



Demonstration of the effectiveness of data visualization analysis applied to quantitative research of academic papers

-- Taking the quantitative visual analysis of research papers on subject services of university libraries from 2010 to 2024 as an example

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Abstract. This paper demonstrates the application efficiency of data visualization analysis in an empirical way. The example is to take the literature resource database of China National Knowledge Infrastructure (CNKI) as the data source, the bibliometrics method is used to make a statistical analysis on the distribution of academic service research papers in university libraries from 2010 to 2024, including the age, subject, author and institution, so as to facilitate and comprehensively understand the development of academic service research in Chinese universities in the past 15 years. This example contrast Chinese university "double" construction plan before and after the core of the author and research papers, multidimensional mining, analyze the data, thus can multi-angle to observe the content of the data, such argument aims to enrich the scholars research methods and service for the university discipline of sustainable research and practice to provide reference.

Keywords: Data visualization analysis, University library, Subject service.

1 Introduction

Data visualization analysis has significant advantages and efficiency in academic paper metrology research, which helps to improve research efficiency, enhance data interpretation ability, improve research accuracy, promote interdisciplinary communication and enhance research influence, etc. Data visualization analysis is more convincing in academic paper metrology research, can reduce the difficulty of reading, improve research quality and other advantages. The concept of visualization has been in development for more than 140 years, In 1881, statistician John W. Tukey developed the concept of a "graphical view", one of the earliest ideas about data visualization. In the 1960s, the rise of computer technology made it possible to process and analyze large-scale data. In the 1970s, Schonberg and others proposed the concept of

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"information visualization" (" information visualization "), which aims to use computer technology to help people better understand and analyze large-scale data. After that, more and more researchers began to pay attention to the field of information visualization, and developed a variety of information visualization tools and technologies. With the increasing number and complexity of data, data visualization analysis has become an important part of data analysis. Data visualization is a scientific and technical study on the visual representation of data. It is a concept in constant evolution, and its boundaries are constantly expanding. These technical approaches allow the visual interpretation of data through representation, modeling, and the display of solids, surfaces, properties, and animations using graphics, image processing, computer vision, and user interfaces. Data visualization covers a much wider range of technical approaches than specialized technical approaches such as stereo modeling.[1]General data visualization techniques include the following basic concepts:(1) Data space: It is a multidimensional information space composed of n-dimensional attributes and m elements;(2)Data development: refers to the use of certain algorithms and tools for quantitative deduction and calculation of data;(3)Data analysis: refers to the multi-dimensional data slice, block, rotation and other actions to analyze the data, so that the data can be observed from multiple angles and sides;(4)Data visualization: refers to the processing process of representing the data in a large data set in the form of graphics and images, and using data analysis and development tools to discover unknown information.

This paper takes university library subject service research papers from 2010 to 2024 as a sample to analyze the research status of university subject service and demonstrate the flexible application and effectiveness of measurement visualization. Since the establishment of the subject librarian system in Qing Hua University Library in 1998, the subject service work and research of Chinese University libraries have entered a new stage of development. With the development of technology and society in various aspects after 2010, the subject service work and research have been further enriched and developed. On November 5, 2015, The State Council of China issued the Overall Plan for Promoting the Construction of World-class Universities and First-class Disciplines[2]., clarifying the guiding ideology for the construction of universities in the new era; On December 17, 2021, the 23rd meeting of the Commission for Deepening Overall Reform of the CPC Central Committee deliberated and adopted Several Opinions on Further Promoting the Construction of World-class Universities and first-class Disciplines, pointing out that the formation of first-class self-supporting and self-strengthening talents should be fostered from the aspects of "firmly establishing the position of talent training center" and "improving and strengthening the mechanism of teachers' teaching and educating responsibilities" [3]. Under the background of "double first-class" construction, Chinese university libraries actively give full play to the functions of teaching and scientific research support service, and provide strong support and development impetus for the talent training of first-class universities. With the continuous development of information technology and the application of emerging technological tools such as big data technology, cloud computing and artificial intelligence technology, the disciplinary services of university libraries are no longer limited to traditional information retrieval services and ref-

erence services, etc., but are evolving in the direction of intelligence. Libraries have been transformed from physical libraries and digital libraries to smart libraries. [4] The subject service field is also exploring the service model of intelligent subject. Related scholars have studied the subject service of university library under the new technology, and are expanding and innovating in several aspects such as the subject service concept, subject service model and subject service content and so on.

2 Process of measurement visual analysis

In summary, the process of data analysis mainly includes six stages: clear analysis purpose and framework, data collection, data processing, data analysis, data presentation and report writing. Many methods have been proposed for data visualization, which can be divided into geometry-based technology, pixel-oriented technology, icon-based technology, hierarchy-based technology, image-based technology, distributed technology and so on.

Taking the quantitative visualization analysis of Chinese library subject service research papers from 2010 to 2024 as an example, this paper briefly presents the effectiveness of data quantitative visualization analysis in six steps of the whole process.

2.1 Purpose and framework of measurement visual analysis

In order to fully grasp and sort out the current research status of Chinese library subject service, the author continues to make a quantitative analysis of the papers on Chinese library subject service from 2010 to 2024 on the basis of the research on Chinese library subject service and subject librarian from 1995 to 2010. The framework of quantitative visualization analysis is based on the annual trend of publication of research papers and the time node when China releases the "double first-class" construction plan of universities, and combined with the impact of new technologies on disciplinary services, the analysis is mainly divided into two stages. The first stage is the peak period of publication from 2010 to 2015. The second phase is 2015-2024 (including three years during the COVID-19 pandemic).

2.2 Data collection and data processing: data sources and statistical methods

In this paper, "China National Knowledge Infrastructure (CNKI)" is used as the data source, the data age is "2010-2024", the search time is January 18, 2024, and the advanced search method is "' article retrieval =university library 'and includes' subject service' or 'article retrieval = subject librarian'". The time range is from January 1, 2010 to January 18, 2024, the source category is all journals, select the research papers most relevant to the title of the paper by search term and publication time range, A total of 5193 Chinese relevant papers were detected in the database, including 4733 academic journal papers, 189 master and doctoral papers, 90 conference papers, 5 newspapers, 18 achievement papers, 4 academic journals, 146 featured journal papers and 8 video academic reports. The visualization analysis tool of CNKI was used to

analyze the retrieved paper data, The visualization function is based on the metadata and citation relationships of literature, using charts to visually display the quantity and relationship characteristics of literature. The visualization analysis of CNKI mainly includes the following types of content: Bibliometric analysis, author cooperation graph analysis, keyword co-occurrence analysis, high-frequency word statistical analysis and cluster analysis, etc. This paper mainly adopts bibliometric analysis according to the purpose of analysis. This visual analysis can be used to analyze the overall situation of literature in a certain major or a certain subject field. Such as the number of publications, core authors, core institutions, highly cited papers, high-yield authors, high-yield institutions, etc. This helps researchers to grasp the general situation of academic research in a certain major or a certain subject field as a whole, so as to provide a basis for subsequent literature evaluation and thematic research.

The data processing of this topic has been preliminarily screened through the retrieval method. In the visualization analysis, appropriate data processing methods are selected to ensure the accuracy and reliability of the results. The data processing of visual analysis mainly involves the following steps: first, data cleaning, second, data conversion, third, data standardization, fourth, data selection and grouping, fifth, chart creation, and sixth, analysis and interpretation of the results. These steps can be adjusted and optimized according to the specific data type and visualization requirements, and they are basically used in the subsequent data analysis.

3 Data analysis and presentation

3.1 Analysis of the annual distribution of papers

This research dimension mainly selects the sample size of research papers from the time of publication, the annual trend chart of research papers reflects the development of research in the field. The annual trend of 5193 research papers published (Figure 1): Library subject service research or subject librarian research showed a relatively hot research state from 2010 to 2020, among which the number of research papers reached the highest in 2013, and the research heat has declined since 2020, which is also related to the impact of the novel coronavirus pneumonia epidemic on some practical activities and research exchange activities.

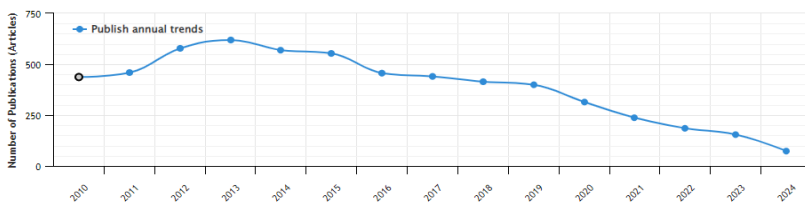


Fig. 1. Annual trend chart of publications

3.2 Distribution of main topics and institutions of the paper

The premise is to collect a large amount of literature data, and then establish a topic model. The topic model is a machine learning technology that can automatically identify and analyze topics and keywords in literature data, and then extract topic labels to generate topic distribution maps according to the frequency and importance of occurrence. The main topic distribution of CNKI is generated by using machine learning and natural language processing technology. Through analyzing and mining a large number of literature data, the importance and distribution of different topics in the literature are obtained. The distribution of publishing institutions also requires paper data collection, data cleaning and sorting, statistics and analysis, and results presentation, so that users can better understand the performance and influence of each institution in the academic field. Figure 2 below shows the basic flow generated by the major topic distribution Process diagram.

The main theme distribution of research papers (Figure 3) is concentrated in five themes, among which there are 2116 papers on the theme of university libraries, 1464 papers on the theme of discipline services, 1212 papers on the theme of subject librarians, 1126 papers on the theme of libraries, and 826 papers on the theme of library discipline services. In addition, there are 304 papers on the subject of subject librarian system and 244 papers on the subject of embedded subject service, Chinese scholars have published a total of 4050 papers on the above subject service topics, subject librarian topics, library subject service topics, subject librarian system topics and embedded subject service topics, accounting for about 70%, and about 30% of the papers on the remaining topics discussed subject service or subject librarian. Combined with the distribution of publishing institutions(Figure 4), it can be seen that the publishing institutions are mainly concentrated in universities, which is an appropriate meaning for universities to respond to the "double first-class" construction strategy in China's higher education field. The construction of "double first-class" is not limited to the construction of first-class universities, but more importantly, the construction of first-class disciplines. This requires universities to deeply study the characteristics and needs of each discipline, find the problems and shortcomings in the construction of disciplines, and put forward feasible improvement measures to promote the sustainable development of disciplines. Further locate the service object and service content, provide personalized and differentiated disciplinary services, improve the pertinence and effectiveness of services, and promote the construction and development of disciplines.

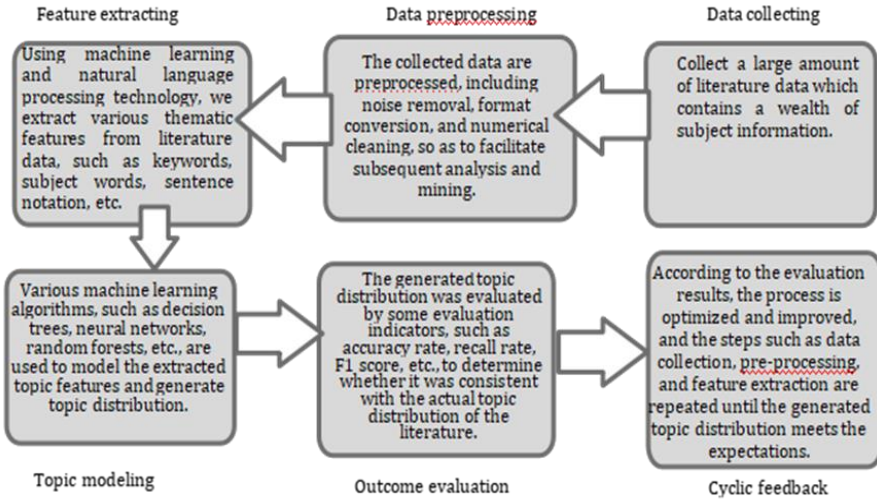


Fig. 2. The primary topic distribution generates the basic flow Path graph

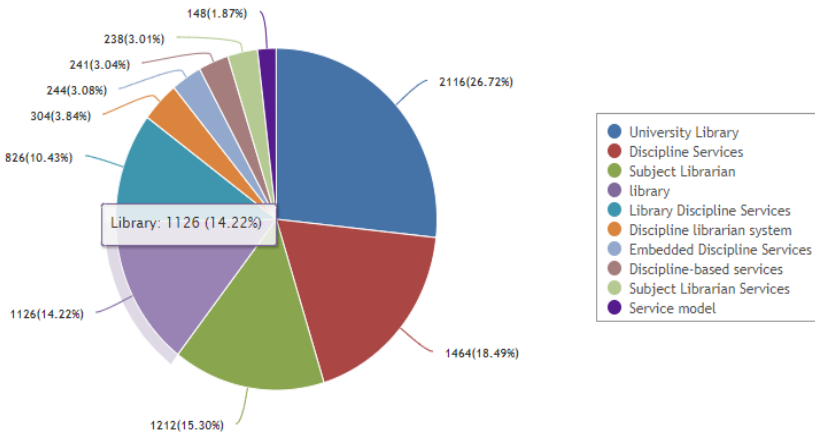


Fig. 3. Distribution of main topics

According to the "institutional distribution" analysis of the search results, it is found that the institutions with a large number of publications are: Shanghai Jiao Tong University, a total of 64 papers, Wuhan University scholars published a total of 51 papers; The PLA Medical Library published 45 papers, ranking third; Peking University ranked fourth with a total of 40 articles, and the rest are shown in Table 3. Universities are the main force in concentrated research in this field.

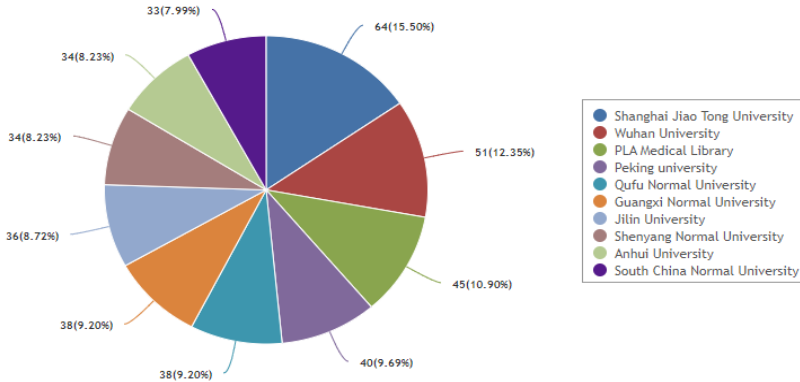


Fig. 4. Institutional distribution

3.3 Distribution of the literature sources

A further search of the papers found that 1570 of them were published in SCI, EI, Peking University Core, CSSCI, CSCD and AMI and other core journals, accounting for only about 27%, The representative core journals are *Library and Information Work* and *Library Science Research*, *Library and Information Work* accounts for 9.08%, *Library Science Research* accounts for 8.26%. 73% of the remaining research papers were published in general level journals, and the general journals with the most related papers are *Library and Information Guide Journal* and *Inner Mongolia Science and Technology and Economy*. Figure 4 below makes statistics on the distribution of literature sources. Among them, *Library and Information Guide Journal* accounts for 9.97%.

And *Inner Mongolia Science and Technology and Economy* accounts for 9.04%, etc. As shown below (Figure 5), the literature distribution of the paper is relatively dispersed.

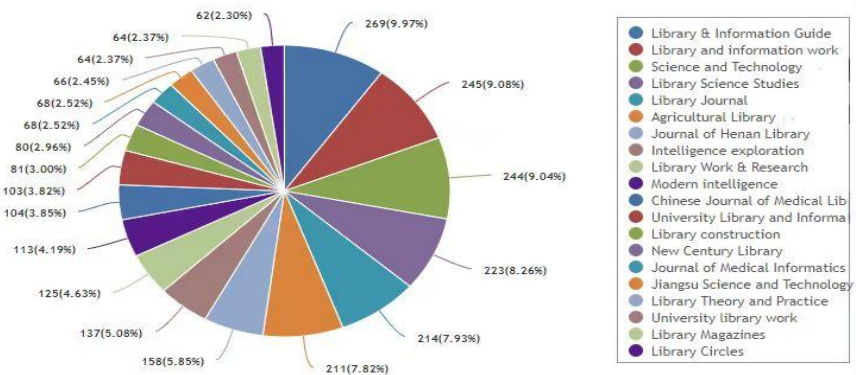


Fig. 5. Literature source distribution

3.4 Distribution of Chinese authors

Among the scholars who wrote papers, as shown in Figure 6, The author with the largest number of articles is Guo Jing from the library of Shanghai Jiao Tong University who wrote 23 papers, The papers include discipline service model, innovation and discipline librarian ability, quality and training, etc. Yuan Hongjun from the library of Zhengzhou Normal University published 17 articles; The papers include investigation and analysis of "double first-class" university library subject service, collaborative innovation model and implementation mechanism of university library subject service, research framework construction of library subject service platform, research on the status quo and development countermeasures of "double first-class" university library scientific research service, etc; Cheng Jin published 13 papers, However, only one paper was published as the first author. and other authors wrote 11 and 10 papers. The publication time was more concentrated between 2011 and 2015, and slightly reduced after 2015.

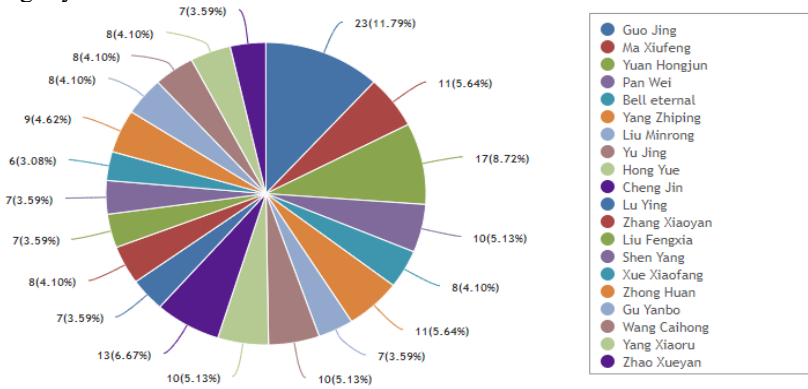


Fig. 6. Distribution of Chinese authors

To assess an author's academic influence, it is essential to evaluate both the quantity and quality of their papers. In line with this notion, this study examines and compiles statistics on 22 key authors whose research findings have been cited over 100 times. The citation frequency of the top 10 authors' papers is presented in Table 1. Upon reviewing and analyzing the research directions and publications of the researchers depicted in Figures 6 and Table 1, it becomes evident that a majority of their work focuses on library science, information studies, and digital libraries. Among them, Chu Jingli from the National Science Library of the Chinese Academy of Sciences has published three relevant papers during a period marked by increasing interest in disciplinary service research. Among the top 10 highly cited papers, the most recently published is the Research on the Innovation Trend of University Library Service Supporting the "Double First-Class" Construction written by Xiao Long[5], a scholar from Peking University Library in 2018, which conducted an in-depth research on the innovation trend of university library service after proposing the "Double First-class" construction plan. Compared to previous decades, subject librarians should expand their roles and responsibilities further. They should not only

strive for excellence in traditional service functions such as reference consultation, teaching and training sessions, and collection development but also enhance their embedded service capabilities within teaching and scientific research while effectively serving as academic partners. This entails strengthening technology applications, actively innovating subject service approaches by integrating online and offline teaching methods to improve data services capabilities; expanding academic exchange channels; as well as discovering and constructing open subject resource libraries. Understanding the leading role played by core authors in advancing this field contributes significantly to comprehending both its current state and future prospects for library subject service research in China.

Table 1. Top 10 papers cited frequently

Number	Author	Article title	Journal name	Year / period	Frequency of citation
1	Huang Haobo, He Weihua, Ye Qing	WeChat and its application in library information services	Library journal	2013/35	326
2	Chu Jingli, Kong Qingqing, Luan Guannan	Research progress in Embedded Subject Services	Book and information work	2013/57	287
3	Liu Ying, Huang Chuanhui	The embedded user environment: a new direction for library subject service	Knowledge of books and intelligence	2010/01	259
4	Chen Quansong	Practice and thinking of embedded subject service mode in university Library —— Taking Xiamen University Library as an example	Book and information work	2012/56	166
5	Chu Jingli	Theoretical breakthrough in embedded library service	The Journal of the University Library	2013/31	163
6	Chu Jingli	The difficulty and breakthrough of library subject service in China	Chinese Journal of Medical Books and Information	2012/21	163
7	Chen Lianfang, Xu Chunman	Discussion on the embedded innovative service mode in university Library	Library work and research	2010/08	161
8	Du Hui, Liu Xiao, Yuan Baicheng	Subject service innovation of university library based on wechat public platform	Book and information work	2015/59	155
9	Xiao Long	Research on the innovation trend of university library service in supporting the "double first-class" construction	The Journal of the University Library	2018/36	150
10	Wang Liping, Yang Bo, Qin Xia, et al	Content, mode and trend of patent information service in university libraries	Book and information work	2015/59	136

In order to gain a deeper understanding of the fundamental theme of research papers published subsequent to the initiation of the "double first-class" construction program in Chinese universities, further analysis was conducted on the search results. A supplementary search for "double first-class" and "discipline service" within the papers resulted in retrieving 346 relevant articles. Upon reviewing these papers, it was observed that under the backdrop of "double first-class" university development, there has been active promotion of discipline service work and research by university libraries. Following an outline of the "double first-class" construction plan in universities, Index analysis of top 12 highly cited papers (Table 2) is presented as a valuable reference for peer researchers and professionals engaged in related fields. The chart demonstrates that university libraries have expanded their practical endeavors and research scope concerning subject service content, service format, subject service system establishment, and service platform design amidst the context of "double first-class" construction efforts. In Table 3 below, the author with the most papers is Dong Tongqiang from the School of Education of Tianjin University. He has published three papers in total, mainly on the construction of intelligent disciplinary service space and platform, which is representative. The exploration of integration and reconstruction of ideas and new technologies reflects the development trend of future disciplinary service work. Yuan Hongjun, Deputy Research Librarian at Zhengzhou Normal University Library[6], investigated and analyzed subject services provided by "double first-class" university libraries: analyzing and comparing variations among 42 such institutions with regard to their subject service systems, content offerings, and operational modes while summarizing existing challenges encountered. Subject services are integrated throughout users' learning processes, teaching activities, and scientific research endeavors; they adapt according to user demands within specific environments. Consequently, recommendations are made to enhance university library subject services through improvements in system frameworks along with enriched content provisions aimed at expanding overall coverage.

Table 2. Index analysis of top 12 highly cited papers

The number of literature	Total reference number	The total number of citations	The total number of times the paper was downloaded	Average of the number of references per paper	The average number of citations per paper	The average number of downloads per paper	Ratio of downloads to citations
12	148	892	31917	12.33	74.33	2659.75	0.03

Table 3. Top 12 papers cited frequently

number	author	Article name	journal name	Year/ period	Frequency of citation
1	Xiao Ximing, Yin Yanli ^a	Construction of university library information resources for the "double first-class" construction	Library construction	2018/04	116
2	Xu Jianhui	Research on subject service innovation of university library under the background of "Double First-Class" construction	The University Library and Information Journal	2017/35	104
3	Liu Yong	The content and strategy of ESI discipline construction of university Library service under the background of "Double First-class" construction	Book and information work	2017/61	103
4	Hai-mei zhang	Analysis on the construction of university library subject service talents under the background of "Double first-class"	Library work and research	2018/01	81
5	Chu Jiewang, Wang Min	Research on accurate service countermeasures of university library under the background of "Double first-class" construction	Modern intelligence	2018/38	80
6	Dong Tong-qiang, Ma Xiufeng	The construction of intelligent discipline service space from the perspective of "artificial intelligence + library"	Library science research	2019/02	65
7	Dong Tong-qiang, Ma Xiufeng	The construction of the intelligent discipline service platform of university library is integrated into the construction of "double first-class"	Modern intelligence	2019/39	64
8	Shen Yang, Li Chunming, Qin Xiaolong	Research on the construction of university library subject service system integrated into the "double first-class" strategy	Modern intelligence	2018/38	59
9	Dong Tong-qiang, Ma Xiufeng	Integration and reconstruction: the design of the intelligent discipline service platform for university library in the first-class discipline construction	The Academic Journal of the National Library	2019/28	59
10	Liu Nan, Chen Xinyan, Yuan Yuan, etc	Practice of library subject knowledge service based on ESI and patent literature information — the library of Wuhan University of Technology supporting the construction of "double first-class" in universities as an example.	Library science research	2017/12	55
11	Yuan Hongjun	Investigation and analysis of the "double first-class" university library subject service	Library science research	2018/08	53
12	Liu Yan, Wang Tianni	Research on the intelligent subject service of university library under the background of "Double First-class"	Library work and research	2019/10	53

^a Xiao Ximing, Yin Yanli. Serving the construction of "double first-class" construction [J]. Construction of the Library, 2018, (04): 79-84.

4 Brief report on visualization analysis of measurement in research paper

Based on the quantitative visualization analysis above, it is evident that with the rapid development of information technology, University library subject service work and research showed an overall development trend of first rising and then decreasing from 2010 to 2024, This is reflected in the increasing number of research documents and author groups after 2010, as well as the expansion of research depth and breadth compared to before. The related research reflects strong characteristics of contemporary times. In 2015, the state proposed a "double first-class" construction plan for universities which played a leading role in disciplinary services for "double first-class" university libraries; however, challenges still exist in practice. Research literature has gradually declined since then, especially regarding novel coronavirus pneumonia epidemic-related results over the past three years. Nevertheless, from a global perspective during this epidemic period, digital information resources provided by university libraries have played an important role in teaching and learning while being key to guaranteeing education continuity amidst these challenging times[7]. In terms of resources, data construction and service mode, effective collaboration and open exchange are also pursued. Expand the service model to realize cross-disciplinary, cross-professional and even cross-school connections; In terms of service content, the pursuit of providing users with more disciplinary service products under the context, to achieve the combination of virtual and real advantages to enhance, weak areas to better serve the wisdom needs of readers. To a certain extent, these enrich and develop the theoretical research and practical application of document information resource security. On the whole, University library and information practitioners are still trying to explore and improve the subject service. - as Ranganathan's fifth law states[8]: "A library is a growing organism." As such institutions are organic entities comprised of three growing parts - books, readership & librarianship - we cannot fully predict what stages they will pass through; But the service purpose of letting readers have their books will never change.

5 Conclusion

Through the above case of quantitative visualization analysis, practitioners and researchers in this field can clearly, quickly and effectively understand the research status and work status of University library subject services in China from 2010 to 2024 by means of charting, The service trend and research trend of discipline service can be explored in multiple dimensions. Of course, using this tool to do the measurement visual analysis of research papers is also twice the result with half the effort. For example, Wang Yanping's paper[9] visual comparative study in the field of mapping at home and abroad — Based on the measurement and visual analysis of SSCI and CSSCI journal papers. At present, the built-in visual analysis function of cnki only supports the functions of document trend, literature mutual citation, keyword co-occurrence network, author cooperation network and author distribution, and does

not support more in-depth text analysis of text content. At present, we are familiar with CiteSpace, but the installation process of CiteSpace is complicated and requires the deployment of Java environment, which is more difficult for the technical white, and can be solved by the following methods: Step 1: Export cnki literature data as excel file, enter cnki first, search and select the literature you want to analyze; Then export the document, select Custom; Check the summary, and publish time, and click the xls button to export to xls format; Modify the file format to xlsx, the exported xls file will report an error when opened with Excel, click Yes, then click Enable edit button, click the file button in the upper left corner, save as xlsx format, open the file again after saving, you can display normal, you will find that save as xlsx format file, the file size is also smaller, but the content has not changed; Step 2: Use SmartAnalyze to start a visual text analysis of cnki paper abstracts. Refer to the Quick Start in the official user manual of SmartAnalyze. Data visualization can be static or interactive. Static data visualizations, such as charts and maps, have been used for centuries. With the development of technology, interactive data visualization is relatively advanced, the ability to use computers and mobile devices to drill down into the details of these charts and graphs, and then interactively change the data that people see and the way that data is processed. Data visualization allows users to quickly grasp key information. Get key data points from the human eye to the mind accurately, quickly and concisely. Data visualization has become one of the important tools in the era of big data. Through visualization, people can grasp the core information and characteristics of the data more quickly, and can see the trends and laws behind the data more clearly.

In summary, to ensure and improve the efficiency of data visualization analysis, we can start from the following aspects: selecting suitable visualization tools, that is, selecting suitable visualization tools according to different analysis needs and data types; Reasonably design the data visualization interface, fully consider the user's usage habits and information acquisition needs, and design the data visualization interface reasonably to make it intuitive and easy to understand; Maintain the accuracy and real-time nature of data, update data in a timely manner to maintain the accuracy of data visualization analysis, and use real-time data to reflect the latest research trends; Emphasize interactivity and user experience, provide interactive data visualization analysis tools, and enable users to conduct in-depth analysis according to their own needs; Combining machine learning and artificial intelligence technology, utilizing machine learning and artificial intelligence technology for deep analysis of data, improving the accuracy and efficiency of data visualization analysis, etc. At present, data visualization is widely used in smart cities, smart scenic spots, network situation, smart transportation and smart libraries, which is a very good development trend for data visualization, and visualization also plays a very important role in these specific industries. With the continuous development and maturity of science and technology, data visualization will gradually become the mainstream data analysis methods and systems.

References

1. baidu encyclopedia. [2024-1-18]
https://baike.baidu.com/item/%E6%95%B0%E6%8D%AE%E5%8F%AF%E8%A7%86%E5%8C%96/1252367?fr=ge_also.
2. The State Council of China. Notice of The State Council on the issuance of the Overall Plan for Coordinating and Promoting the construction of world-class universities and first-class subjects(No.64,2015) [EB / OL]. [2015-11-05]. [https:// www. gov. cn/ zhengce/ content/ 2015-11/05/content_10269.htm](https://www.gov.cn/zhengce/content/2015-11/05/content_10269.htm).
3. The Ministry of Education of the People's Republic of China. Several Opinions of the Ministry of Education, Ministry of Finance, National Development and Reform Commission on Promoting the Construction of World-class Universities and First-class disciplines [EB / OL]. (2022-01-29) [2022-06-12]. http://www.moe.gov.cn/srscsite/A22/s7065/202202/t20220211_598706.html.
4. Zhang Hua, Li Xiaodi.—Take the archaeological discipline of Jilin University as an example [J]. *Library Journal*, 2022,44 (04): 70-74. DOI: 10.14037/j.cnki.tsgxk.2022.04.011.
5. Xiao Long. Research on the innovation trend of university library service in supporting the "Double first-class" construction [J]. *Journal of the University Library*, 2018,36 (05): 43-51. DOI:10.16603/j.issn1002-1027.2018.05.008.
6. Yuan Hongjun. Investigation and analysis of subject services of "double first-class" university libraries [J]. *Library Science Research*, 2018, (08): 76-81. DOI: 10.15941/j.cnki.issn1001-0424.2018.08.011.
7. Stephen T, Josiline P C. COVID-19: Strategies for Positioning the University Library in Support of E-Learning[J]. *Digital Library Perspectives*, 2020, 37 (1): 54-64.
8. Cijari Ramarita Nazan. *The Five Laws of Library Science* [M] Bibliographic Academic Press, 1931.
9. Wang Yanping. — Based on the measurement and visualization analysis of SSCI and CSSCI journal papers [J]. *Library Theory and Practice*, 2021, (04): 44-51.

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