

## **Trend of Library and Information Science Research on Library and Information Science Journals in Indonesia (2013-2019)**

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### **Abstract**

This research aims to identify trend in the development of Library and Information Science in Indonesia through scientific journals of Library and Information Science having been indexed by SINTA (*Indeks Sains dan Teknologi*) during 2013-2019. This research is a quantitative research using bibliometrics method. Population in this research is 741 articles published on 8 (eight) journals, *Berkala Ilmu Perpustakaan dan Informasi* published by Universitas Gadjah Mada, *Jurnal Kajian Informasi dan Perpustakaan* published by Universitas Padjadjaran, *Jurnal Ilmu Informasi, Perpustakaan dan Kearsipan* published by Universitas Indonesia, *Edulib Journal Perpustakaan dan Ilmu Informasi* published by Universitas Pendidikan Indonesia, *Jurnal BACA: Jurnal Dokumentasi dan Informasi* published by Lembaga Ilmu Pengetahuan Indonesia, *Khazanah Al-Hikmah: Jurnal Ilmu Perpustakaan, Informasi, dan Kearsipan* published by Universitas Islam Negeri Alauddin Makassar, *Lentera Pustaka: Jurnal Kajian Ilmu Perpustakaan, Informasi, dan Kearsipan* published by Universitas Diponegoro, and *Record and Library Journal* published by Universitas Airlangga during the period of 2013-2019. Research trend of Library and Information Science from 2013 to 2019 shows most topics discussed are Library and Information Science (LIS) 27.68%, Information Science Research (17.21%), and Subject Specific Sources and Applications (13.40%). The interesting finding is percentage of collaborative research is higher than individual research, 54.93%.

### **Keywords**

Research Trends, Journals, Bibliometrics, SINTA, Library and Information Science.

## **Introduction**

Journal is one of scientific publications containing research conducted by students, lecturers, or researchers. Scientific journal can be defined as a form of periodical scientific publications containing activities' results of particular science, both in the form of empiric observations and conceptual studies, new inventions or corrections, development, and strengthening of existing paradigms, concepts, laws, and theories (Telagawathi, 2017). Research published in journal is used to develop a science. One of sciences that publishes scientific journal is Library Science or Library and Information Science. Based on data on SINTA (Science and Technology Index) website up to June 2020, the total of Library and Information Science journal was 19 accredited journals. SINTA is an official portal belonging to Indonesian government containing the assessment of Science and Technology (IPTEK) performance, among others are researcher performance, journal performance, IPTEK institution performance, and journal author performance. In addition to assessing IPTEK, SINTA is also an international indexing tool of journal, book, article, and other scientific works. SINTA is used as a forum for researchers and lecturers to publish research results online initiated by Ministry of Research, Technology, and Higher Education (Kemenristekdikti) of the Republic of Indonesia.

During the period of article publication on Library and Information Science journals in 2013-2019, certainly there were many research results or various reviews, innovations having been disseminated. Therefore, it is interesting to find out the extent of research development in Library and Information Science. The analysis which can be used to perceive research development is bibliometrics analysis. When a scientific journal is examined by means of bibliometrics, it will result in description of the journal such as, the quality of journal, maturity, productivity, and other descriptions (Saleh & Sumarni, 2016). Bibliometrics introduced by Pritchard in 1969 is the application of mathematical and statistical methods to books and other media of communication (Tallolli & Mulla, 2016). In ODLIS: Online Dictionary of Library and Information Science bibliometrics means the use of mathematical and statistical methods to study and identify pattern in the use of material and service at library, or to analyse historical development of particular literature body, especially authorship, publication, and its use (Reitz, 2002).

Previous research using bibliometrics analysis on journals is research conducted by Rahayu (2019) titled "Khizanah Al-Hikmah: Jurnal Ilmu Perpustakaan, Informasi dan Kearsipan (Analisis Bibliometrika pada Terbitan Tahun 2013-2018)". This research concluded that this journal published as many as 101 articles from 150 authors, with the total of individual author outnumbered that of collaborative authors, indicated by collaboration degree 0.34.

The majority of reference used was book (65.15%), with the most pages around 6-10 pages (41.13%).

Another research on bibliometrics analysis is “Tren Topik Penelitian Jurnal Terakreditasi Peringkat Sinta 2 Bidang Ilmu Perpustakaan dan Informasi di Indonesia Periode 2013-2019” conducted by Dwiyanoro (2020). This research aimed to find out the trend of research topic on accredited journal SINTA 2 of Library and Information Science in Indonesia during the period of 2013-2019. Result of this research showed that research trend on accredited journal SINTA 2 of Library and Information Science during the period of 2013-2019 tended towards 3 (three) main taxonomies, among others were Libraries and Library Services (LIS), The Information Professional, and Information Science Research (ISR). Conclusion of this research is research trend was more inclined towards Libraries and Library Services (LIS), The Information Professional, and Information Science Research (ISR).

In addition, Kriswanto et al., (2019) also conducted bibliometrics research titled “Kecenderungan Topik Penelitian di Bidang Ilmu Perpustakaan dan Informasi dengan Pendekatan Kaidah Zipf”. Result of this research showed that research topic tendency on *Berkala Ilmu Perpustakaan dan Informasi UGM* in 2017 was divided into two groups, (1) librarianship group as many as 16 articles; (2) information science as many as 4 articles.

Shukla & Verma (2018) also conducted research titled “Library Herald 2008-2017: A Bibliometric Study”. This research analysed bibliometrics of *Journal of Library Herald* within 10-year period. Result of the research showed from 222 published articles, there were as many as 97 (43.68%) articles written by individual author, and 87 (39.18%) articles written by two authors. The most productive author was Dr. K. P. Singh with 11 articles (31.43%), then B.K Sen with 6 articles (17.14%). Loan (2017) conducted research on *Journal of Central Asian Studies* with the title “The Journal of Asian Studies: A Bibliometric Study”. This journal was first published in 1990, up to 2016 had published 23 volumes. Result of the research showed that this journal published 266 papers in 23 volumes written by 202 authors from 55 institutions and 23 countries across the world. Prof Abdul Majeed Matoo was the “chief editor” in 12 volumes and followed by Prof G N Khaki in as many as 3 volumes. Journal writing trend was mostly contributed by individual author (232.87%). Regional analysis showed India was the country with the largest contribution, 208.78%. Haque et al., (2019) conducted bibliometric analysis on articles published on electronic journal *Library and Philosophy and Practice* during 2014-2018 with the title “Bibliometric Analysis of the E-Journal of Library Philosophy and Practice During the Period of 2014-2018”. As many as 1,046 articles published in this period were from

researchers around the world. Result of research showed that an average of 209.2 articles were published every year and the highest total (421) of articles was published in 2018. From 35 countries that contributed across the world, Nigeria was on the top level with the contribution of 36.33%.

To perceive the development of Library and Information Science, especially in Indonesia, we can see it from articles on the published scientific journals. Therefore, the aim of this research is to identify the development trend of Library and Information Science in Indonesia through scientific journal of Library and Information Science having been indexed by SINTA (Science and Technology Index) during the period of 2013-2019. By conducting bibliometrics research to analyse research trend in Library and Information Science we can find out the development of the science. Thus, the focus of this research is to analyse research topic that are trending; the most productive author, institution of origin, total of articles; the most productive institution; as well as collaboration among authors from various institutions. Bibliometrics study on research trend can be useful for journal editor to improve article quality to be published, while the benefit of this research for Library and Information Science academically is that it can be reference for researcher to be able to develop topics of Library Science, and to establish research collaboration among institutions, as well as provide description of research trend in Library and Information Science in Indonesia.

## **Method**

This research is conducted using descriptive quantitative approach with bibliometrics method. Object of this research is articles published on 8 (eight) journals of Library and Information Science with journal publication period limited to 2013-2019. Population in this research is all articles on 8 (eight) journals from 2013 to 2019, as many as 741 articles. The whole population is research sample. In other words, this research is a population research using the whole population with the total of 741 as sample in research. The selection of eight journals is based on parent institution of journal publication, among others are education institutions and research institutions. In details, these are the criteria of journal selection:

1. Published regularly for 7 (seven) years since 2013 to 2019.
2. Has owned OJS (Online Journal System).
3. Parent institution is a renowned research institution, for example Lembaga Ilmu Pengetahuan Indonesia (LIPI).
4. Parent institution is a state university with accreditation A in Library and Information Science: Universitas Indonesia, Universitas Padjajaran, Universitas Pendidikan

- Indonesia, Universitas Islam Negeri Alauddin, Universitas Diponegoro, and Universitas Airlangga.
5. Renowned journal and firstly accredited by SINTA is *Berkala Ilmu Perpustakaan dan Informasi* published by Universitas Gadjah Mada.
  6. Journal's scope of topic does not only cover library and information but also archive, *Lentera Pustaka dan Khizanah Al-Hikmah*.

The next step conducted in data gathering was as follows, downloading all articles on eight journals that are included in research population as intended, from 2013 to 2019, checking the completeness of every journal article having been collected, and then creating worksheet in the form of table using Microsoft Excel. Data to fill the table are journal name, edition, volume, year of publication, author, article title, abstract, research approach, research method, theory, keywords, literature review, and references. Data was then processed and analysed to be concluded.

## Discussion

Research on trend of Library and Information Science on journals in Indonesia during 2013-2019 was started by identifying journals taken as research samples (see Table 1).

**Table 1 Journals of Library and Information Science**

No.	Journal Name	Institution of Origin	SINTA Accreditation
1.	Berkala Ilmu Perpustakaan dan Informasi (BIP)	Universitas Gadjah Mada	Sinta 2
2.	Kajian Informasi & Perpustakaan Journal (JKIP)	Universitas Padjadjaran	Sinta 2
3.	Ilmu Informasi, Perpustakaan dan Kearsipan Journal (JIPK)	Universitas Indonesia	Sinta 4
4.	Edulib Journal of Library and Information Science (Edulib)	Universitas Pendidikan Indonesia	Sinta 3
5.	BACA: Dokumentasi dan Informasi Journal (Jurnal BACA)	Lembaga Ilmu Pengetahuan Indonesia	Sinta 2
6.	Khizanah Al-Hikmah: Ilmu Perpustakaan, Informasi, dan Kearsipan Journal	Universitas Islam Negeri Alauddin Makassar	Sinta 2
7.	Lentera Pustaka: Kajian Ilmu Perpustakaan, Informasi, dan Kearsipan Journal	Universitas Diponegoro	Sinta 2
8.	Record and Library Journal	Universitas Airlangga	Sinta 3

### a. Data of Article per Year

Based on data in Table 2, the total of articles on *Berkala Ilmu Perpustakaan dan Informasi Journal* was 109 articles, *Kajian Informasi dan Perpustakaan* 111 articles, *Edulib Journal* 109 articles, *Ilmu Informasi, Perpustakaan dan Kearsipan Journal* 73 articles, *Baca*

Journal 85 articles, *Khizanah Al-hikmah Journal* 118 articles, *Lentera Pustaka Journal* 42 articles, *Record and Library Journal* 94 articles. *Lentera Pustaka* dan *Record & Library Journal* had just published online journal in 2016 and 2015. The following is table of article percentage published on each journal.

**Table 2 Average of Article Distribution**

Journal Name	Year							Number of Articles	Percentage
	2013	2014	2015	2016	2017	2018	2019		
Berkala Ilmu Perpustakaan dan Informasi	9	9	12	19	20	20	20	109	14.71%
Kajian Informasi & Perpustakaan Journal	22	14	21	19	7	14	14	111	14.98%
Informasi, Perpustakaan dan Informasi Journal	6	8	8	11	16	12	12	73	9.85%
EduLib	13	16	14	16	18	15	17	109	14.71%
Baca	7	10	13	8	11	16	20	85	11.47%
Khizanah Al-hikmah	16	16	16	16	21	16	17	118	15.92%
Lentera Pustaka	-	-	-	10	12	9	11	42	5.67%
Record & Library Journal			20	20	18	16	20	94	12.69%
<b>Total</b>	73	73	104	119	123	118	131	741	100%
<b>Distribution Percentage Average</b>	9.85%	9.85%	14.04%	16.06%	16.60%	15.92%	17.68%	100%	

Each journal published two volumes per year. In Table 3, distribution percentage level of article published in 2013 and 2014 was 9.85%. Meanwhile in 2015, the percentage level was 14.04%. In 2016 the percentage was 16.06%. In 2017 was as much as 16.60%. During 2014-2017 there was an increase of article distribution. In 2018 was as much as 15.92%. Then in 2019 was as much as 17.68%. From 2017 to 2018 there was a decrease of article distribution, but in 2019 there was another increase.

**b. Authorship Pattern**

Authorship pattern is used to find out data of authors who wrote individually and collaboratively in an article on a journal.

**Table 3 Authorship Pattern Distribution**

Authorship Pattern	Year							Number of Articles	Percentage
	2013	2014	2015	2016	2017	2018	2019		
Individual	44	40	64	64	47	47	28	334	45.07%
Collaborative	29	34	40	54	74	73	103	407	54.93%
Total	73	74	104	118	121	120	131	741	100%

In Table 3, of 741 journal articles, 334 articles (45.07%) were written by individual author, while 407 (54.93%) articles were written collaboratively. In addition, from Table 3 it can be seen that during 2013-2015 individual author still dominated. On the other hand, during 2017-2019 there was a significant change. The number of collaborative authors started to dominate and exceed that of individual authors. The result shows the quality of articles published from eight journals was increasing, because quality research will be better if it is conducted collaboratively. This is in line with research conducted by Junandi (2019) who asserts research will be better in terms of quality if conducted in collaboration. If collaboration degree is seen through formulation by K. Subramanyam (1983), then the collaboration degree value is:

$$C = \frac{NM}{NS + NM}$$

NM: articles written collaboratively

NS: articles written individually

The value of C obtained from the method mentioned above can be categorized as:

- a. If C is equal to zero (C=0), all research activities are conducted individually (individual author) or none of the researches conducted collaboratively
- b. If C is more than 0 and less than half ( $0 < C < 0.5$ ), the number of research activities conducted individually is more than that of collaborative research
- c. If C is equal to half (0.5), the number of individual researches and collaborative researches is in balance
- d. If C is more than half and less than one ( $0.5 < C < 1$ ), the number of collaborative researches is more than that of individual research
- e. If C is equal to one (C=1), all researches are conducted collaboratively

Thus, collaboration degree value of *Berkala Ilmu Perpustakaan dan Informasi Journal*, *Kajian Informasi dan Perpustakaan Journal*, *Ilmu Informasi, Perpustakaan dan Kearsipan Journal*, *EduLib Journal of Library and Information Science*, *BACA: Dokumentasi dan Informasi Journal*, *Khazanah Al-Hikmah: Ilmu Perpustakaan, Informasi, dan Kearsipan Journal*, *Lentera Pustaka: Kajian Ilmu Perpustakaan, Informasi, dan Kearsipan Journal*, and *Record and Library Journal* during 2013-2019:

$$C = \frac{407}{741} = 0,54$$



The value shows that there was more research conducted by collaborative authors compared to individual authors. This is in line with the percentage of researchers who conducted research collaboratively, 54.93% (see Table 3).

### **c. Author Productivity**

From data recapitulation of article author on eight journals during 2013 -2019 there were 821 authors. Authors with the largest number of articles were Pawit M. Yusup and Yunus Winoto who wrote 22 articles, then Sukaesih and Encang Saepudin 20 articles, Neneng Komariah 16 articles, Rully Khairul Anwar dan Tupan 15 articles, Margareta Aulia Rachman, Tine Silvana Rachmawati, Ninis Agustini Damayani 14 articles. Data in Table 4 is top ten authors who wrote articles during 2013-2019.

**Table 4 Author Productivity**

<b>No</b>	<b>Author Name</b>	<b>Number of Articles</b>	<b>Institution</b>
1	Pawit M. Yusup	22	Universitas Padjadjaran
2	Yunus Winoto	22	Universitas Padjadjaran
3	Sukaesih	20	Universitas Padjadjaran
4	Encang Saepudin	20	Universitas Padjadjaran
5	Neneng Komariah	16	Universitas Padjadjaran
6	Rully Khairul Anwar	15	Universitas Padjadjaran
7	Tupan	15	Lembaga Ilmu Pengetahuan Indonesia
8	Margareta Aulia Rachman	14	Universitas Indonesia
9	Tine Silvana Rachmawati	14	Universitas Padjadjaran
10	Ninis Agustini Damayani	14	Universitas Padjadjaran

### **d. Institution Productivity**

Table 5 shows top ten productive institutions on eight journals during 2013-2019. Result of recapitulation from 741 articles based on author's institution, there were 117 institutions contributed in article publishing. It can be seen that the most productive institution in publishing articles was Universitas Indonesia, as many as 99 authors (13%). Authors from Universitas Indonesia is relatively higher in number because the demand that students can graduate after producing article requires them to collaborate. This is line with Choinski (as cited in Slutsky & Aytac, 2016) who asserts that authors with less experience tend to find collaborator to help them to develop research and writing skills. On the other hand, research conducted with researcher of the same science background shows the absence of enrichment



of library and information science with other sciences. Thus, it is necessary for a collaboration among researchers with different science background so that there will be enrichment of library and information science. Below is institution productivity table.

**Table 5 Institution Productivity**

<b>No</b>	<b>Institution</b>	<b>Academic/Non academic</b>	<b>Number of Authors</b>	<b>Percentage</b>
1	Universitas Indonesia	Academic	99	13%
2	Universitas Padjadjaran	Academic	89	12%
3	Universitas Gadjah Mada	Academic	86	11%
4	Universitas Pendidikan Indonesia	Academic	57	7%
5	LIPI	Nonacademic	49	6%
6	Universitas Airlangga	Academic	44	6%
7	Universitas Islam Negeri Alauddin	Academic	32	4%
8	Universitas Islam Negeri Sunan Kalijaga	Academic	26	3%
9	Universitas Brawijaya	Academic	24	3%
10	Universitas Jenderal Soedirman	Academic	16	2%

Of 117 institutions, there were academic and nonacademic institutions. As many as 91 institutions were academic and as many as 26 institutions were nonacademic institutions. This shows that academic institutions more actively played the role in the development of library and information science journal.

**Table 6 Contributor of Academic and Nonacademic Institution**

<b>Institution</b>	<b>Number of Contributors</b>	<b>Percentage</b>
Academic Institution	91	77.78%
Nonacademic Institution	26	22.22%
Total	117	100%

#### **e. Collaboration of Authors among Institutions**

Of 741 articles, there were 381 authors who affiliate with their own institutions or other institutions. From Table 8, it can be seen the collaboration of authors among institutions were mostly conducted by authors of the same institution. Top ten institutions were Universitas Padjadjaran as many as 87 authors, Universitas Indonesia as many as 53 authors, Lembaga Ilmu Pengetahuan Indonesia (LIPI) as many as 31 authors, Universitas Gadjah Mada as many as 27 authors, Universitas Pendidikan Indonesia as many as 22

authors, Universitas Brawijaya as many as 7 authors, Universitas Islam Negeri Alauddin Makassar as many as 6 authors, Universitas Negeri Malang as many as 6 authors, and Universitas Diponegoro as many as 5 authors.

**Table 7 Author Collaboration Data**

No	Collaboration of Authors among Institutions	2013	2014	2015	2016	2017	2018	2019	Number of Authors	Percentage
1	Universitas Padjadjaran & Universitas Padjadjaran	5	8	8	17	27	10	12	87	23%
2	Universitas Indonesia & Universitas Indonesia	-	6	2	5	14	5	21	53	14%
3	LIPI & LIPI	2	-	4	3	4	7	11	31	8%
4	Universitas Gadjah Mada & Universitas Gadjah Mada	1	-	-	5	5	9	7	27	7%
5	Universitas Pendidikan Indonesia & Universitas Pendidikan Indonesia	8		2	5	2	3	2	22	6%
6	Universitas Brawijaya & Universitas Brawijaya	-	-	-	-	-	5	2	7	2%
7	UIN Alauddin & UIN Alauddin	-	-	3	-	1	1	1	6	2%
8	Universitas Negeri Malang & Universitas Negeri Malang	-	-	-	-	-	-	6	6	2%
9	Universitas Diponegoro & Universitas Diponegoro	-	-	-	-	2	-	3	5	1%
10	Universitas Airlangga & Universitas Airlangga	-	-	2	2	-	-	1	5	1%
Total Number									381	

In addition, there were 2 (two) articles of collaboration between foreign institution and Indonesian researcher, namely collaboration between Institut Teknologi Bandung, University of Sydney Clinical School, Universitas Binus, Universitas Tanjungpura, Universitas Muhammadiyah Sidoarjo, Universitas Padjadjaran, Lembaga Ilmu Pengetahuan Indonesia, Universitas Pendidikan Indonesia, Universitas Indonesia, Springer Nature Indonesia in 2017, and collaboration between National Library of Australia, Institut Pertanian Bogor, Universitas Indonesia in 2019 (see Table 8).

**Table 8 Foreign Institution Contributor by years**

<b>No</b>	<b>Collaboration of Authors among Institutions</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Number of Collaborations</b>
1	Institut Teknologi Bandung, University of Sydney Clinical School, Universitas Binus, Universitas Tanjungpura, Universitas Muhammadiyah Sidoarjo, Universitas Padjadjaran, Lembaga Ilmu Pengetahuan Indonesia, Universitas Pendidikan Indonesia, Universitas Indonesia, Springer Nature Indonesia	-	-	-	-	1	-	-	1
2	National Library of Australia & Institut Pertanian Bogor & Universitas Indonesia	-	-	-	-	-	-	1	1
<b>Total</b>									<b>2</b>

**f. Topic Most Researched**

To define the topic most researched, keywords were categorized from 741 articles and there were 2,550 keywords. After all keywords were collected, they were then processed and analysed using Hawkin’s taxonomy to see the topic most researched.

**Table 9 Percentage of Number of Articles and Keywords**

<b>Description</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>
Number of Articles	73	73	104	119	123	118	131	741
Number of Keywords	272	247	365	426	480	258	502	2550
Average of Keywords/Articles	3.73	3.38	3.51	3.58	3.9	2.19	3.82	3.44
Number of the Same Keywords	21	21	23	38	39	51	48	241
Number of Different Keywords	251	208	342	388	441	207	454	2291

In Table 9 it can be seen that total number of keywords on eight selected journals, in 2013 and 2014 was 73. Then in 2015, there were 365 keywords. In 2016 there were 426 keywords, in 2017 as many as 480 keywords, in 2018 there were as many as 258 keywords

and in 2019 there were 502 keywords, thus total keywords were 2,550 keywords. The same keywords described the relevance of subject among articles. The same keyword indicated the same subject, while different keyword described the diversity of subject in each article.

The collected keywords would be categorized based on Hawkin’s taxonomy consisting of 11 subjects. Topic distribution based on Hawkin’s taxonomy can be seen in Table 10.

**Table 10 Subject Distribution during 2013-2019**

No.	Keyword	Year							Total	Percentage
		2013	2014	2015	2016	2017	2018	2019		
1	Information Science Research (ISR)	22	18	37	49	56	25	69	276	17.21%
2	Knowledge Organization (KO)	7	3	6	4	10	3	8	41	2.56%
3	The Information Professional (TIP)	27	17	17	39	25	25	29	179	11.16%
4	Societal Issues (SI)	10	4	10	13	31	17	34	119	7.42%
5	The Information Industry (TII)	2	5	16	18	7	7	27	82	5.11%
6	Publishing and Distribution (PD)	5	8	11	23	22	7	14	90	5.61%
7	Information Technologies (IT)	13	6	22	16	23	15	44	139	8.66%
8	Electronic Information System and Services (EISS)	1	1	4	6	0	0	0	12	0.75%
9	Subject Specific Sources and Applications (SSSA)	20	14	17	24	45	17	78	215	13.40%
10	Libraries and Library Services (LLS)	51	57	71	72	69	41	83	444	27.68%
11	Government and Legal Information and Issues (GLII)	1	1	2	0	0	0	3	7	0.44%
	<b>Total</b>	<b>159</b>	<b>134</b>	<b>213</b>	<b>264</b>	<b>288</b>	<b>157</b>	<b>389</b>	<b>1604</b>	<b>100.00%</b>

Based on Table 10 it can be seen that there is topic tendency on eight research sample journals. Research topic in Libraries and Library Services (LLS) field was the most researched, as many as 444 descriptors or 27.68%. This libraries and library services field covered library descriptions and types, library services, library automation, digital and virtual library, and education and training. The second most researched topic was Information Science Research field, as many as 276 descriptors or 17.21%. The third most researched topic was Subject Specific Sources and Applications (SSSA) as many as 215 descriptors or 13.40%.

Meanwhile, the least researched topic was Government and Legal Information and Issues (GLII) as many as 7 descriptors or 0.44%. The next was, Electronic Information System and Services (EISS) as many as 12 descriptors or 0.75%. Based on analysis result, the most researched topic during 2013-2019 was libraries and library services field with library descriptions and types, library services, library automation, digital and virtual library, and education and training subfields.

## **Conclusion**

Based on research result having been presented, it can be concluded that research trend of library and information science in Indonesia for seven years during 2013-2019 has gone through changes. This can be seen from the most researched topic during 2013 to 2019, namely Library and Information Science (LIS) field with the percentage of 27.68%. In addition, research topics no less researched are Information Science Research (17.21%) and Subject Specific Sources and Applications (13.40%). However, other research topics of library and information science still need to be developed, such as Government and Legal Information and Issues (0.44%) because there are only few researchers who discussed the topic. The next is the most productive authors with 22 articles are Pawit M Yusup and Yunus Winoto, while the most productive institution is Universitas Indonesia with 99 articles (13%). The interesting finding is collaborative author percentage is higher than that of individual author, namely 54.93%. This shows the trend of high necessity of collaboration in Library, Information, and Archives Science. However, research collaboration with foreign institution also requires to be improved to increase citation and scientific contribution. It is also necessary to conduct research examining social network analysis to see social relationship and network among authors of library and information science in Indonesia.

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