Hotspot Mining in the Field of Library and Information Science

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Abstract. [Objective] This paper studies the research hotspots of Library and Information Science and the future research trends are also discussed. [Methods]Select the five journals with the highest impact factors in 2021 as the data source, and use the VOSViewer software to carry out bibliometric analysis on these data.[Results]According to the data analyze the research hotspots on the topic mainly focus on six major research themes include knowledge management, user behavior, technology innovation, big data information analysis, competitive intelligence analysis and text mining.[Conclusions]Using bibliometric methods to analyze relevant literature in the field of library and information science can reveal research hotspots in this field, thus providing guidance for relevant researchers.

Keywords: Text mining, Bibliometrics analysis, Library and Information Science.

1. Introduction

Library and information science is an interdisciplinary subject. With the development of science and technology, a variety of new technologies are flooding into the field of library and information, which also brings new research hotspots to the field. The arrival of the big data era has affected the field of library and information, and the research hotspots in the field of library and information science are constantly changing. Therefore, this study carries out bibliometric analysis of the articles in five important journals in the field, and summarizes the current research status and research hotspots in the field of graphics and information.

Currently, the process of bibliometric analysis is complete. Using bibliometric methods to analyze relevant literature in the field of library and information science can reveal research hotspots in this field, thus providing guidance for relevant researchers.

2. Research Methodology

2.1. Data resourse

Journal Citation Reports are one of the most academically influential journal evaluation tools. Therefore, this study selected 5 journals (see Table 1 for details) of Information Science & Library Science which have the top 5 impact factors. Then a subject search was conducted in the Web of Science core collection database to obtain the data sources. Retrieval time: September 11, 2022. This study selected all the documents of these five journals since their inception, and downloaded the full records and cited references, 8560 results were retrieved.

Table 1. Distribution of retrieved studies among 5 journals

Journals	2021JIF	Number of studies issued
International journal of information management	18.958	2828
Journal of strategic information systems	14.682	618
Information & Management	10.328	2721
Telematics and informatics	9.140	1178
European journal of information systems	9.011	1215

As can be seen from Table 1, “International journal of information management” and “Information & Management” have the largest number of studies published in the field of Library and Information

Science, with a total number of 5549, accounting for 64.8% of all research results. In addition, only 618 studies on this field have been published in the journal "Journal of strategic information systems", however, the impact factor of the journal in 2021 is 14.682, ranked second and this fully illustrates the importance of this journal.

2.2. Method

In this study, we use VOSViewer software as the research tool to conduct bibliometrics analysis on the relevent documents of the five import journals. This software can be used for almost all common bibliometric analysis, such as co-ouccrrence analysis, co-citation analysis, coopearation analysis, etc [1]. The software is used to extract the publication time, author, author keywords and so on from the included literature.

3. Data Analysis

The document distribution is shown in Figure 1. It can be seen from the figure that the overall trend is gradually increasing, which shows that the field of library and information science is gradually developing, especially in the last five years, the total number of papers issued is more than 400.

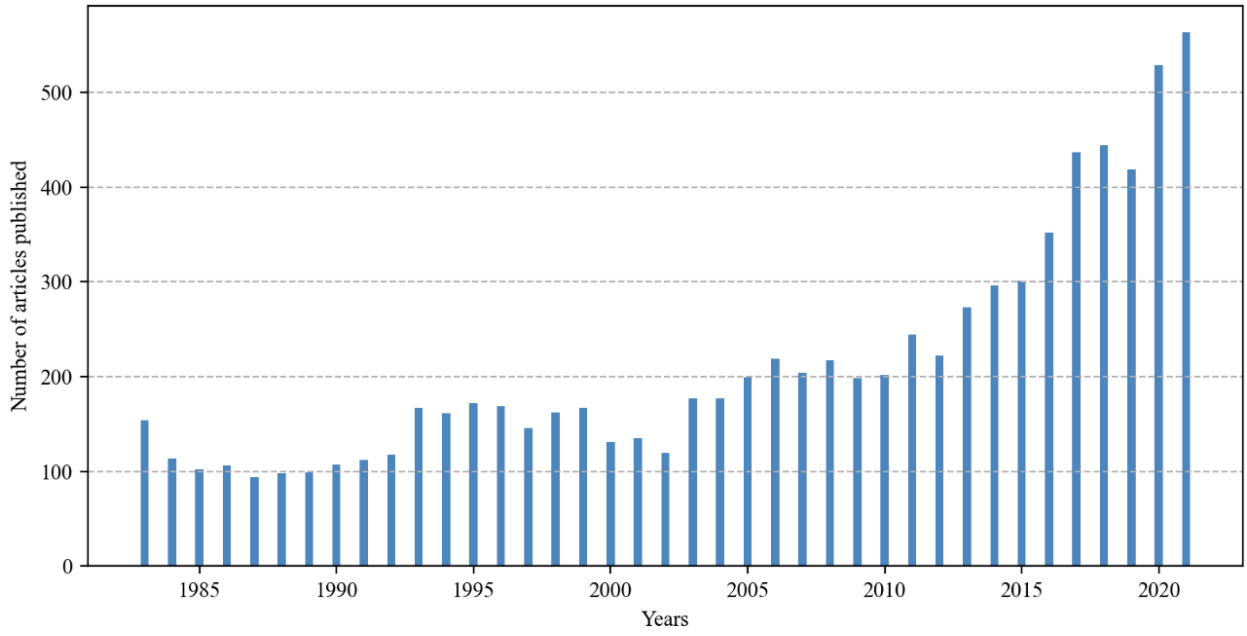


Figure 1. The distribution trend of the publication

The data collected from the web of science core collection database were imported into the VOS Viewer software to obtain the keywords and authors appearing in the papers.

There are 12828 authors in total, and the author with the highest number of articles is Bawden D who has published 121 articles. According to Price's Law [2], it can be calculated that the minimum publication number of core authors is 8.239, and there are a total of 142 core authors. Using the VOS Viewer software to generate a co-authorship analysis of the authors who have published more than 10 articles, and the co-authorship network is shown in Figure2. The size of nodes in Figure2 indicates the number of articles published by the author, the connections between nodes indicate the cooperation between authors, and the colors of nodes and connections indicate different clusters. From Figure2, we can find 10 cooperative groups among the 57 authors. The authors in each cooperative group work closely with each other, but not with other groups.



Figure 2. The clustering analysis diagram of co-authorship

Table 2. High-frequency keywords (≥60)

id	keywords	frequency	id	keywords	frequency
1	social media	256	10	innovation	78
2	knowledge management	143	11	adoption	77
3	information systems	138	12	knowledge sharing	77
4	information technology	134	13	electronic commerce	74
5	trust	132	14	technology acceptance model	66
6	case study	126	15	e-government	65
7	information management	94	16	satisfaction	64
8	internet	90	17	literature review	61
9	e-commerce	80	18	covid-19	60

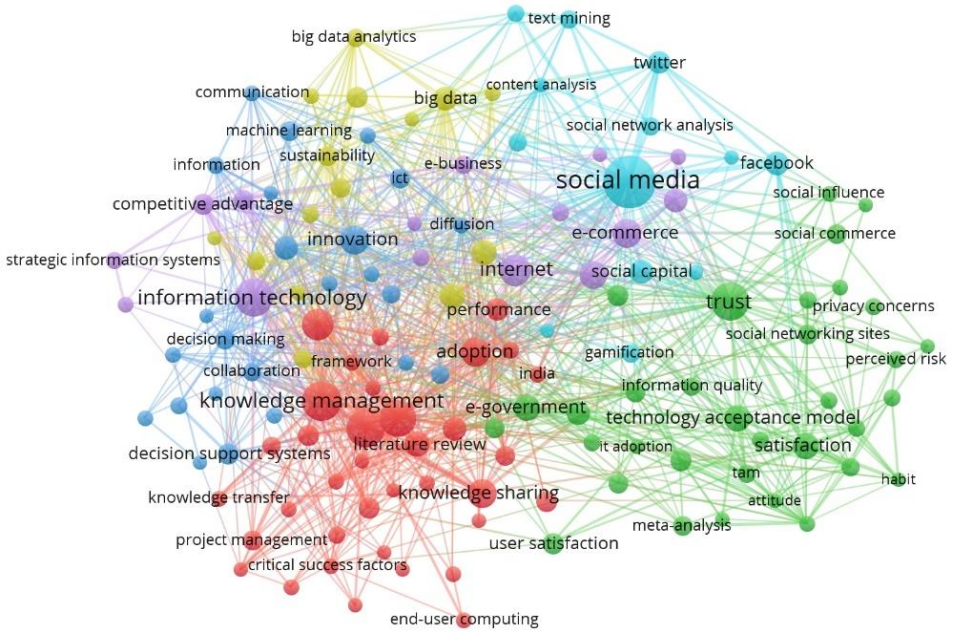


Figure 3. The clustering analysis diagram of high frequency keywords

Clustering analysis is a commonly used statistical analysis method, which has been widely used in the field of text data mining in recent years, it can reflect the research hotspot in a certain field and predict the development trend of future research [3]. Author keywords are keywords defined by authors for their own articles, the top 137 high-frequency author keywords with frequency ≥20 were selected as the main research objects. High-frequency author keywords with frequency ≥60 was shown in Table 2. Using the VOS Viewer software to generate a clustering analysis diagram of author keywords, as illustrated in Figure3. In Figure3, the size of nodes indicates the frequency of keywords, the connecting line between two nodes indicates the co-occurrence of two keywords, and the colors of nodes and connecting lines indicate different clusters. According to the clustering results, 137 high-frequency author words are grouped into six categories, indicating that the research of library and information science mainly involves six topics.

4. Hotspot analysis

Through the above analysis, the research hotspots in the field of Library and information science can be summarized into six aspects.

Hotspot 1: Knowledge management. Knowledge management is the basis of the management research field [4], and the research enthusiasm remains stable. At the same time, organizations and institutions pay more and more attention to the construction of information systems and the development of related application software to improve their core strength. Hotspot 2: User behavior. Analyzing user data, using information technology methods to predict and build user behavior models to provide better Internet products and services are the focus of research in recent years [5]. In addition, the user trust and user privacy security issues arising from the development of the Internet are also the focus of research in this field [6]. Hotspot 3: Technology innovation. Now, traditional research methods have been replaced by new technologies, and there are more relevant studies in library and information science using new tools [7]. Hotspot 4: Big data and information analysis. Data mining is widely used in the field of Library and Information, and the emergence of big data also has an impact on the methods of information processing. The data is growing at an alarming rate, and it is difficult for traditional information analysis methods to find the potential value in big data, which prompts the emergence of new information analysis methods to analyze these huge data sets in order to reveal the potential relationships in the data [8]. Hotspot 5: Competitive intelligence analysis. With the development of the network, e-commerce has also developed rapidly. More and more people pay attention to the competitive intelligence analysis of enterprises, and implement the man-machine cooperation mode of computer-based, intelligence personnel and decision-making [9]. Hotspot 6: Text mining. Many scholars use the data of social media such as twitter and Facebook for content analysis, text mining analysis and social network analysis [10,11], which is also a research hotspot of library and information science.

5. Conclusion

This paper is based on the Web of Science core collection database, and takes the articles of five important journals in the field of library and information science as the data sources. Through bibliometric analysis, the distribution, core authors and distribution of documents are obtained.

By doing the co-occurrence cluster analysis of high-frequency author keywords in this field, six hotspots in the library and information science are finally summarized, which are knowledge management, user behavior research, technology innovation, big data information analysis, competitive intelligence analysis, and text mining. Through the above analysis, this study can provide reference for relevant researchers, guide the scientific research direction, find the development direction of the field of library and information science, and promote and promote the development of the field of library and information science.

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