluating indicator and the construction of judgment matrix B. $\bar{r_i}=\sum_{j=1}^{m}x(i,j)/m$ is the mean of each evaluation sample series, $i=1\square n$.

$$b_{ij}=\begin{cases}\dfrac{s(i)-s(j)}{s_{\max}-s_{\min}}(b_m-1),s(i)\geq s(j)\\ 1\Big/\left[\dfrac{s(i)-s(j)}{s_{\max}-s_{\min}}(b_m-1)\right],s(i)\prec s(j)\end{cases} \tag{4}$$

In this formula, $s_{\max},s_{\min}$ are respectively the maximum and the minimum of $\{s(i)\mid i=1\square n\}$, The parameter value of relatively important degree is $b_m=\min\{9,\mathrm{int}[s_{\max}/s_{\min}+0.5]\}$, $\min,\mathrm{int}$ mean taking the minimum function and the Integer function.
Therefore, the judgment matrix of judgment scale of 1:9 levels can be got according to the equation four.

Step 3:

The test and correction of judgment matrix B as well as the calculation of weights $\omega_i(i=1\square n)$ should meet the requirements: $\omega_i\succ 0,\sum_{i=1}^{n}\omega_i=1$. According to the definition of judgment matrix B, theoretically it can get:

$$b_{ij}=\omega_i/\omega_j\quad(i,j=1\square n) \tag{5}$$

Judgment matrix B has the following characteristics: (1) $b_{ii}=\omega_i/\omega_i=1$; (2) $b_{ji}=\omega_j/\omega_i$; (3) $b_{ij}b_{jk}=(\omega_i/\omega_j)(\omega_j/\omega_k)=\omega_i/\omega_k=b_{ik}$. Among them, Characteristic (1) is the unit of judgment matrix; Characteristic(2) is the inverse matrix(reciprocity) of judgment matrix; Characteristic(3) is the consistency condition of judgment matrix, which means correlation can be quantitatively transferred.

Now the judgment matrix $B=(b_{ij})_{n\times n}$ is known, and the weight of each index value $B=(b_{ij})_{n\times n}$ is to be calculated. If judgment matrix $B=(b_{ij})_{n\times n}$ meets the requirements of formula (5), decision makers can accurately measure $b_{ij}=\omega_i/\omega_j$, If judgment matrix has full consistency, therefore:

$$\sum_{i=1}^{n}\sum_{j=1}^{n}\left|b_{ij}\omega_j-\omega_i\right|=0 \tag{6}$$

In this formula, $|\ |$ means absolute value. Owing to the diversity of evaluation system, the diversity of people's understanding as well as the sidedness and instability of subjectivity, the consistency conditions of judgment matrix

B does not fully meet the conditions that it is of objective existence and can't be completely eliminated in practical application. AHP method only requires the satisfactory consistency of judgment matrix B to adjust to a variety of complex systems. If B does not have a satisfactory consistency, it needed to be corrected. Set the correction matrix of B is $Y=\{y_{ij}\}_{n\times n}$, the weight value of Y indexes is $\{\omega_i \mid i=1\sim n\}$, so the minimum Y matrix is the consistency judgment matrix of B in formula (7):

$$\min CIC(n)=\sum_{i=1}^{n}\sum_{j=1}^{n}\left|y_{ij}-b_{ij}\right|\Big/ n^2+\sum_{i=1}^{n}\sum_{j=1}^{n}\left|y_{ij}\omega_j-\omega_i\right|\Big/ n^2 \tag{7}$$

$$s.t.\quad y_{ii=1(i=1\sim n)}$$

$$1\Big/ y_{ji}=y_{ij}\in\left[b_{ij}-db_{ij},b_{ij}+db_{ij}\right](i=1\sim n,\ j=i+1\sim n)$$

In this formula, the objective function CIC(n) is called Consistency Index Coefficient; d is non-negative parameter, which can selected from $[0,0.5]$ based on the experience; the remaining symbols are the same before. For judgment matrix n with different orders, its consistency coefficient value $CIC(n)$ is also different. In order to measure whether the determine matrix has the satisfactory consistency, the mean random consistency index value $RIC(n)$ of determine matrix is introduced in table 1.

Table 1: Coefficient of the mean random consistency index value $RIC(n)$

Order number n	3	4	5	6	7	8	9
$RIC(n)$	0.578	0.487	0.451	0.377	0.321	0.308	0.277

A lot of practical experience shows that: The judgment matrix can be considered to have satisfied consistency when the consistency index coefficient of judgment matrix is $CIC(n)\prec 0.10$. And whereby the weight value $\omega_i(i=1\sim n)$ of each evaluating indicator calculated is acceptable, therefore the parameters d is needed to be improved until the satisfactory consistency is reached.

Step 4:

Multiplying and accumulating the weight value ω_i of each evaluation index and relative membership values $r(i,j)$ of each program, it can get the comprehensive index value $Z(j)$ of fuzzy comprehensive evaluation.

$$Z(j)=\sum_{i=1}^{n}\omega_i r(i,j)\qquad (j=1\sim m) \tag{8}$$

The higher comprehensive index value $Z(j)$ means the more excellent of the j-th scheme, basing on which it can sort or make evaluation studies.

In summary, AHP-FCE method is to establish hierarchical structure model about the various elements of complex system to be evaluated in according to their subordinated relations and construct judgment matrix of comparison in pairs, basing on which it can calculates the weights of various elements as well as testify the consistency of judgment matrix. Studies have shown that the correction magnitude of AHP-FCE method is smaller than other methods currently proposed, while its calculation result of weight is consistent with the majority of the correction method, which shows that AHP-FCE method has imploded the information of original judgment matrix as mush as possible.

THE APPLICATION OF AHP-FCE METHOD

Step 1: the establishment of a hierarchical model which shown in Figure 1.

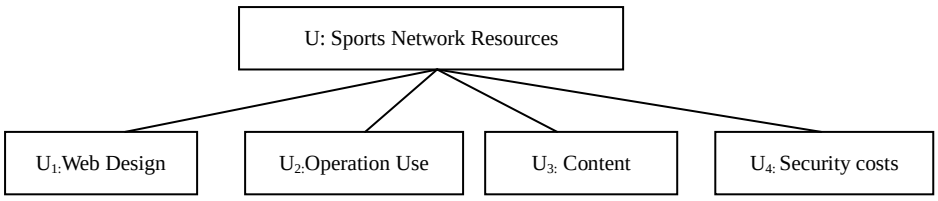

Fig. 1 The figure of hierarchical tree structure

Step 2:
The judgment matrix of four first-level indicators structure is shown in Table 2.

Table 2. first-level indicators structure

U	U_1	U_2	U_3	U_4
U_1	1	$1/5$	$1/7$	$1/3$
U_2	5	1	$1/2$	2
U_3	7	2	1	4
U_4	3	$1/2$	$1/4$	1

According to the calculation method of the steps and the plot, the judgment matrix after normalization is:

$$\begin{bmatrix} 0.0625 & 0.0541 & 0.0755 & 0.0454 \\ 0.3125 & 0.2703 & 0.2645 & 0.2728 \\ 0.4375 & 0.5405 & 0.5291 & 0.5457 \\ 0.1875 & 0.1351 & 0.3123 & 0.1364 \end{bmatrix}$$

Adding the judgment matrix after normalization in terms of row, it can get a column matrix composed by numbers $\begin{bmatrix} 0.2375 \\ 1.1201 \\ 2.0528 \\ 0.7713 \end{bmatrix}$. After the further normalization of the the previous matrix, it can get $\begin{bmatrix} 0.0568 \\ 0.2679 \\ 0.4909 \\ 0.1844 \end{bmatrix}$. Multiplying this matrix with matrix multiplication, it can get largest eigenvalue of judgment matrix $\lambda_{\max} = 4.0373$, and the consistency index $CI = \frac{\lambda_{\max} - 4}{4-1} = 0.0093$. To test whether the judgment matrix has satisfactory consistency, comparation needed to be made between CI and average consistency index RI. As the average random consistency index of 4-order matrix is 0.90, so $CR = \frac{CI}{RI} = \frac{0.0093}{0.90} = 0.01 \prec 0.10$. Therefore, the judgment matrix has satisfactory consistency.

Step 3:
Using the method of AHP, the weight of first level evaluating indicator can be obtained:

$$U = \{U_1, U_2, U_3, U_4\} = \{0.0568, 0.2679, 0.4909, 0.1844\}$$

Step 4:
Repeat the first three steps of the procedure and calculate the weights of each index under first level indicator with the method of analytic hierarchy, the results are following:

$$U_1 = \{u_{11}, u_{12}, \cdots, u_{16}\} = \{0.0212, 0.0067, 0.0132, 0.0078, 0.0052, 0.0026\}$$
$$U_2 = \{u_{21}, u_{22}, u_{23}, u_{24}\} = \{0.0963, 0.0446, 0.0569, 0.0710\};$$
$$U_3 = \{u_{31}, u_{32}, \cdots, u_{36}\} = \{0.0846, 0.1183, 0.0807, 0.0771, 0.0746, 0.0556\};$$
$$U_4 = \{u_{41}, u_{42}\} = \{0.0686, 0.0758, 0.0400\}.$$

Step 5:

Choose six raters and make evaluation about sports network information resources of four sites Z_1, Z_2, Z_3 and Z_4. Take evaluation set, V={Excellent, good, medium, poor}, and adopt quantitative scale: That is excellent: 85-100; good: 75-84 minutes; medium: 60-74 minutes; poor: 60 points or less.

Scoring for the network resources of four sites according to the evaluation criteria and quantitative scale, and then forming the first one-class index-the evaluation matrix of web design's six indicators. The uniform application of percentile during score eliminates the dimensionless, besides, all data are the type of bigger and better, and therefore, the fuzzy evaluation matrix can be got without standardized processing. $R = (r(i, j))_{4\times 6}$, for example (9)

$$R = \begin{pmatrix} 85 & 90 & 80 & 95 & 60 & 70 \\ 95 & 80 & 85 & 60 & 70 & 90 \\ 65 & 75 & 95 & 95 & 65 & 90 \\ 75 & 75 & 80 & 50 & 65 & 75 \end{pmatrix} \tag{9}$$

Step 6:
It can calculate the score of each secondary index according to formula (8) and then get the results of comprehensive evaluation of web resources. Standardized processing can be left out for all dimensions are same during the score. Conduct the multiplication with the judgment matrix and weight matrix of web design's six indicators, then it can obtain the evaluation score about the four site resources of the first person with respect to the first evaluation indicator.

$$Z_{11}^1 = 4.101, Z_{21}^1 = 4.9265, Z_{31}^1 = 4.347, Z_{41}^1 = 3.9095$$

Similarly, it can get the evaluation score of the indicator of web design about the four sites resource from the second person to the sixth.

$$Z_{11}^2 = 4.6485, Z_{21}^2 = 4.258, Z_{31}^3 = 4.4205, Z_{41}^2 = 3.955$$
$$Z_{11}^3 = 4.63, Z_{21}^3 = 4.179, Z_{31}^3 = 4.9255, Z_{41}^3 = 3.852$$
$$Z_{11}^4 = 4.3335, Z_{21}^4 = 4.1435, Z_{31}^4 = 4.972, Z_{41}^4 = 3.374$$
$$Z_{11}^5 = 4.059, Z_{21}^5 = 4.587, Z_{31}^5 = 4.599, Z_{41}^5 = 4.377$$
$$Z_{11}^6 = 4.4895, Z_{21}^6 = 4.5975, Z_{31}^6 = 4.9125, Z_{41}^6 = 3.114$$

$Z_{i1}^j (i = 1,2,3,4; j = 1,2,3,\cdots,6)$ represents the score of the indicator of web design of the i-th site by the j-th reviewer. For $Z_{i1}^j (i = 1,2,3,4; j = 1,2,3,\cdots,6)$, when i is constant, while j changes, you can see the change of assessment scores about the same site by different evaluators.

Calculating $\frac{1}{6}\sum_{j=1}^{6} Z_{11}^{j} = 4.3769$, $\frac{1}{6}\sum_{j=1}^{6} Z_{21}^{j} = 4.4486$, $\frac{1}{6}\sum_{j=1}^{6} Z_{31}^{j} = 4.6961$ and $\frac{1}{6}\sum_{j=1}^{6} Z_{41}^{j} = 3.9303$ at the same time, it can be got the composite score of sports information resources on the indicator of web design, then the sites can find the gap of indicators among themselves through the comparison of the results. Meanwhile, our evaluation subjects can select the site of sports academic information resources according to the scores.

Step 7:

Repeat steps 5 and 6 and calculate sports information resources of the four sites on operation using indicator U_2, content indicator U_3, and the score results in other aspects U_4.

Operation using indicator U_2,:

$$\frac{1}{4}\sum_{j=1}^{4} Z_{12}^{j} = 21.2082, \quad \frac{1}{4}\sum_{j=1}^{4} Z_{22}^{j} = 21.039, \quad \frac{1}{4}\sum_{j=1}^{4} Z_{321}^{j} = 22.1608, \quad \frac{1}{4}\sum_{j=1}^{4} Z_{42}^{j} = 19;$$

Content indicator U_3:

$$\frac{1}{6}\sum_{j=1}^{6} Z_{13}^{j} = 37.5438, \quad \frac{1}{6}\sum_{j=1}^{6} Z_{23}^{j} = 37.9278, \quad \frac{1}{6}\sum_{j=1}^{6} Z_{33}^{j} = 40.4369, \quad \frac{1}{6}\sum_{j=1}^{6} Z_{43}^{j} = 34.7522;$$

The indicator in other aspects U_4:

$$\frac{1}{2}\sum_{j=1}^{2} Z_{24}^{j} = 13.9278, \quad \frac{1}{2}\sum_{j=1}^{2} Z_{34}^{j} = 14.9467, \quad \frac{1}{2}\sum_{j=1}^{2} Z_{44}^{j} = 13.4488.$$

Step 8:

Obtain the composite score of the four sites resources through the results from the three steps above.

$$Z_1 = 4.3769 + 21.2082 + 37.5438 + 14.2232 = 77.3521,$$
$$Z_2 = 4.4486 = 21.039 = 37.9278 + 13.9278 = 77.3432,$$
$$Z_3 = 4.6961 + 22.1608 + 40.4369 + 14.9467 = 82.2405,$$
$$Z_4 = 3.9303 + 19 + 34.7522 + 13.448 = 71.1313,$$

So the sequencing of the four sites are: $Z_3 \succ Z_1 \succ Z_2 \succ Z_4$.

By adopting the method of AHP - FCE, people have easier access to building suitable core sites by choosing the top two or three sites resource. People can find appropriate sports information from the carefully chose sites resources, which not only facilitates the query information but also meets the needs of their queries, offering help for people to keep abreast of the direction of sports development.

CONCLUSION

In the sports network information resources evaluation, the establishment of evaluation and assessment are foundation and core. This paper tests the reliability and scientificalness of evaluation methods by expertise as well as mathematical model, providing feasible theoretical method for the choice and use of sport site resources in our country and the constructive information for sports websites. Besides, it demonstrates the feasibility of the operation of evaluation system in practice and effectively guides the professionals to select and use the sports information resources on the network, offering ways and means for the establishment of core network resource site for the sports department or agency at all levels and reference information for sports network site builders. In a word, it will promote the innovation and reform of evaluation and fill the theory blank about sports network site evaluation, thus developing new ideas of sports network site in our country.

REFERENCES

[1] Lennart Bjcrneborn; Peter Ngwersen; *Scientometrics*, **2001**(50), 65-82.

[2] Alastair Smith, Criteria for evaluation of Internet information resources. *http://www.vuw.ac.nzlstaff/alastair smith/evaln/index.htm.*
[3] E. S. Savas. Privatization and Public-Private Partnerships, Seven Bridges Press, **2000**, 44-62.
[4] Mohamed, Sofian Saleh; Mohamed, Salah Al-Bashier; Shalfoh, Ehassan Salem; Fhid, Omran, *J. Chem. Pharm. Res*., **2009**(5), 2512-2516.
[5] Ramegowda, M., *J. Chem. Pharm. Res*., **2013**(5), 182-186.
[6] Zhihua Du, *J. Chem. Pharm. Res*., **2013**(12), 892-897.
[7] Thelwall Mike; Vaughan L, *Annual review of information science and technology,* **2005**(39), 81-135.
[8] Lennart bjcrneborn; Peter Lngwersen, *Scientometrics,* **2001**(50): 65-82.