LIS Research Hotspots and Development Trends in Recent Years

—Analysis Based on Altmetrics Indicators

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Abstract

This paper identifies the hot areas of LIS research and discovers the development trend of library intelligence by establishing a comprehensive influence system in the field of LIS and finally, the scientific knowledge mapping software was used to analyze the literature on library science and information science in the SSCI database. Finally, the research hotspots in the field of graphic information were identified, and the development trend of library and information science was found to provide a reference for the research and development of the discipline.

Subject Areas

Library and Information Science

Keywords

Altmetrics, Library Science, Information Science, Research Hot Spots

1. Introduction

The development of library science and intelligence science has always been closely linked. In today's rapid development of academic communication and dissemination channels, more and more scholars are involved in social networks, and it has become an important thing to sort out the research focus of this discipline and see the future direction of scientific research. In foreign countries, Jarvelin K *et al.* [1] conducted a content analysis of core journal papers in the field of LIS between 1965 and 1985, and tracked the changes of research themes and hotspots in this field during 20 years, and found that the research focus in

this field was mainly on investigation, conceptual analysis, system and software analysis and design, etc.; Uzun A. [2] analyzed the developing countries and Eastern European countries' library intelligence research, selected 21 core journals in the field of LIS, analyzed the content of the literature as well as author co-authorship during 1980-1999, and used co-word analysis to conclude that information retrieval, information needs, and information users were popular research topics for scholars in the field of LIS during this period; Figuerola C G *et al*. [3] in the LISA database selected titles and abstracts of scholarship in the field of LIS during the period 1978-2014 and applied the Hidden Dirichlet Assignment Model technique to identify 19 major themes of the documents, classifying them into four areas: methods, information technology, libraries, and specific areas of information applications. A number of scholars in China have also analyzed the research hotspots in the field of LIS from different aspects [4]-[10]. Most of these studies analyze the journal papers in the field of LIS itself, this paper aims to combine the Altmetrics index of literature and traditional indexes to calculate the comprehensive influence of literature to identify the research hotspots and research frontiers in the field of LIS, reveal the trajectory, characteristics and laws of the development of the discipline of librarianship and intelligence, and provide reference for future academic research.

2. Comparison Analysis of Traditional Evaluation Indexes and Altmetrics Indexes

The traditional evaluation indicators of literature include the number of citations, the number of downloads, and the level of journals in which they are published. The Journal Citation Report (JCR) released once a year in foreign countries, the research report of China Science and Technology Paper Statistics and Analysis (CSTPCD) in China, and the catalog of core journals or source journals compiled by the library intelligence community all apply the traditional evaluation indexes. The most effective way to reflect the quality and level of academic journals among these evaluation methods is undoubtedly to use academic peers as the evaluation subject and let the subject conduct "content evaluation" and "utility evaluation" of academic journals. In the web 2.0 era, as the pace of academic communication and scientific progress accelerates, the limitations and shortcomings of using traditional evaluation indicators gradually emerge: one is the time lag. One is the time lag. The long period from publication to citation of academic results does not reflect the influence immediately; the other is the incomprehensive index. Citation evaluation ignores the network evaluation that can reflect the influence of academic results from multiple perspectives in the network era; third, there is a Matthew effect in citation evaluation; fourth, unethical and unethical citation also makes citation evaluation unfair and objective. a) Self-citation Although authors usually have good reasons for citing themselves in their articles, this practice has also been criticized as a tool to increase the number of citations, which may artificially artificially increase prestige and in-

fluence. b) Forced citation Well-known publications force scholars to enrich their papers with redundant citations or to enhance the status of their own journals by increasing citations. Fifth, there is the problem of negative citation. First, just because a paper is cited does not mean that it is positively cited; but there is no difference between positive and negative references when evaluating the value of a citation. Then there is the tendency for authors to cite highly cited journal material and ignore other valid work for a variety of reasons.

Altmetrics is a new evaluation concept that emerged after literature, information and webometrics, and its indicators include collection, sharing, commenting, reprinting and citation of literature, and its indicators reflect social influence. With advantages such as openness and ease of use compared to citation analysis, Altmetrics does not rely on commercial databases and can measure the impact of different types of research; it also reduces language expression bias, improves the assessment of young researchers' impact, and speeds up the evaluation process; calculates impact on various audiences, predicts future research impact, assesses the impact of uncited papers, compares across disciplines, and assess the output of various sources and researchers; and analyze low or slow-citing topics, Altmetrics can fill in the gaps in citation analysis.

Traditional evaluation metrics reflect only the academic impact of a paper, and using this metric to analyze research hotspots in a particular discipline would be incomplete; whereas altmetric metrics reflect the social impact of a paper. Therefore, combining traditional evaluation indexes and altmetrics indexes to calculate the comprehensive impact index of literature can make up for the limitations and shortcomings of each, and the results of research assessment are more reliable.

3. Data Collection and Processing

In this paper, the Web of Science database was selected as the source of data, and the search condition was set as "*wc = information science library science*", and the search date was December 1, 2019.

Firstly, the text data were processed, and those data whose DI fields were null values were removed from 20,618 data, and finally 17,897 valid data were obtained, accounting for 86.80%. Then, the DOI numbers of 17,897 academic papers were extracted, and the DIO numbers were used in batches at Altmetric.com to obtain the indicator data and attention scores of Altmetrics, and the literature whose publication years were not 2017-2019 were removed, and the final altmetrics indicator data and attention scores of 8283 papers were obtained.

4. Data Analysis and Identification of Research Hotspots

4.1. Data Analysis

4.1.1. Analysis of Cited Frequency and Altmetrics Indicators

Among the 8283 data collected, the highest number of citations was only 85, 11 papers were cited more than 50 times, 386 papers were cited more than 10 times,

and 3701 papers were not cited, accounting for 44.68% of the total. The large proportion of papers without citations is related to the short years of publication of papers in the sample. The following figure shows the distribution of citation frequency (Figure 1), from which we can see that the number of citations in the sample is mainly distributed below 5 times, and there are no citations over 100 times.

The citation frequencies, Altmetrics scores and indicators of 8283 data were extracted and imported into SPSS software for descriptive statistical analysis, and the results are shown in Table 1.

Table 1 lists only those metrics with coverage (coverage refers to the number of papers for which the valid value of a metric is not equal to 0 as a percentage of all papers) of 0.1% or more. The table shows the utilization of these metrics and where the influence of the LIS field comes from. 8283 articles of Altmetric
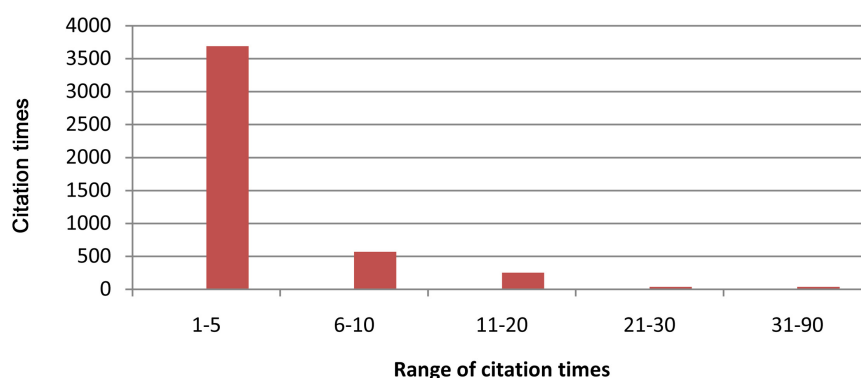

Figure 1. Distribution of citation frequency.

Table 1. Metrics statistics for the LIS.

Indicator	Minimum	Maximum	Mean	Standard deviation	Coverage
Mendeley	0	1028	26.85	44.395	95.79%
AAS	0	812	7.95	23.681	85.72%
Twitter	0	1327	9.06	31.230	81.15%
Dimensions	0	145	3.30	6.921	63.77%
Citedfrequency	0	85	2.22	4.634	55.32%
Facebook	0	11	0.18	0.571	13.24%
Blog	0	20	0.16	0.620	10.48%
News	0	53	0.16	1.487	3.49%
Google	0	8	0.05	0.283	3.40%
Policy	0	5	0.02	0.161	1.68%
Wikipedia	0	5	0.02	0.162	1.53%
Reddit	0	7	0.02	0.160	1.22%
Peerreview	0	2	0.00	0.065	0.39%
Video	0	1	0.00	0.051	0.27%

contain metrics, Mendeley is mentioned by users in 95.79% of papers, mentioned in Twitter, Dimensions, Facebook, Blog, News, Google, etc. The percentage of papers mentioned by users was 81.15%, 63.77%, 55.32%, 13.24%, and 10.48%, respectively, while the coverage of papers in the field of LIS by metrics such as News, Google, Policy, Wikipedia, Social News, Review Sites, Video, F1000, Patents, and Q&A was below 10%, and the coverage of microblogs, LinkedIn, Pinterest, the course syllabi and reading bibliographies had zero metrics and were not mentioned. Looking at the mean value of these metrics, the mean value of cited frequency is 2.22 and the mean value of Altmetrics score is 7.95, where the mean value of Mendeley is 26.85, Twitterr is 9.06, and Dimensions is 3.30. Only 55.32% of the 8283 articles are cited, which may have something to do with. This may be related to the fact that all these data were published in recent years, and it can also show that it is far from enough to evaluate the influence of an article only by the indicator of the number of citations. In this paper, we analyze the indicators with high coverage to establish a comprehensive impact evaluation system, and then identify the research hotspots in the field of LIS by identifying the high impact research literature.

4.1.2. Comprehensive Influence Analysis

Six indicators (citation frequency, Mendeley, Twitter, Dimensions, Facebook, Blog) with a coverage rate of 10% or more were selected to establish the comprehensive influence evaluation index system of the paper, and the data of the corresponding indicators of the paper were imported into SPSS for factor analysis. The results are shown in Table 2: the correlation between citation frequency and Mendeley and Dimensions is high, reaching 0.676 and 0.940, respectively, and the correlation with Twitter, Facebook, and Blog reaches 0.143, 0.122, and 0.137, respectively. the probability of two-sided test is 0.000, which is less than

Table 2. Correlation matrix.

		Citedfrequency	Mendeley	Twitter	Dimensions	Facebook	Blog
Correlation	Citedfrequency	1.000	0.676	0.143	0.940	0.122	0.137
	Mendeley	0.676	1.000	0.097	0.746	0.044	0.051
	Twitter	0.143	0.097	1.000	0.131	0.287	0.390
	Dimensions	0.940	0.746	0.131	1.000	0.094	0.110
	Facebook	0.122	0.044	0.287	0.094	1.000	0.201
	Blog	0.137	0.051	0.390	0.110	0.201	1.000
Significance (one-tailed)	Citedfrequency		0.000	0.000	0.000	0.000	0.000
	Mendeley	0.000		0.000	0.000	0.000	0.000
	Twitter	0.000	0.000		0.000	0.000	0.000
	Dimensions	0.000	0.000	0.000		0.000	0.000
	Facebook	0.000	0.000	0.000	0.000		0.000
	Blog	0.000	0.000	0.000	0.000	0.000	

[a]Determinant = 0.038.

0.001, that is, the correlation reaches significant at 0.001 level to reach significant correlation.

KMO (Kaiser-Meyer-Olkin) is an indicator used to compare simple correlation coefficients and partial correlation coefficients among variables. the KMO statistic takes values between 0 and 1. the closer the KMO value is to 1, the stronger the correlation between variables and the more suitable the original variables are for factor analysis. The KMO value in Table 3 is 0.658, which is greater than 0.06, indicating that the bias correlation between the six indicators is strong and the original variables are suitable for factor analysis; the Bartlett sphericity test for significance indicates that the six variables are significant among each other.

As seen in Table 4, the commonality of all variables is high except for Facebook.

Then the data were subjected to principal component analysis, there are two factors and the variance contribution rates are 44.54% and 25.08%, respectively, and the cumulative variance of these two components is large, reaching 69.61%, so two common factors can be extracted; then the maximum variance method was selected and the factors were orthogonally rotated to obtain the factor loading matrix (Table 5) and the component score coefficient matrices (Table 6):

From the factor score coefficient matrix, we can obtain the formula for the two factor score functions for the dissertation evaluation.

$$F_{academic} = 0.364C + 0.345M - 0.034\,T + 0.378D - 0.035F - 0.041B$$

$$F_{social} = 0.002C - 0.064M + 0.500T - 0.024D + 0.405F + 0.471B$$

(Initials are used instead of individual variable names, where C indicates M for Mendeley, T for Twitter, D for Dimensions, Cited frequency, F for Facebook, and B for Blog)

Table 3. KMO and bartlett's sphericity.

KMO Sampling fitness measure		0.658
	Approximate chi-square	27,149.589
Bartlett's test of sphericity	degrees of freedom	15
	Significance	0.000

Table 4. Common factor variance.

	Initial value	Extraction
Citedfrequency	1.000	0.895
Mendeley	1.000	0.750
Twitter	1.000	0.630
Dimensions	1.000	0.940
Facebook	1.000	0.409
Blog	1.000	0.552

Extraction method: Principal component analysis.

Table 5. Rotated factor load matrix.

	Component	
	1	2
Dimensions	0.966	0.085
Citedfrequency	0.938	0.121
Mendeley	0.866	0.009
Twitter	0.075	0.790
Blog	0.048	0.741
Facebook	0.042	0.638

Table 6. Component score coefficient matrix.

	Component	
	1	2
Citedfrequency	0.364	0.002
Mendeley	0.345	−0.064
Twitter	−0.034	0.500
Dimensions	0.378	−0.024
Facebook	−0.035	0.405
Blog	−0.041	0.471

According to the loading weights of each factor 44.54% and 25.08% to obtain the combined influence score of the paper:

$$F_{composite} = \left(F_{academic} \times 0.4454 + F_{social} \times 0.2508 \right) / 0.6962$$

The two-dimensional scale is an analysis method that selects two classification dimensions and draws a four-quadrant diagram, which is deepened from the "Boston matrix analysis" method and can be used to analyze the level and status of the field. After obtaining the impact score of the paper, the X-axis indicates the social influence $F_{society}$, which indicates the social attention and influence of the paper in the Web environment; the Y-axis indicates the frequency of citations $F_{academic}$, which indicates the academic research level of the paper. The two-eight law of literature prevailing in academia was chosen to be applied, and 20% of the papers with social influence greater than 0.35 were obtained with the X-axis with 0.35 as the benchmark cut-off; 20% of the papers with academic influence score greater than 0.24 were obtained with 0.24 as the benchmark standard cut-off, and the sample papers were put into the two-dimensional coordinates (Table 7).

Finally, four quadrants were obtained.

1) "Hot areas": located in the first quadrant of the figure. This field is characterized by high social media and academic influence. The authors in this area are all highly accomplished academics, leading scholars and leaders in the field of LIS. The research content of "hot fields" is usually the hot spot and the frontier of research in this field, so the citation frequency and altmetric index are high.

Table 7. Classification of thesis types based on two-dimensional measures.

Social impact	Cited frequency	Research area
Low	Low	Marginal
Low	High	Classical
High	Low	Emerging
High	High	Hotspot

2) "Classic fields": located in the second quadrant of the graph. This field is characterized by high academic influence and a high number of citations, but it is less mentioned on social media. I think the authors in this field have high prestige themselves, but are not active enough in academic communication networks.

3) "Marginal Fields" is located in the third quadrant of the graph. Authors in this field have some minor influence in academic and social networks. Most of the young researchers in the field of figure of affection are authors in this quadrant position, who are more active in academic social media and have less academic achievements, and their academic and social influence will slowly increase with time in the future.

4) "Emerging field": located in the fourth quadrant of the figure. This research area is more active on academic social networks, but is less frequently cited. This area may be an emerging area of research that has not yet been discovered by most scholars.

4.2. Research Hotspots in the Field of LIS

4.2.1. Sources of Research Hotspots in the Field of LIS

The 4141 data were imported into VOSViewer, and the data were analyzed by Bibliographic coupling (Bibliographic coupling), the type of analysis was Publications (Sources), and the threshold value was selected as the minimum of 5 published papers, and the following **Figure 2** was obtained.

As can be seen in **Figure 2**, the main journals from which the articles with high Altmetrics scores come. The top 10 high-impact journals are Scientometrics (354 articles), Journal of the american medical informatics association (300 articles), Qualitative health research (176 articles), telematics and informatics (154 articles), journal of the association for information science and technology (153 articles), journal of informetrics (147), international journal of information management (127), journal of health communication (125), profesional de la informacion (103), and journal of academic librarianship (102). The total altmetrics scores of the journals (top 40) and six indicators (frequency of citations, Mendeley, Twitter, Dimensions, Facebook, and Blog) were summarized in **Table 8**. Six journals are ranked in the top 10 by AAS; three other journals are ranked in the top 20, 11th, 12th and 18th respectively; only one journal, international journal of information management, is ranked relatively low, 32nd.

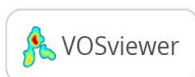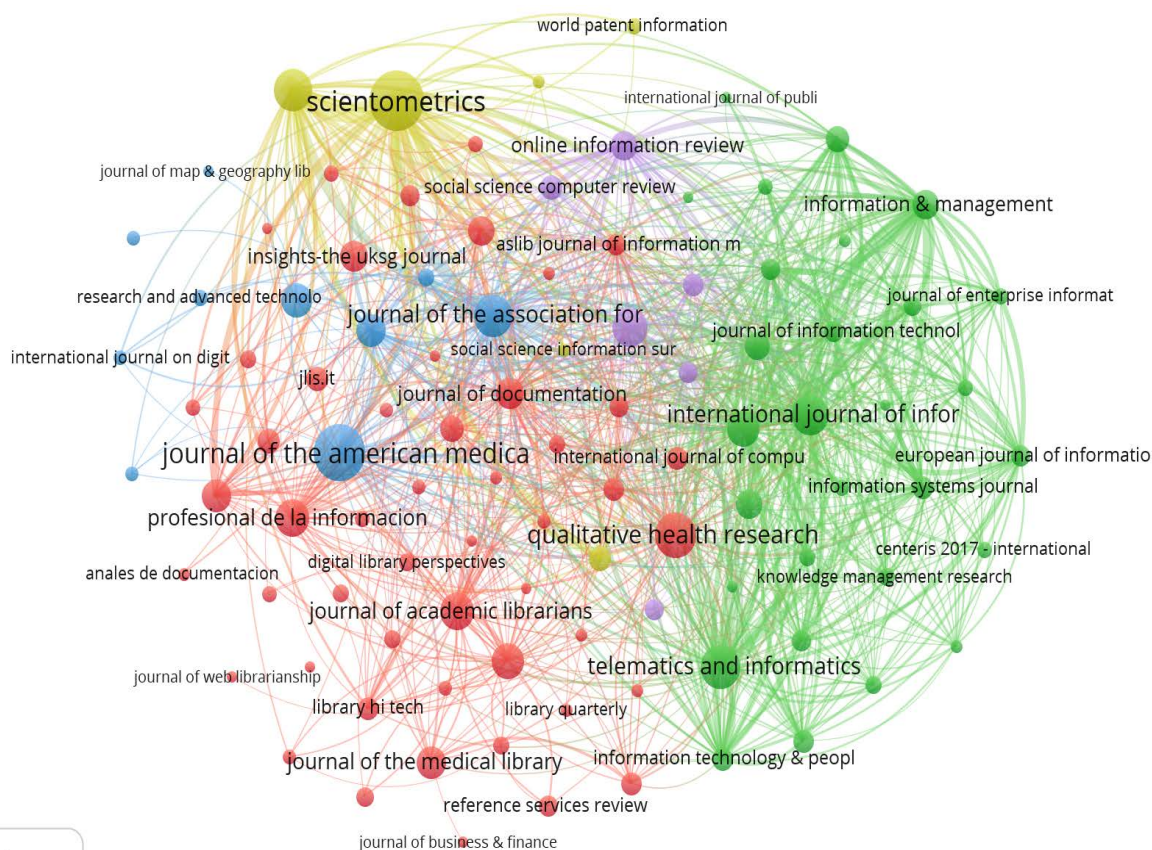These six indicators (frequency of citations, Mendeley, Twitter, Dimensions,

Figure 2. Souces.

Facebook, and Blog) were then clustered using SPSS to obtain a clustering tree diagram (Figure 3).

From the figure, it can be seen that journals in the field of LIS communicate online mainly on the platform of online literature management tools and academic social Mendeley; secondly, journals in the field of LIS are often mentioned on Twitter; Blog, Facebook, Cited frequency, and Dimension indicators all score relatively Blog, Facebook, Cited frequency, and Dimension indicators are all relatively low.

These journals are then placed in a two-dimensional quadrant: with AAS as the X-axis and citation frequency as the Y-axis. The journals located in the fourth quadrant are basically in emerging fields, and these journals include: Insights: the UKSG journal, Archives & Manuscripts, Ethics & Information Technology, Information Technology & Libraries, Journal of Library Administration, JLIS.it, Archival Science, Cataloging & Classification Quarterly.

Journals located in the fourth quadrant of emerging fields published a total of 443 articles on LIS, and the highest AAS of these articles was 197, with high activity on academic social networks; the highest citation frequency was 10, with fewer citations, which is related to the recent publication of articles in emerging fields. However, this field should be an emerging area of LIS research, which has

Table 8. Table of journal altmetrics scores.

Journal	AAS	Cited frequency	Blog	Twitter	Facebook	Mendeley	Dimensions
Scientometrics	7228	1928	201	8998	85	12,912	2488
Journal of the American Medical Informatics Association	7039	1294	52	7415	267	11,172	2152
Insights: the UKSG journal	3299	75	108	4607	52	775	105
Journal of Informetrics	3297	914	67	5029	33	7601	1215
Publications	2629	152	110	3376	35	1265	204
Learned Publishing	2446	244	80	3974	28	1287	292
Qualitative Health Research	2441	631	40	3062	39	6427	901
Journal of the Association for Information Science and Technology	2241	700	44	2705	10	6415	1133
Journal of Health Communication	1841	514	9	1502	43	4726	717
Profesional de la Informacion	1768	285	9	2513	89	3060	129
Telematics & Informatics	1587	1230	17	598	10	16,035	1862
Journal of Computer-Mediated Communication	1355	236	11	1185	12	2047	313
Social Science Computer Review	1310	153	18	1179	8	1524	273
Journal of the Medical Library Association	1205	236	34	1650	15	3699	302
Telecommunications Policy	1185	243	12	595	7	4254	448
College & Research Libraries	1152	264	29	1195	130	2995	266
Journal of Academic Librarianship	1124	250	37	1133	38	7422	341
Government Information Quarterly	972	483	5	1293	3	12,204	880
International Journal of Geographical Information Science	921	525	8	1036	13	3192	684
Research Evaluation	849	224	31	975	13	1361	298
Journal of Documentation	843	262	29	913	9	2741	308
Archives & Manuscripts	703	17	3	1071	5	222	18
Ethics & Information Technology	676	76	5	1093	11	1601	146
Health Information & Libraries Journal	660	123	5	1049	6	1309	143
Information Technology & Libraries	615	32	63	315	3	892	47
Aslib Journal of Information Management	596	152	14	729	10	1070	206
Information Systems Journal	583	168	6	121	4	2136	263
International Journal of Computer-Supported Collaborative Learning	576	159	3	959	21	1373	238
Journal of Library Administration	519	50	8	506	10	973	89
Information Processing & Management	488	513	7	503	6	4489	802
International Journal of Information Management	484	1265	5	448	3	15,190	2159
Online Information Review	440	214	9	626	5	2887	300
JLIS.it	424	30	14	363	93	399	20
Archival Science	408	22	1	556	3	284	33
Cataloging & Classification Quarterly	405	49	5	465	1	611	48
Information Systems Research	379	147	3	140	0	3530	276

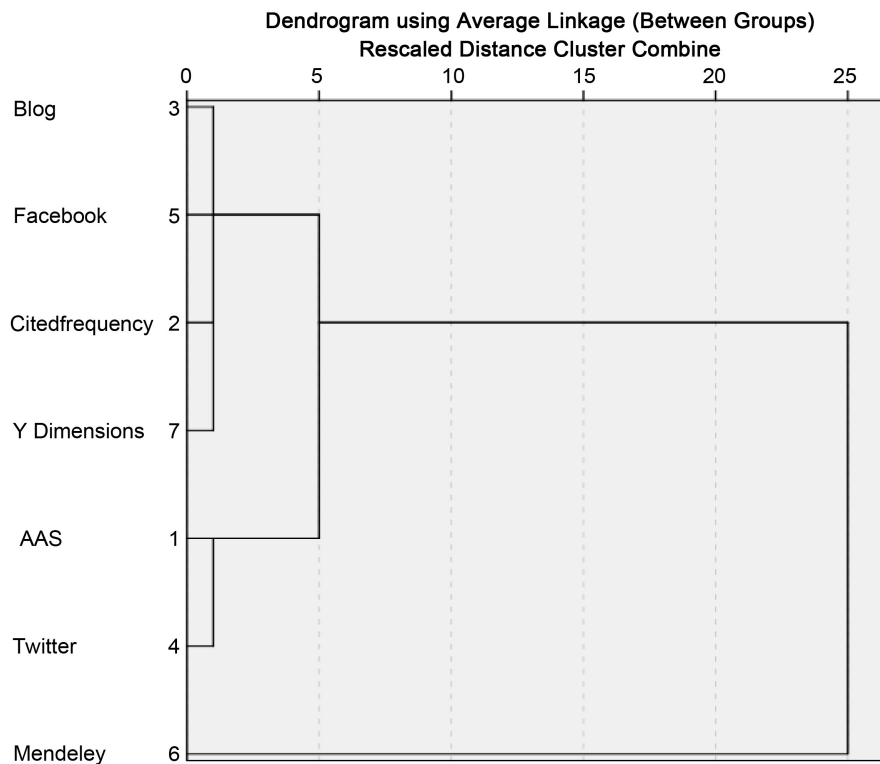**Figure 3.** Indicator clustering tree diagram.

not been discovered by most scholars and will most likely become a research hotspot in the future.

4.2.2. Analysis of Research Hotspots in the Field of LIS

Using Citespace software, the data of these 443 papers were analyzed to reveal the research hotspots in the field of LIS, with the node type selected as "Reference", the time zone span (Slice) set to 1 year, the data filtering set to Top50, the pathfinding network algorithm, and the overall network The results are shown in Figure 4.

Figure 4 has 178 nodes, forming six clearer clusters: intelligent system, archival intervention, case study, radical empathy, virtual reality, and algorithmic paranoia. For the above identification and findings, the content analysis of these clustered literature yielded the research frontiers in the field of LIS.

Frontier 1 intelligent systems consists of the clustered literature #0 intelligent system in the figure. With the research of artificial intelligence technology, Bryson, Joanna J, Gunkel, David J have argued that the design of intelligent systems should be combined with the design of ethical systems to design ethical AI and should be more patient in the face of AI to guide the norms [11] [12]. Johnson, Deborah Gr states that robots should not be treated like animals and that when building robots one should consider where they are and where they fit in the physical, economic, legal, intelligence and ethical [13].

Frontier 2 archival intervention and case study Consisting of 3 clustered literatures #1 archival intervention, #3 case study, and #4 radical empathy, Wright,
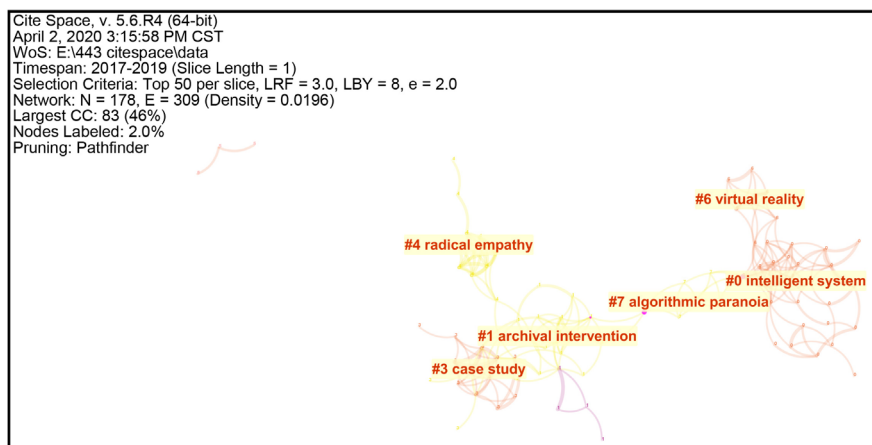
Cite Space, v. 5.6.R4 (64-bit)
April 2, 2020 3:15:58 PM CST
WoS: E:\443 citespace\data
Timespan: 2017-2019 (Slice Length = 1)
Selection Criteria: Top 50 per slice, LRF = 3.0, LBY = 8, e = 2.0
Network: N = 178, E = 309 (Density = 0.0196)
Largest CC: 83 (46%)
Nodes Labeled: 2.0%
Pruning: Pathfinder

#6 virtual reality
#4 radical empathy
#0 intelligent system
#7 algorithmic paranoia
#1 archival intervention
#3 case study

Figure 4. Frontiers of research in emerging areas.

Kirsten [14] discusses issues related to the display and use of historical language that is now seen as offensive. Taking the non-neutrality of archives, archival systems and documents as a starting point, he considers the role of archivists in maintaining and reproducing dominant power structures through archival descriptions. It also examines the implications of non-critical reproduction of historical language in archival descriptions, catalogs and the search for secondary sources. It considers the balancing act between reproducing that language and potentially causing offense and distress if the information is not displayed, which would not provide complete and accurate information. Lapp, Jessica M [15] explores how archival work, once considered mechanical, servile and invisible, can become powerful and disruptive, providing opportunities for political intervention and social change. Sutherland, Tonia examines the influence of anthropologist, dancer and choreographer Katherine Dunham on African wandering dance works through the intervention of archives, arguing that the reading of gestures as documents or records came to be used as a colonial archival practice, making the archive a cultural the beginning of expression that would otherwise render the extant Western archival practices invisible [16].

Lian, Zhiying [17] analyzed the sustainability of independent community archives in China and he classified three models of community archives in China. The first is the preservation of community archives in government-funded/government-created museums or archives. The second place is where community archives are kept by academic organizations such as universities. The third is where communities create their own archives. The last model is very rare in China. He discusses the emergence and development of the PCMML, a museum of migrant workers' culture and art in Picun, and the challenges it faces. He argues that the survival strategies of independent community archives in China depend on three dimensions: the community itself, the community, and the government. caswell, Michelle [18] and others see community archives as personal political sites, and they argue that the spatial archival metaphor needs to be transformed, and that community archives are personally and politically trans-

formative spaces for the communities they represent and serve. douglas, Jennifer theoretically and methodologically focus on the individual in the archive, and they suggest that it is best to decide whether to consider a record as personal based on its creator rather than its creators [19].

Lowry, James approach displaced archives from a new perspective, using theories and concepts recently introduced in archival theory by Michelle Carswell, Anne Gilliland, and Marika Chifle: influence, imagined records and the impossible archival imagination and Radical Empathy. In his opening keynote address at the 8th International Conference on the History of Records and Archives in Melbourne, Australia, he first outlined archival displacement as a historical phenomenon, then focused on postcolonial cases and argued for a more comprehensive history of archival displacement during decolonization, further elaborating on the potential research agenda for displaced archives as a still underresearched area of archival research [20] [21].

Frontier 3 Virtual reality Consists of literature clustered by #6 virtual reality. Ramirez, Erick Jose [22] *et al.* argue that the design and use of certain kinds of virtual reality (VR) experiences in specific contexts may be unethical, and that almost-real experiences can raise ethical issues for VR technologies unique to the medium. Therefore, a higher level of ethical scrutiny should be applied to any VR scenario that may produce an almost-real experience. To mitigate this unique ethical risk, they propose the "equivalence principle". This principle states, "If it is wrong to allow subjects to have certain experiences in reality, then it is wrong to allow subjects to have experiences in environments that are actually real." They argue that such principles, although limited in scope, should be part of any risk analysis conducted by institutional review boards, psychologists, experience-oriented philosophers, or game designers who use VR technology in games.

Frontier 4 Algorithms Consisting of the literature on #7 algorithmic paranoia clustering. sheehey, Bonnie [23] examines the temporal operation of the power exercised by predictive policing algorithms in light of the recent emergence of predictive techniques in law enforcement to predict crimes before they occur. He argues that predictive policing exercises power through a paranoid style that constitutes a form of provisional government. Temporality is particularly relevant to understanding the ethical relationship of predictive policing because temporality is continuous with the historical racial practices of organizing, managing, controlling, and stealing time.

5. Conclusion

This study analyzed the academic influence and social influence of papers, screened out the highly cited literature, and analyzed the research hotspots in the field of LIS using visualization tools, and finally concluded that the research hotspots in the field of LIS in 2017-2019 are mainly concentrated in the fields of big data, academic search engines, social media, and information literacy; at the same time, it was also found that the journals containing these hot research areas have a to-

tal altmetrics scores are relatively high, and analysis of journals for emerging research areas reveals that there are still many problems to be solved in these research areas such as intelligent systems, archives, virtual reality, and algorithms, and I believe that these studies will remain the focus and hotspot of research in the field of LIS in the coming years.

Fund

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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