

Bibliometric Study on Performance Evaluation of Chinese E-Government Website

Erlei Ma¹ Kun Zhao²

¹Information School, Yunnan University of Finance and Economics, Kunming 650221, China. Email: maerlei998@gmail.com

²Modern Education Technology Center, Yunnan University of Finance and Economics, Kunming 650221, China

Abstract

This paper uses bibliometric methodology to study the performance evaluation of e-government website in China from 1999 to 2009. Data are collected through academic journals published in last ten years. Analysis is performed from the aspects of publishing date, publishing journals, research institutes, research topics and authors of the papers. Through the analysis, this paper reveals the situation and existing problems in the area of e-government website performance evaluation research. Several key issues related to the research are also discussed.

Keywords: E-Government, Performance Evaluation, Bibliometric methodology

1. Introduction

Electronic government website in China is developing rapidly in latest ten years. According to the e-government website statistic report (2009) released by the Chinese Government, the number of the government websites reaches 54,974 in 2009. These websites cover all provinces and cities. On one hand, the emergence of large number of government websites reflects the rapidly development of e-government in last ten years, on the other hand, operation performances of these sites is concerned much both by academic research and real practice.

E-government needs performance evaluation, which has become a consensus among academics and practice. Therefore, the debate on if we need performance evaluation is no longer the focus of the problem, however, assesses what and how to assess is now the hot of the problem. Though research in this area in China just began from recent ten years ago, there are many research works appeared which have been done by many experts and scholars, professional researchers and administrative staffs. A significant achievement has been achieved.

Through analyzing of the research papers related to the e-government performance evaluation by using bibliometric methods, the paper attempts to outline the status, characteristics and trends in the area of research from the aspects of the developments of the research, main topics, research focus, research institutes, researchers, and working journals.

2. Research Materials and Research Methods

Bibliometrics was presented in 1969 by Alan Britchard. Bibliometric methodology use mathematics, statistics and other measurement methods as its research methods. By using bibliometric methodology, we can analyze a research filed from the aspects such as distribution structure, quantitative relationship, variation law

and quantitative management through some bibliometric information of the field, and then gives the structure characteristics and regularity of the field [1]. In recent years, Bibliometrics obtains great attention from researchers and becomes an important branch of information science [2].

This paper uses CNKI, a full text literature database from Chinese academic journals, as search source, and use ‘e-government performance evaluation’ as the key words to search the research papers related to e-government performance evaluation during the period of 1999-2009 in China. There are 79 eligible papers, which don’t include some non-academic papers (forewords, book reviews, meeting minutes). About the co-author papers, only the first authors and their research institutions are considered. For statistical quantitative analysis, a literature database is established for the qual-

ified literatures. Analysis is performed from the aspects of publishing date, working journals, research institutes, research topics and authors of the papers.

3. A brief introduction to the statistics results from bibliometric methods

3.1. Age distribution of the literatures

Table 1 shows that research paper published in journals on the subject of e-government performance evaluation began in 2004. The number of published papers increases year by year. Between 2007 and 2008, the number of papers increased 9 papers, accounting for 11.34 percent of the total papers. The number of papers did not increase many, only increased 22 papers among the last six years.

Year	2004	2005	2006	2007	2008	2009
Papers	2	8	10	13	22	24
Percentage	2.53	10.13	12.66	16.46	27.85	30.38

Table 1: Age distribution of research literatures.

3.2. Journal distribution of the literatures

According to the statistical result, there are 54 journals which publish the research papers related to e-government performance evaluation. There are 46 journals publish only one paper in this field, accounting for 85.18 percent of the total journals. Table 2 shows the journals distribution of the literatures, and ‘E-government’, ‘Information Journal’ and ‘Information Science’ are the most popular journals in the field. These journals publish 23 papers, accounting for 29.11 percent of the total papers. The E-government journal publishes 15 papers, accounting for 18.99 percent of all the papers. This phenomenon meets literature

discrete regular. The discrete regular states that academic papers of a subject will be heavily concentrated in a small number of publications, however, the remaining small number of papers are scattered in more publications.

3.3. The distribution of key researchers

There are 72 researchers who study on the topic of e-government performance evaluation at different levels and publish papers in academic journals in the last ten years. However, there are 66 researchers published only one paper, accounting for 91.67 percent of the all researchers. One researcher publishes three papers, accounting for 1.39 percent of the all re-

searchers. Five researchers publish two papers, accounting for 6.94 percent of the all researchers. In this research, we call researchers who publish two (include two)

or more papers as the key researchers. There are ten key researchers, accounting for 12.66 percent of the all papers.

Periodical	E-Government	Information Journal	Information Science	Value Engineering	Technology and Management	Business Times	Executive Forum	China Management Information
Papers	15	5	3	2	2	2	2	2

Table 2: Journal distribution of research literatures.

Published articles	3	2	1
Number of authors	1	5	66
Percentage	1.39	.94	91.67

Table 3: The distribution of key researchers.

3.4. Research institute distribution of research literatures

There are 61 research institutes which carry out researches on the topics of e-government performance evaluation. Table 4 shows the research institutes which publish three research papers in this field. There are only four research institutions publish 3 research papers, accounting for 6.56 percent of the all researcher institutions. These research institutions publish

a total of 12 papers, accounting for 15.19 percent of the all papers. There are ten research institutions published 2 research papers, Peking University, University of Science and Technology Beijing, Beijing Institute of Technology, Guilin Institute of Technology, Central China University of Science and Technology, Central China Normal University, Nanjing University, Xi'an Jiaotong University, Zhejiang University of Finance & Economics, Zhongnan University of Economics and Law. The remaining 47 research institutions publish one paper in the area, accounting for 77.05 percent of the all researcher institutions

Research Institute	State Information Center	Renmin University of China	Southwest Jiaotong University	Great Wall of strategic consulting
Papers	3	3	3	3
Percentage	4.92	4.92	4.92	4.92

Table 4: Research institute distribution of research literatures.

3.5. Main research contents of the research literatures

According to the strict screening, through statistically analyzing the research thesis and abstract of the research papers, the research papers in this area are divided into two categories, namely qualitative research and applied research. Qualitative research includes researches of survey, review, proposition and other the same

like streams of research in this field; applied research includes the study of e-government performance evaluation proposals or methods in some application background. Figure 1 shows that qualitative research is the main research contents in this field, a total of 47 papers, accounting for 59.49 percent of the total papers.

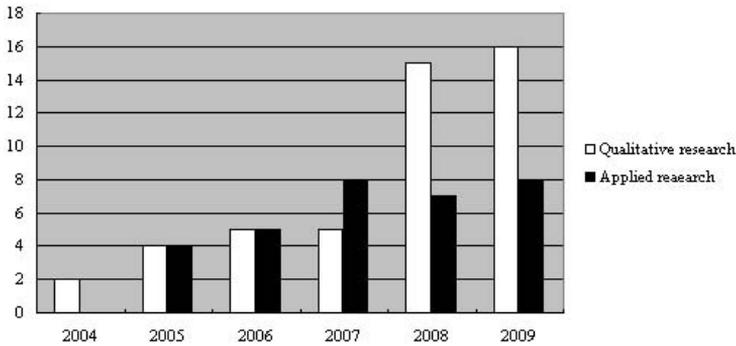


Fig. 1: Main research contents of research literatures.

4. A further analysis on the methods used in e-government performance evaluation

The applied research in this area is account only 40.51 percent, significantly less than qualitative research. But the evaluation methods are the hot of the evaluation problems. With the presence of various kinds of evaluation problem, the changes of evaluation objectives and the applications of new technology, some new evaluation methods will emerge. Therefore, it is necessary to in-depth analysis into the topic e-government performance evaluation method, so as to grasp the situation of the research and give a well understanding of existing problems.

The main evaluation methods using in the research area include AHP, BSC, Fuzzy AHP, third-party evaluation, valuation evaluation methods and so on. From the literature analysis, the trend of the applied research in china follows the international progress in the field. Table 5 shows that many methods have been applied in varying degrees.

It is worth noting that AHP and BSC are the current and future mainstream methods in the area. Both methods have ad-

vantages and disadvantages. Balanced Score Card is a method of goal-setting and performance evaluation. BSC divides organizational strategic objectives into four performance evaluation index system, financial, customer, internal processes, learning and growth. BSC can evaluate comprehensive performance simultaneously from several aspects. BSC is an effective way and a research idea in the area. BSC reflects current ideas of business management. However, BSC has shortcomings such as difficult to implement and to establish index system, excessive indicators, and large implementation costs and so on. So, it has limitations in practical applications. It is difficult to let it play its full strength. How to overcome its drawbacks and let it play its full strength is the key issue in BSC applications. Analytic Hierarchy Process is a systematic analysis method of qualitative and quantitative analysis. Through construction the comparison matrix and calculation the corresponding weight, AHP provides a basis for decision-making choice. AHP simplifies analysis and calculations of systematic decision problems. And AHP also helps decision-makers to maintain their thought process and decision-making principle in consistency. So, AHP is a good decision-

making method. If used properly, BSC and AHP can complement each other, which is more effective for the analysis and study of e-government performance evaluation. For example, BSC builds the

evaluation index system; AHP structures matrix to calculate the weights on all levels and defines the relative weight of each factor index relative to the total index.

Methods	Application
AHP and Delphi method	Hong CHANG (2009) set up index system based on Delphi method and model based on AHP of the e-government performance evaluation. For Xiangfan city as example.
Fuzzy AHP	Jun FEI, Yu Lihua (2009) establish comprehensive quantitative evaluation model of e-government using Fuzzy AHP. For Wuhan as example.
AHP	Weiling JAO(2007) establish index system of e-government satisfaction evaluation and calculate all levels weights using AHP. Wei LIU(2006) establish evaluation index system of government websites impacts using AHP.
BSC and AHP	Yaming ZHANG, Liu Hai'ou(2009) establish the BSC-AHP model based on BSC and AHP and prove the feasibility of the model. Qian WANG(2005) build a reasonable BS system and establish the implementation framework of BS.
BSC	Daqin HE(2005) build the implementation framework of BS based on the system of e-government performance evaluation .
BSC and fuzzy comprehensive evaluation	Lan CHEN(2009) use fuzzy comprehensive evaluation method to assess research, for local e-government performance in this study.
Fuzzy comprehensive evaluation	Heting CAI (2007) propose membership function as the new evaluation system using fuzzy comprehensive evaluation, for Guang Zhou as example. Wei LV(2007) propose fuzzy comprehensive evaluation model of e-government performance evaluation .
Valuation Methods	Linfei DONG (2009) propose an e-government valuation methods based on public.
Target decomposition	Wenyan LI (2009) propose an evaluation model of e-government based on target decomposition.
Expert interviews	Yong HU (2008) build the evaluation index system of e-government performance based on expert interviews.
Project Management	Junjie XU (2008) propose the model of e-government project life cycle.

Table 5: Evaluation Methods and its application of e-government performance evaluation.

5. Conclusion

Though the issues of e-government performance evaluation appears as a research problem for academic researcher in China is quite new, big steps of progress have been made both in theoretical research and application research in the last few years. From the above brief introduction to the statistical results and further analysis on the research of methods, several conclusions can be draw as followings.

(1) From analysis of the distribution of author's age and journals of the research literatures, it can be seen that the research in this field has not attracted much attention from researchers. The number of research papers in this field does not in-

crease significantly in recent years. Papers published in the journals which enjoy a good academic reputation are quite few. So, some suggestions should be taken to give rise to concern in this field. Such as core journals should give preference to the research in this field in some sense, the research ability of the researchers should be strengthened.

(2) Many topics did not receive in-depth research. Many authors only publish one paper in the area. In research institutions, only a few researchers study in the field. Some measures should be taken to promote the formation of research teams. For example, strengthen research institutions' attention and increase the funding efforts in this field.

(3) From analysis of contents distribution of research literatures, it can be seen that much attention have been put to qualitative research in this field. Furthermore, too many studies have focused on a narrow topic and its innovation is quite low. Applied research is not enough as it should be, and there are many issues need to be studied in this area.

(4) From analysis of the methods distribution of the literatures, it can be seen that with the application of new technologies, some new evaluation methods would emergence. But methods studied by researchers in this area are also far from enough compared with the application need in real practice. In the world of today, the development of technology and the change of idea for the management of e-government call for continuous innovation in evaluation methods.

This study also has some shortages. For example, 'e-government performance evaluation' is used as the only key words to search for the literatures, so it would make many other papers related to the topic can't be included in the source under study. So that it would exert influence on the reference of analysis results. Furthermore, in the case of the more than two authors (include two), only the first one author and his institution can be take into account. This will influence analysis results about research teams.

Acknowledgement

The work was supported by the Key Project of Science Research Program, Supported by Chinese Ministry of Education (208128).

References

- [1] Shisheng LUO, "Introduction of Bibliometrics", Zhongshan University Press, 1994.
- [2] Quanqing FAN, Weizhen GUO, Yujanjie FENG, "30 Years Of Our Literature Metrology Research Development", Journal Of Information Work, pp.30-33, 2009 (03).
- [3] Yunping QIU, "Bibliometrics", Science and Technology Literature Press, pp.1-48, 1988.
- [4] Weixian XUE, Jun LIU, Weiwei DONG, "Bibliometrics of Our International Service Trade", Information Development and Economy, pp. 111-113, 2008.
- [5] Yunpin QIU, Zifeng DUAN, Jingquan CHEN, "China Bibliometrics Review and Prospects", Scientific Studies, pp. 143-148, 2003.
- [6] Kui JIANG, "Literature Metrological Analysis of Information Literacy Assessment Study", Journal of University Library, pp. 82-85, 2009.
- [7] Yongtai CHEN, Shouwei LI, Youshi HE, "Domestic Progress of E-government Performance Evaluation Research Based On Bibliometrics E-government Performance Evaluation Research", Journal of Intelligence, pp. 41-45, 2009.
- [8] Hong CHENG, "Analysis and Design of Municipal E-government Performance Evaluations System", Chinese Shipping, pp.101-110, 2009.
- [9] Jun FEI, Lihua YU, "The Fuzzy AHP Model of E-government Performance Evaluation Based on Public Service Perspective", Journal of Information Science , pp. 894-899, 2009.
- [10] YamMing ZHANG, Haiou LIU, "The BSC-AHP model and its application of e-government performance evaluation", Science and Technology Management Research, pp.142-145, 2009.
- [11] Lan CHEN, "Local Government Performance Evaluation Based on the Balanced Scorecard Generosities", Management Information in China, pp. 92-95, 2009.

- [12] Linfei DONG, "Study on E-government Value Evaluation Methods Based on the Public View", *Journal of Value Engineering*, pp.50-52, 2009.
- [13] Wenyan LI, "The model research of e-government performance evaluation based on the target decomposition", pp. 64-68, 2008.
- [14] Yong HU, Lijun HUANG, Yaodang XU, Jianwen ZHOU, "The System Study of Foreign E-government Projects Performance Evaluation", *Journal of intelligence*, pp.131-134, 2008.
- [15] Junjie XU, "Project management and evaluation of E-government", *Science and Technology Information*, pp. 6-7, 2008.
- [16] Weiling JIAO, "Construction of China's E-government Public Satisfaction Assessment Index System", *The Commercial Age*, pp.93-94, 2007.
- [17] Heting CAI, Li ZHU, "The AHP-Fuzzy model and examples of e-government performance evaluation", *Journal of Xinyang normal college (natural science edition)*, pp. 266-270, 2007.
- [18] Wei LV, Dongqiang GUO, "The application of fuzzy comprehensive evaluation method of e-government performance", *Market Weekly (Theoretical Research)*, pp. 132-134, 2007.
- [19] Wei LIU, Yufeng DUAN, "E-government Building Performance Evaluation Impact on Network Influence", *Information Science*, pp. 1704-1708, 2006.
- [20] Qian WANG, Kexin DAI, Wei LUO, "Balanced Scorecard implementation of e-government performance management", *Office Automation*, pp. 16-19, 2005.
- [21] Kexin DAI, Wei LUO, Qian WANG, "Construction and implementation of performance evaluation method based on e-government", *Journal Of financial College in Guangxi*, pp. 57-59, 2005.