

# Visualized Analysis and Comparative Study on the Research Situation of Knowledge Economy in the Field of Library and Information in China and Foreign Countries

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**Abstract**—Knowledge economy is an economic type with mental labor as the main body and knowledge as the carrier. With the progress of the times, the social and economic types based on knowledge economy have been gradually expanded, and radiated to many industries, such as industry, agriculture, education, information and so on. In the field of library and information, the related research on knowledge economy has gradually formed a mature literature support system, and the research results in this field in China and foreign countries are also seen in writing. Therefore, based on the authoritative literature databases in China and foreign countries, this paper makes a visual comparative analysis on the research situation of knowledge economy in the field of library and information.

**Keywords**—the field of library and information in China and foreign countries; knowledge economy; visualization; analysis; comparison

## I. INTRODUCTION

Knowledge economy originated in the United States at the late 1990s, therewith, the wave of knowledge economy has swept the world rapidly, and has had a profound impact on all fields and industries of society. Compared with foreign countries, the work of knowledge economy research in China started relatively late, and it was not until the beginning of this century that it began to take shape. Especially with the rapid development of computer and information technology, knowledge economy has entered a new golden development period. Combined with the knowledge economy, the domestic experts and scholars carry out in-depth and detailed academic research in the field of library and information, and clarify the relationship between the knowledge economy and higher education, as well as the positive role of the field of library and information in the acquisition of knowledge. Through the analysis of the situation of knowledge economy in China, this paper compares it with the research results of foreign countries, and then provides important data support for the study of the development trend of knowledge economy.

## II. THE MAIN SOURCES OF RESEARCH DATA

According to the source of domestic research data, this paper mainly selects HowNet as the citation object, takes "knowledge economy" as the key word, inputs "Chinese Core Journal" as the research object to obtain the latest research results and the development trend of knowledge economy in time. Because of "Chinese Core Journal" has high authority and low similarity rate of literature data, it also has high reference value. In the retrieval, "Library and Information and Digital Library" is used as the classified catalogue, and the retrieval deadline is defined on December 31, 2017. A total of 1365 references are obtained through retrieval. Then the references searched in China and foreign countries are inputted into the information analysis software, with the help of this software, econometric analysis, cluster analysis and social network analysis are adopted to obtain good visualization results, and the relevant literature items are extracted, and the comparative results are obtained by the methods of literature measurement and content analysis, so that the research situation of knowledge economy in the field of library and information in China and foreign countries can be compared.

## III. CONTRASTIVE ANALYSIS ON RESEARCH SITUATION OF KNOWLEDGE ECONOMY IN THE FIELD OF LIBRARY AND INFORMATION IN CHINA AND FOREIGN COUNTRIES

### A. Comparative Analysis of the Quantity of Knowledge Economy Literature

Considering whether knowledge economy is a hot issue in the field of library and information, first, we should start with the quantity of literature materials including knowledge economy, and take December 31, 2017 as the time node to analyze the number of documents in the previous literature database, which provides important data support for the study of the development trend of knowledge economy. The development trend of knowledge economy research literature in China and foreign countries is shown in "Fig. 1".

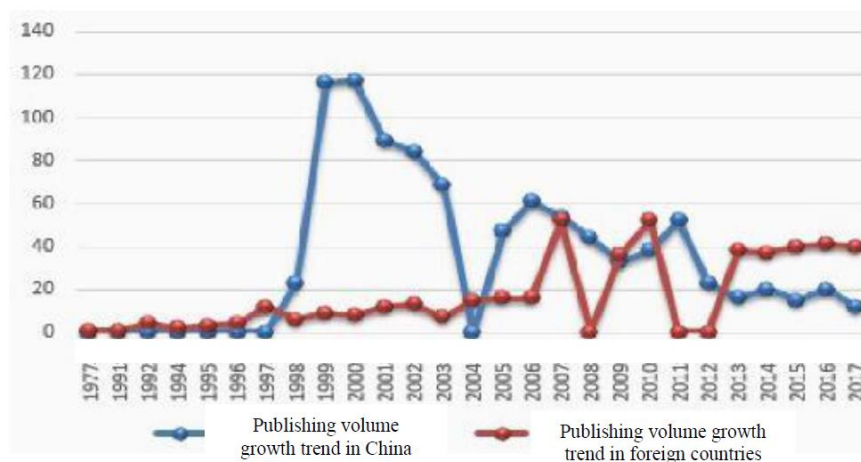


Fig. 1. The development trend of knowledge economy research literature in China and foreign countries.

As can be seen from "Fig. 1", the research time of knowledge economy in China started relatively late, and it was not until 1998 that it entered the initial stage of research, which was seven years behind that of foreign countries. However, in the next year or two, the development of our country in this field has shown a gratifying trend, and the number of relevant research literature has increased rapidly. During this period, the development trend of foreign countries is still in the primary stage, and the number of documents is growing slowly. In 2007 and 2010, China reached the peak period of literature issuance, and the number of articles with reference value reached 52. Although this number decreased by 2011, it was not until 2013 that it gradually entered a period of calm development. Through comparative study, it is not difficult to find that the number of research documents in the field of knowledge economy in the field of library and information is obviously lower than that in China, and the peak period of domestic issuance is nearly ten times higher than that in foreign countries.

#### B. Comparative Analysis of Document Distribution Region in the Study of Knowledge Economy in the Field of Library and Information

Through the regional distribution of the literature, we can accurately analyze the research strength of each country in this field. Countries with more than 10 articles in the field of knowledge economy research are shown in "Table I".

TABLE I. COUNTRIES WITH MORE THAN 10 ARTICLES IN THE FIELD OF KNOWLEDGE ECONOMY RESEARCH

Serial number	Quantity (article)	Country	Serial number	Quantity (article)	Country
1	90	America	8	19	Taiwan
2	60	China	9	16	Holland
3	33	Britain	10	16	India
4	29	Spain	11	15	Australia
5	27	Malaysia	12	15	Italy
6	26	Romania	13	12	Canada
7	24	South Africa	14	12	Russia

As can be seen from "Table I", the research results of knowledge economy and the distribution of literature quantity are uneven in the field of library and information technology all over the world, and the number of papers published in the United States is as high as 90, which shows that the United States is a hot area of research in this field, while China is followed by 60 articles. If we analyze the cooperative relations between countries, the forms of cooperation among countries are more scattered in the field of knowledge economy, and there is no close cooperative relationship between countries. It can also be seen from this table that developing countries occupy less, while the number of developed countries is far ahead, so developed countries and developing countries lack efforts in scientific research, academic exchange and cooperation of knowledge economy.

#### C. Comparative Analysis of High-yield Institutions in the Field of Knowledge Economy Research

In the field of knowledge economy research, the high-yielding institutions in foreign literature are represented by colleges and universities, while only Shanghai Jiaotong University and the Chinese Academy of Sciences enter the top 10 in the world.

In the field of knowledge economy research, colleges and universities are the main representatives of high-yield institutions in foreign literature, while only Shanghai Jiaotong University and Chinese Academy of Sciences enter Top 10 in the world. As can be seen from this, the research heat of these two colleges and universities focusing on knowledge economy is much higher than that of other colleges and universities. Therefore, it also has a high international influence. From the point of view of the cooperative organization of communication, the United States has a higher frequency of cooperation with other countries in the field of knowledge economy research. Taking the University of Maryland and the University of Minnesota as examples, there are eight cooperative communities, and the communication is more frequent. In the cooperation of high frequency institutions for the issuance of foreign literature, the cooperative teams

constructed by the Chinese Academy of Sciences and the University of Leuven in Belgium are much higher than that of other institutions. Through comparative analysis, the Chinese Academy of Sciences has the closest relationship with the international cooperation and interaction in the field of knowledge economy research. From a macro point of view, the frequency of cooperation between domestic scientific research institutions and universities and the international community is much lower than foreign countries. Therefore, our country should further strengthen the international cooperation in this research field, actively draw lessons from the research experience of developed countries, and strengthen the strength of science and technology research and development in our country.

#### *D. Contrastive Analysis on Symbiosis of High Yield Author of Literature*

With the help of visual atlas, the high-yield authors of foreign literature include six cooperation teams, including three four-member cooperation teams and three-person cooperation teams, and the other high-yield authors' cooperation teams are composed of two people. However, Chinese literature production authors include five cooperative teams, including one six-member cooperative team, and four three-person cooperative teams. Through the comparison and analysis of the domestic and foreign results data, it is not difficult to see that the overall degree of the foreign cooperation team is higher than that of the domestic cooperation team, the author cooperation relationship in the cooperation team is closer than that in the domestic country, the domestic team cooperation model is more scattered, and the communication relationship between the authors is also more estranged.

#### IV. COMPARATIVE ANALYSIS OF THE HOT SPOTS IN THE FIELD OF KNOWLEDGE ECONOMY

##### *A. Research Hotspots of Knowledge Economy in Foreign Countries*

The research field of knowledge economy abroad mainly covers four hot topics, namely, knowledge sharing, knowledge learning, knowledge technology and knowledge capital. The hot phrases mainly include learning, research, knowledge society, performance, knowledge strategy, knowledge transfer, knowledge-based economy, network, big data, communication technology, innovation, human capital, intellectual capital, intangible assets, enterprises, strategic management, library, information society, online learning, and development of knowledge and so on.

##### *B. Research Hotspots of domestic Knowledge Economy*

The four hot topics mainly covered in the field of knowledge economy research in China are library, knowledge resources and management, knowledge sharing and technology application. Of which the hot phrases mainly include learning, research, knowledge society, performance, knowledge strategy, knowledge transfer, knowledge-based economy, network, big data, communication technology, innovation, human capital, intellectual capital, intangible assets, enterprises, strategic management, library,

information society, online learning, development of knowledge, and so on.

Through the comparative analysis of hot issues in China and foreign countries, it can be concluded that the contents of knowledge management, knowledge sharing and technology application are similar in the research field of knowledge economy in China and foreign countries. The difference is that more attention is paid to the operation of knowledge capital and the application of comprehensive learning in foreign countries. The acquisition of knowledge in foreign countries is larger than that in China, and the scope of knowledge is wider than that in China. Although in-depth research on learning and education has also been carried out in China, there is still a big gap between the research results and foreign countries. Therefore, we should further expand the scope of learning and education, and strengthen the breadth and depth of research in this field.

#### V. CONCLUSION

In summary, through the method of comparative analysis, there is still a big gap between our country and foreign countries in the field of knowledge economy of library and information. Domestic scientific research institutions and academic organizations should constantly consolidate the foundation of academic research, constantly break through innovation, take knowledge as the carrier, combine the current rapid development of computer technology, information technology, big data technology, enrich and improve the knowledge system, and provide a steady stream of knowledge nutrients for the good development situation of knowledge economy in our country.

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