Comparative Analysis of Performance Appraisal Based on CSSCI and SSCI

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ABSTRACT: By using the visual analysis software, this paper analyzes and compares the performance evaluation research of CSSCI and SSCI in 2010-2019 by keyword co-occurrence, literature co-citation clustering, mutation word detection and comparison, combs the differences of research hotspot, knowledge base and evolution trend of performance evaluation in China and the world, and provides reference for performance evaluation research and practice. The results show that scholars in the world are more active and fruitful in this field; Chinese scholars pay more attention to the application and practice of performance evaluation in government, universities and public cultural services, while international scholars pay more attention to enterprise performance evaluation and its strategic meaning. In terms of future research, China has begun to focus on the performance evaluation research in the field of collaborative innovation, while the international community has focused more on the effectiveness of performance evaluation.

KEY WORD: performance evaluation; visualization; hot topics; knowledge map

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I. INTRODUCTION

Performance management and performance appraisal have always been the key areas of research and practice. In the past century, performance evaluation has developed from a narrow focus on performance evaluation to a comprehensive design of performance evaluation process. From the initial relatively simple problem, that is, how to define rating standards, so that managers can make accurate ratings, has become a more complex challenge, that is to understand and research the behavior and results of promoting performance evaluation.

However, performance evaluation was introduced into China in the last century, and its importance was paid attention to by scholars only after 2000. At present, there are still some problems in the field of performance evaluation in China. Firstly, many scholars have carried out the traditional literature review and analysis of performance evaluation, but this form is difficult to objectively analyze the research hotspot and evolution trend in this field. Secondly, there are obvious differences in the performance view between the eastern and Western cultures. Whether the western mature performance evaluation theory can be applied to the process and practice of China's performance evaluation. Therefore, it is necessary to adopt quantitative analysis method to compare and summarize the similarities and differences of performance evaluation research and practice, and analyze the characteristics and development trend of performance evaluation.

Although at present, Chinese scholars have used visual analysis technology to analyze performance evaluation research, for example, Sun Fei et al. (2019) used citation analysis, clustering analysis, mutation literature analysis and other methods to analyze 3452 government performance management research literatures in SSCI database from 2008 to 2017; Li Zhiyuan et al. (2014) used keyword clustering analysis and time series analysis The hot spots, themes and trends of 1333 articles of enterprise performance evaluation in SSCI database over the years were analyzed visually by the methods of cited analysis and literature. Liu Zhi et al. (2019) analyzed the development process and trend of 2881 university performance evaluation studies in 2018-2017 in CNKI database by using keyword co-occurrence, keyword clustering, time view analysis and other methods. However, the above research is only limited to the quantitative analysis of a single performance evaluation subject of government, enterprise or university, and lacks the comprehensive analysis of performance evaluation from the perspective of comparative analysis at home and abroad.

To sum up, this study breaks through the traditional literature review form, using scientific metrology method to sort out the retrieved literature. By using CiteSpace visualization tool, we can directly show the frontier direction, structural characteristics and development trend of performance evaluation field, and provide direction guidance for the theoretical research and practical application of performance evaluation in China.

II. DATA SOURCES AND RESEARCH METHODS

Scientific knowledge map refers to the combination of graphics and computer science and other disciplines, using citation analysis, CO citation analysis, co-occurrence analysis and other technologies and methods to show the intersection, interaction and evolution of knowledge units, and then reveal the new knowledge in these relationships . In this paper, CiteSpace, a citation analysis software developed by Professor Chen Chaomei, is used to draw a map of scientific knowledge, to compare the current research hot topics, summarize the evolution trend of performance evaluation research, and analyze the similarities and differences between China and international performance evaluation research from the perspectives of keyword co-occurrence, Co citation clustering and mutation detection.

Obtaining comprehensive and accurate data is a key step in the study of scientific knowledge map. Data capacity and data quality directly affect the accuracy of the study. In this paper, we choose SSCI and CSSCI database to carry out comparative analysis of performance evaluation research at home and abroad. In the aspect of Chinese research, the key words are set as "performance evaluation" or "performance evaluation" in the CSSCI retrieval interface, the literature type is "paper", and the age is 2010-2019. Check "accurate" retrieval, and a total of 1537 relevant literatures are retrieved after data cleaning. In terms of international research, in the web of science core database retrieval interface, advanced search is adopted, the database type is set as SSCI, the time limit is 2010-2019, the retrieval formula is (TS = "performance evaluation" or TS = "performance appraisal") and language: (English) and document types: (article), and 2703 documents are retrieved after data cleaning.

III. VISUAL COMPARATIVE ANALYSIS OF PERFORMANCE APPRAISAL RESEARCH

3.1 Analysis of Publishing Trend of Research Literature

In a period of time, the amount of papers published in a research field can reflect the growth process and development trend of the field to a certain extent. By comparing 1537 performance evaluation related literatures in China and 2703 performance evaluation related literatures in the world, this paper can grasp the development trend and change of this field as a whole, as shown in Figure 1.

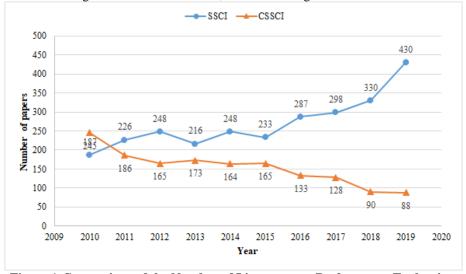


Figure 1:Comparison of the Number of Literature on Performance Evaluation

On the whole, the number of literature published in the field of performance evaluation at home and abroad is on the contrary. In terms of time sequence, the number of Chinese performance evaluation related literature publications can be divided into two stages: from 2010 to 2015, the decline of Chinese performance evaluation research publications and the slow growth trend of international research, while from 2015, the rapid decline of Chinese performance evaluation research publications and the rapid growth of International Performance evaluation research publications indicate that the research in this field is gradually cooling down in China, and international research in this field is gradually warming up.

3.2 Keyword Co-occurrence Analysis

The key words are a high-level summary of the research content and theme of the paper. By analyzing the key words of the published papers in the research field, we can understand the research hotspot, knowledge structure and development trend in this field. In this paper, CiteSpace is used for keyword co-occurrence analysis to explore the common research focus of scholars in the field of performance evaluation.

Run CiteSpace, set node types as "keyword", time range as "2010-2019", time slice as 1, and threshold value of each time slice as Top50, respectively import domestic and foreign performance evaluation research data, and merge synonymous keywords, such as "performance evaluation" and "performance evaluation", "data envelopment analysis" and "DEA", "data envelopment analysis" and "de" A "and so on, and finally get the list of keyword frequency and centrality of performance evaluation research at home and abroad (Table 1 and Table 2).

Table 1: Frequency Distribution of Keywords in CSSCI

Frequency	Keyword	Centrality	Frequency	Keyword CSSC1	Centrality
1536	Performance Appraisal	0.6	14	Electronic Resources	0.04
141	Index System	0.4	14	Knowledge Management	0.05
46	Balanced Scorecard	0.14	13	Service Government	0.01
42	Analytic Hierarchy Process	0.12	13	Influence Factor	0.03
40	Local Government	0.02	12	University Teachers	0.01
62	Data Envelopment Analysis	0.11	12	Expenditure	0.02
23	Library	0.02	12	Higher Education	0
23	E-government	0.06	11	Public Library	0
22	Performance Management	0.03	11	Information Resource Sharing System	0
22	Public Service	0.02	10	Collaborative Innovation	0.02
17	University Library	0.05	10	Stakeholder	0.05
17	Government Performance	0	9	Technological Innovation	0.02
17	Evaluating Indicator	0.04	9	Digital Resources	0
17	Factor Analysis	0.11	9	Fuzzy Comprehensive Evaluation	0
16	Universities	0.04	8	Evaluation Model 0.02	

Table 2: Frequency Distribution of Keywords in SSCI

Frequency	Keyword	Centrality	Frequency	Keyword	Centrality
883	Performance Appraisal	0.07	91	Incentive	0.05
369	Model	0.08	90	Productivity	0.02
314	Data Envelopment Analysis	0.1	85	Satisfaction	0.02
298	Performance	0.1	82	Organization	0.04
264	Management	0.09	81	Strategy	0.06
209	Efficiency	0.01	79	Perception	0.03
205	System	0.03	77	Balanced Scorecard	0.02
184	Impact	0.06	75	Design	0.04
138	Information	0.04	74	Industry	0.03
134	Selection	0.03	71	Perspective	0.02
111	Quality	0.05	69	China	0.05
104	Behavior	0.02	65	Firm	0.01
103	Framework	0.02	62	Market	0.04
96	Decision Making	0.03	57	Job Performance	0.02
93	Risk	0.06	44	Feedback	0.03

From the high-frequency keyword ranking in Table 1 and table 2 and the keyword co-occurrence map in Figure 2 and figure 3, it can be seen that the hot topics of performance evaluation research at home and abroad are both similar and heterogeneous. In this paper, the hot topics of performance evaluation research at home and abroad are compared and analyzed from the aspects of similarity and heterogeneity.

Similarity: first, the domestic and foreign performance evaluation studies all emphasize the importance of performance evaluation methods and the construction of performance evaluation index system. The common keywords include "index system", "balanced scorecard", "AHP model", "data envelopment analysis", "fuzzy comprehensive evaluation", etc. Secondly, the research of performance evaluation at home and abroad focuses on the influencing factors of performance evaluation. The common keywords include "influencing factors" and "influence".

Heterogeneity: from the perspective of Chinese research: first, from the perspective of the main body of performance evaluation, Chinese research focuses more on the application of performance evaluation in government, universities and public cultural services. Its key words include "local government", "government performance", "e-government", "service-oriented government", "University Library", "University", "University", "Cachers", "higher education" and "public service", "public library" and "public fund". Second, starting from the

content of performance evaluation, the research content of China's performance management focuses more on the performance evaluation of knowledge management, scientific and technological innovation, so as to better use and give full play to the advantages of enterprises, and then guide the development of enterprises. The key words include "knowledge management", "collaborative innovation", "scientific and technological innovation", "information resource sharing system".

From the perspective of international research: first, international research pays more attention to the application and practice of performance evaluation in enterprises as the main body of evaluation, and its key words are "enterprise", "industry", "market", etc. Second, pay more attention to the strategic significance of performance evaluation and integrate it into the strategic framework of the organization. The key words are "strategy", "framework", "organization", "quality", etc. Third, pay more attention to the research of performance evaluation and performance management theory, and incorporate system into the research of performance evaluation. The key words include "perception", "incentive", etc. Fourth, China's performance evaluation research has become a hot topic in the field of international research. The key words include "China".

3.3 Literature Cited Analysis

Two or more related research literatures are cited by the same article, which shows that these articles have similar research contents and research topics, and these high-frequency quotations constitute the knowledge base of the discipline. In order to analyze the context and knowledge base of performance evaluation, this paper analyzes the research differences in this field through literature cited.

Run CiteSpace, set node types as "reference", time range as "2010-2019", time slice as 1, and threshold of each time slice as Top50. Import performance evaluation research data respectively, and use LLR (log likelihood algorithm) to extract nominal terms from keywords of cited documents to generate clustering labels, and finally get clustering comparison of cited documents at home and abroad (see Table 3 Shown).

Table 3: Cluster Comparison of Cited Articles in Performance Evaluation Research

Cluster	CSSCI	CCSI		
#0	Government Performance	Performance Appraisal		
#1	Library	Date Envelopment Analysis		
#2	R&D Input	Executive Compensation		
#3	Information resource sharing system	Balanced Scorecard		
#4	National Natural Science Foundation of	Mutual Funds		
	China			
#5	University Library	Expatriate Management		
#6	Knowledge Management	Procedural Justice		
#7	Information Effect	Ocb-Performance Evaluation Relationship		
#8	Technological Innovation	Leader-Member Exchange		

Through the comparative analysis of the cited clusters of domestic and foreign performance evaluation research literature, it can be seen that the domestic and foreign performance evaluation research is more different from the cited clusters of literature. The following will analyze the clustering differences from the perspectives of China and international.

China's research: first, with the concept of deepening the reform of the administrative system and improving the government's governance ability, the theory and practice of government performance evaluation has become a hot field for scholars. According to the cluster visualization results, the representative literature of cluster 0 (government performance) includes Zhou Zhiren (2008), citizen participation in government performance evaluation: China's practice and prospect, and Cai Lihui (2007), government performance evaluation: current situation and development prospect. Second, library performance evaluation has always been a hot topic at home and abroad. With the management and investment of information resources and knowledge resources, the knowledge base of Library and information resource sharing system is gradually formed. Among them, the representative literature of cluster 1 (Library) includes research and Practice on library performance evaluation by Yu Sheng (2006) and international library service quality evaluation by Zhang Hongxia (2009): the formation and development of two systems of performance evaluation and effectiveness evaluation; the representative literature of cluster 3 (information resource sharing system) includes XieChunzhi (2007) Research practice and Reflection on performance evaluation of Library Alliance and service performance evaluation to promote sustainable development of information resources co construction and sharing by Liu Yanli (2008). Third, in the era of knowledge economy, countries all over the world put the implementation of knowledge innovation strategy at the commanding height of national development. Knowledge management has rapidly become a hot area of performance evaluation, and gradually formed the knowledge base of knowledge management performance evaluation research. The representative literature of clustering 6 (Knowledge Management) is a comprehensive evaluation method of organizational knowledge management performance by Wang Jun (2004).

Foreign research: first, focusing on the construction of performance evaluation model and theoretical connotation. The representative literature of clustering 0(performance evaluation) includes understanding performance evaluation written by Murphy Kr (1995) and social background of performance evaluation: review and framework in the future by levy PE (2004). Second, the use of performance evaluation methods and the construction of index system have become the research hotspot in the field of performance evaluation, and gradually formed the knowledge base in this field. The cluster labels formed include balanced scorecard and data envelopment analysis. Among them, the representative literatures of # 1 (Data Envelopment Analysis) are "measuring the efficiency of decision-making units" by Charnes A (1978) and "several models for estimating technical efficiency and scale efficiency in data envelopment analysis" by banker Rd (1984), and the representative literatures of # 3 (Balanced Scorecard) are "Balanced Scorecard - indicators for measuring performance" by Kaplan RS (1992). Third, focus on the research of influencing factors and effectiveness of performance evaluation process, and then form the knowledge base in this field. For example, the representative literature of #6 (organizational justice) includes the meta-analysis review of Millennium Justice: 25 years of organizational justice research by Colquett JA (2001) and the due process of performance evaluation: quasi experiment of procedural justice by Taylor MS (1995) The representative literatures of leader member exchange include organization and culture by Hofstede G (1980) and relationship based leadership method: the development of leadership member exchange theory in the past 25 years from the perspective of multi-level and multi domain by Gran GB (1995).

In order to further analyze the differences in the knowledge base of performance evaluation research, this paper combs the high cited literature of performance evaluation at home and abroad, as shown in Table 4. The heterogeneity of the cited literatures with high performance evaluation was compared from two aspects of research methods and research contents.

Table 4: Comparison of Citation Frequency of Performance Evaluation in 2010-2019

Number -	CSSCI		SSCI		
	Cited Literature	Frequency	Cited Literature	Frequency	
1	Zhou zhiren (2008)	12	Charnes A(1978)	276	
2	Yu sheng (2006)	10	Banker RD(1984)	172	
3	Zhang hongxia (2009)	8	Murphy KR (1995)	110	
4	Cai lihui (2007)	8	Levy PE (2004)	86	
5	Zhou zhiren(2006)	7	Kaplan RS (1992)	85	
6	Banker RD (1984)	7	Holmstrom B (1979)	69	
7	Zhang hongling (2005)	6	Jensen MC(1968)	51	
8	Shang huping (2008)	6	Aggarwal RK(1999)	45	
9	Ni xing (2008)	6	Cawley BD (1998)	35	
10	Wang jun (2004)	5	Colquitt JA (2001)	34	

In terms of research methods: the high cited literature in China mainly adopts the method of combining theory with practice, which mainly analyzes the obstacles and bottlenecks encountered in the process of performance evaluation practice in China and puts forward reasonable suggestions. The international high cited literature mainly uses the methods of theoretical review, model construction and empirical research, mainly from the accuracy of performance evaluation, performance rating scale construction, performance evaluation process, cognitive process and other aspects to enrich and improve the performance evaluation related theories. For example, in Chinese research, Zhou Zhiren (2006) pointed out that there was a lack of standardization in the process of performance evaluation of public organizations, which resulted in inconsistencies in the content, standard, procedure and method of performance evaluation, and then analyzed the current situation of performance evaluation practice of public organizations from the perspective of government performance management concept and system. Cai Lihui (2007) thinks that how to combine the practical experience of government performance evaluation in western developed countries with China's reality and localization is an important issue. Therefore, from the perspective of analyzing the theoretical research of government performance evaluation, we should reflect on the current situation of government performance evaluation practice and further grasp the development direction of government performance evaluation. Shang Huping (2008) proposed the paradox of local government performance evaluation based on the current situation of government performance evaluation practice, deeply analyzed the root causes of this phenomenon and put forward reasonable suggestions. In the international research, Levy PE (2004) systematically reviews the research on social and environmental factors in the process of performance evaluation through literature review, and constructs the process model of performance evaluation. Kaplan RS (1992) analyzed the function of Balanced Scorecard and its impact on enterprise performance through theoretical elaboration and other methods. Cawley BD (1998) uses meta analysis to explore the relationship between participation in performance evaluation process and employees' various responses through 27 empirical studies of 32 individual samples.

The different research methods of performance evaluation at home and abroad show that the research

in the field of performance evaluation in China started late. It is basically based on the mature research of international performance evaluation theory to carry out further localized innovation, combined with domestic performance evaluation practice to build a suitable government performance evaluation system and implementation method.

In terms of research content: there are more obvious differences in research content between domestic and foreign cited literatures with high performance evaluation. In this paper, through the in-depth analysis of the performance evaluation practice of enterprises, governments, colleges and universities, and public services, the influencing factors of performance evaluation, evaluation subjects, evaluation results, etc. are theoretically elaborated, and the localization suggestions of performance evaluation theory are put forward based on practical experience. However, the most cited literatures of high international performance evaluation mainly focus on the optimization of performance evaluation methods and tools, the theory of relative performance evaluation, the performance evaluation of venture portfolio, and the related research of salary incentive and organizational performance. For example, Wang Jun (2004) started from the process, organizational structure and benefits of knowledge management, and established a set of organizational knowledge management performance evaluation index system including the process, organizational structure, changes in economic benefits and efficiency of knowledge management. Ni Xing (2008) mainly analyzes the differences in objectives and motivations of different government performance evaluation actors, the effect of government performance evaluation and the main factors affecting government performance evaluation. Yu Sheng (2006) analyzes the development stages of practice and theoretical research of library performance evaluation at home and abroad, and further explores its practice and theoretical development trend. In international research, Charnes A (1978) first proposed a data envelopment analysis method to evaluate and control the relative effectiveness of management behavior. Aggarwal RK (1999) empirical research shows that executive compensation will decrease with the performance of competitive enterprises, and this sensitivity will increase with the increase of industry competition. Colquett JA (2001) conducted a meta-analysis of 183 Judicial Studies, revealing the overall and unique relationship between the fairness of distribution process, interpersonal fairness, information fairness and organizational performance.

3.4 Mutation Detection and Analysis

The detection of mutation words can further explore the research hotspot of the subject in a certain period of time, that is, the research frontier and trend. In this paper, we test the performance evaluation data for keyword burst, and according to the time sequence as shown in Table 5 and Table 6, to determine the development trend of performance evaluation research at home and abroad. From the perspective of time series, the development trend of performance evaluation research at home and abroad has more differences.

Table 5: Ranking of Mutation Words in CSSCI Performance Evaluation in 2010-2019

Keywords	Year	Strength	Begin	End	2010 - 2019
Knowledge Management	2010	2.5967	2010	2012	
Information Resource Sharing System	2010	4.3921	2010	2011	
Evaluation Model	2010	3.1892	2010	2011	
Government Website	2010	3.219	2011	2012	
Influence Factor	2010	3.9231	2015	2016	
Collaborative Innovation	2010	3.3906	2015	2019	

Table 6: Ranking of Mutation Words in SSCI Performance Evaluation in 2010-2019

Keywords	Year	Strength	Begin	End	2010 - 2019
Feedback	2010	6.1724	2010	2013	
Organizational Justice	2010	3.9649	2010	2013	
Rating	2010	7.1497	2010	2013	
Accuracy	2010	7.2226	2010	2013	
Commitment	2010	6.7435	2011	2014	
Social Exchange	2010	6.405	2011	2014	
Consequence	2010	6.5921	2012	2015	
Benchmarking	2010	5.8958	2012	2015	
Knowledge	2010	8.77	2014	2017	

The key words of Chinese scholars' research on performance evaluation began to increase abruptly in 2010. During 2010-2012, there were "knowledge management", "information resource sharing system", "evaluation model", "government website", etc. with China's management and focus on information resources and knowledge resources, these areas have received sustained attention in performance evaluation research; 2015 began" The words "influencing factors" and "collaborative innovation" began to appear, which shows that they are more concerned in the field of performance evaluation in recent years. Taking "collaborative

innovation" as an example, the Ministry of Education launched "2011 plan" in 2012, focusing on efficient collaborative innovation center, focusing on advantageous disciplines and high-quality resources, and promoting the synergy of production, learning and research. Based on this, scientific and reasonable evaluation of scientific research performance and construction of efficient agreement innovation performance evaluation model have become the leading trend of research. The key words that international scholars began to pay attention to in 2009 are "feedback", "organizational justice", "accuracy", etc., the key words in 2010 are "social exchange", "commitment", "human resource management", etc., and the key words in 2011 are "feedback", "organizational justice", "accuracy", etc Benchmarking, consequence. The sudden increase in vocabulary in 2013 was "knowledge".

IV. CONCLUSION

Through the above comparative analysis, it can be seen that the domestic and foreign performance evaluation research is the focus of scholars' research. China's performance evaluation research is more focused on the combination of theory and practice, and more inclined to develop a performance evaluation model and system suitable for local conditions. However, there is still a lot of room for progress in its performance evaluation research, which is mainly reflected in the following aspects: first, it is necessary to continuously improve the research on the basic theory of performance evaluation. At present, it is mainly based on the internationally mature performance evaluation theory to guide China's practice, which may lead to the lack of stability and fundamentality of the research, so it is necessary to further improve the basic theory of performance evaluation based on China's reality and form Performance evaluation research model suitable for local conditions. Second, we need to enrich the content and methods of performance evaluation research, combine quantitative and qualitative research, and expand the relevant empirical research. At present, domestic research is mainly based on theory to guide practice, and empirical research on performance evaluation is extremely lacking. Therefore, research methods should be further improved and supported by data. Third, it is necessary to further expand interdisciplinary research. Since performance evaluation research has a hundred years of history and is a relatively mature theoretical system, it is necessary to deeply explore the commonality of performance evaluation with political science, psychology, sociology and other disciplines, and give full play to the value of performance evaluation research.

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