6-22-2021

Fifty Six Years Research Productivity of Library Resources and Technical Services: A Bibliometric Analysis

Nusrat Ali
Quaid-e-Azam Library, University of Gujrat, Gujrat, Pakistan, nusrat.ali@uog.edu.pk

Sanila Aslam
Learning Resource Center, Quaid-e-Azam Campus, University of Management and Technology Lahore, Pakistan, sanila.arshad@umt.edu.pk

Muhammad Naveed
Minhaj University, Lahore, Pakistan, m.naveed789@gmail.com

Nadeem Siddique
Gad and Birgit Rausing Library, Lahore University of Management Sciences, Pakistan, nadeem.siddique@lums.edu.pk

Fifty Six Years Research Productivity of Library Resources and Technical Services: A Bibliometric Analysis

Nusrat Ali[1]
Quaid-e-Azam Library, University of Gujrat, Gujrat, Pakistan

Sanila Aslam
Learning Resource Center, Quaid-e-Azam Campus
University of Management and Technology Lahore, Pakistan

Muhammad Naveed
Ex-M.Phil Student (2016-18)
Minhaj University, Lahore, Pakistan

Nadeem Siddique
Gad and Birgit Rausing Library
Lahore University of Management Sciences, Pakistan

Abstract

This bibliometric analysis represents the fifty six years (1965-2020) research productivity of Library Resources and Technical Services (LRTS). Association for Library Collections and Technical Services (ALCTS) has been publishing a journal "Library Resources and Technical Services". It is a peer-reviewed journal and continuously serving from 1957. The research having aims to highlights the research outcomes/research productivity of the journal from the last fifty six years. Data was accumulated from Web of Science (core collection). Tools such as Biblioshiny, VOSviewer and MS Excel have been used for processing and data analysis. The assessment is based on various occurrences such as types of documents published, year wise distribution of documents, most productive authors, authorship pattern, organizations' contribution in publications, most productive countries, keywords used and highly cited articles. The study concludes the analysis in a statistical form and it enables the researchers to get updated information about the journal of Library Resources and Technical Services at one page. This study also facilitates the people who want to know that which type of publications publishes in LRTS.

Keywords: Library Resources, Technical Services, Research Productivity, Bibliometric Analysis

[1] **Corresponding Author:** nusrat.ali@uog.edu.pk

Introduction

Journals have been considered as a significant media for correspondence and scholarly articles. Journals give a way of conveying current data in all fields (Tenopir & King, 1997) .They assume a significant part for imparting the most recent exploration discoveries and publishing the articles containing the current advancement in any field of information. Pradhan and Chandrakar (2011) identifies that journals assume a significant part in academic correspondence of various domains from exceptionally past by containing the thoughts, research works, contents and discoveries of scientists, researchers and academicians. Most countries have been considered the research as the best way of progression in any field of life. Development in numerous fields have been possible through research (Aslam, Ali, Naveed, & Mairaj, 2021). The journals have been considered the best source of writing development in any field of information (H. Ali, Mahadevamurthy, & Jagadeesha, 2015).

Library Resources and Technical Services (LRTS) is a peer-reviewed journal and it is officially published by Association for Library Collections and Technical Services (ALCTS). It is serving from 1957 and LRTS takes the basic strategy to the inquiries and difficulties confronting librarians and libraries concerning such as: Scholarly correspondence, collection, cataloging i.e. (i) descriptive metadata and (ii) its authoritative control, acquisition which includes its license issues and financial facets of acquisition etc. (Association, March 28, 2007) .

Library Resources and Technical Services having various publications and they frequently publishes both research oriented papers and operational issues that have worth for different libraries. Likewise, LRTS publishes, editor letters, book reviews, editorials and the yearly report by the president.

A bibliometric analysis is to be considered a best approach for statistical information. A bibliometric examination is a decent method to assess the magnitude of any publication and their effect on the concerned people (Siddique, Rehman, Khan, & Altaf, 2021). Bibliometrics is the utilization of quantitative strategies to examine the volume and the qualities of the published documents, related exercises and helps in the estimation of all type of recorded data and their methods (Khanna, Bansal, Sood, & Tiwari, 2018). Bibliometrics is an examination field that reviews the bibliographic material quantitatively (Bonilla, Merigó, & Torres-Abad, 2015). Bibliometric concentrate as one of the pivotal area of investigation in Library and Information

Science field (Vellaichamy & Jeyshankar, 2015). Bibliometric strategies are measurable investigations used to inspect for scientific publications (Balstad & Berg, 2020).

Bibliometric investigation is employed to get the exact figure of research records in published form. These days, it is broadly perceived as a strategy to assess research in a specific area. The fundamental point of the current investigation is to assess fifty six years research productivity of Library Resources and Technical Services. This investigation consolidates bibliometric analysis with current representation procedures to get a reasonable image of research productivity of LRTS (N. Ali, Shoaib, & Abdullah, 2021).

Literature Review

Bibliometric techniques is right now acquiring consideration among journals for the particular investigation. Now, several bibliometric studies have been carried out, such as:

Arik (2013) concluded in his examination 'a bibliometric study on Turkish Journal of Psychology' tracked down that the articles, published in the journal are generally (84.65%) in Turkish. Authors included for the most part were from Turkey then gradually USA and Canada and articles were for the most part single composed. Roy and Basak (2013) contemplated the bibliometric study of exploration articles in Journal of Documentation from 2005-2010. The investigation revealed that greater part of papers were multi-wrote, the level of joint effort is 0.51, and commitment by U.K was the most elevated. The normal reference per paper was 43. Saravanan and Dominic (2014) directed bibliometric investigation on a journal of Palaeobotany and Palynology, The examination, was based on data taken from Web of Science TM and data concluded the contribution of 1821 authors through the 903 papers from 2003 to 2012. Satpathy, Maharana, and Das (2014) examined the articles from Scopus related to the journals of Library and Information science and having position of open access. The majority of the papers was contributed as a single author and similarly followed only two papers as co-authors papers. The level of coordinated effort is somewhere in the range of 0.33 and 0.8. As far as country efficiency position in research productivity, USA level was top in ranking. Awasthi (2015) highlighted the published articles in 'Library Trends' within the period of 2008-2014 that were 261. The investigation uncovered that the greatest quantities of articles were being published in winter and summer. Authors likes to work as single author as compare to joint authorship. Highest length of articles concluded that was 11 to 21 in length. Gaviria-Marin, Merigo, and Popa (2018b) emphasized a bibliometric analysis of twenty years on the journal of Knowledge

Management concluded that the UK and the USA were the leading countries in the field of research.

The current research means to depict fascinating discoveries of fifty six years research productivity of Library Resources and Technical Services and its outcomes are going to explore.

Objectives of the Study

1. To discover the documents types and their year wise distribution.
2. To highlight the most productive authors and authorship pattern contribution.
3. To determine the most productive organizations.
4. To analyze the most productive countries.
5. To find out the highly used keywords.
6. To conclude the most cited articles.

Methodology

The bibliographic records for the analysis are limited to the publications of "Library Resources and Technical Services" in the field of Library and Information Science. The time span selected in this study is from 1965 to 2020. In 'Web of Science' citation database, search strategy employed for retrieving data was as follows:

"Publication Name = Library Resources and Technical Services; Publication Year=1965-2020". The data was extracted on May 13, 2021, at 9:55 PM (PKT). The query retrieved 2722 total publications i.e. 1350 articles, 892 book reviews, 142 editorial material, 99 reviews, 63 Letters, 56 Notes, 48 item about an individual, 40 Proceeding papers, 17 corrections, 7 meeting abstract, 3 biographical items, 3 software review, 1 bibliography and 1 discussion. The indexes in the core collection of Web of Science were SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI, CCREXPANDED, and IC. The bibliometric analysis method was employed on the resultant data. The evaluation was based on the parameters: types of documents published, year wise distribution of documents, most productive authors, authorship pattern, most productive organizations, most productive countries, keywords used and highly cited articles were recorded in Biblioshiny, VOS viewer and MS Excel for processing and further data analysis. VOS viewer utilizes for the mapping of science task. This method is further developed as data gathering methods.

Results

The data in table 1 shows the documents types published during 1965-2020. The total published documents are 2722 with yearly publication average 3 percent, average citations per documents 2.244 percent, Average citations per year per doc 0.09869 % and total References 32635. The highest numbers of publications are articles 1350 (49.6%), Book review is on second highest with 142 (32.77%) publications and bibliography and discussion are least published with 1 (0.04%) and 1(0.04%) respectively. It is evident that the most authors preferred to publish their research work in the form of articles instead of other document type.

Table 1. Distribution of Published Documents by Document Types (1965-2020)

Type of the documents	Total Publications	Percentage
Article	1350	49.6
Book Review	892	32.77
Editorial Material	142	05.22
Review	99	03.63
Letter	63	02.31
Note	56	02.06
Item About an Individual	48	01.76
Proceedings Paper	40	01.47
Correction	17	00.62
Meeting Abstract	7	00.26
Biographical-Item	3	00.11
Software Review	3	00.11
Bibliography	1	00.04
Discussion	1	00.04
Total	2722	100.00

The frequency distributions of year wise publications of published documents are listed in table 2. The results revealed that the highest number of publications 376 (13.81%) have been published in between 1986-1990. The second highest publications 368 (13.52) were published in 1991-1995 and the minimum number of publications 152 (5.58%) have published in recent past 2016-2020. The year wise details of publications are indicated in figure 1 also.

Table 2. Distribution of Published Documents by Years (1965-2020)

Years	Publications	Percentage
1965-1970	357	13.12
1971-1975	336	12.34
1976-1980	167	06.14
1981-1985	167	06.14
1986-1990	376	13.81
1991-1995	368	13.52
1996-2000	201	07.38
2001-2005	193	07.09
2006-2010	215	07.9
2011-2015	190	06.98
2016-2020	152	05.58
Total	2722	100.00

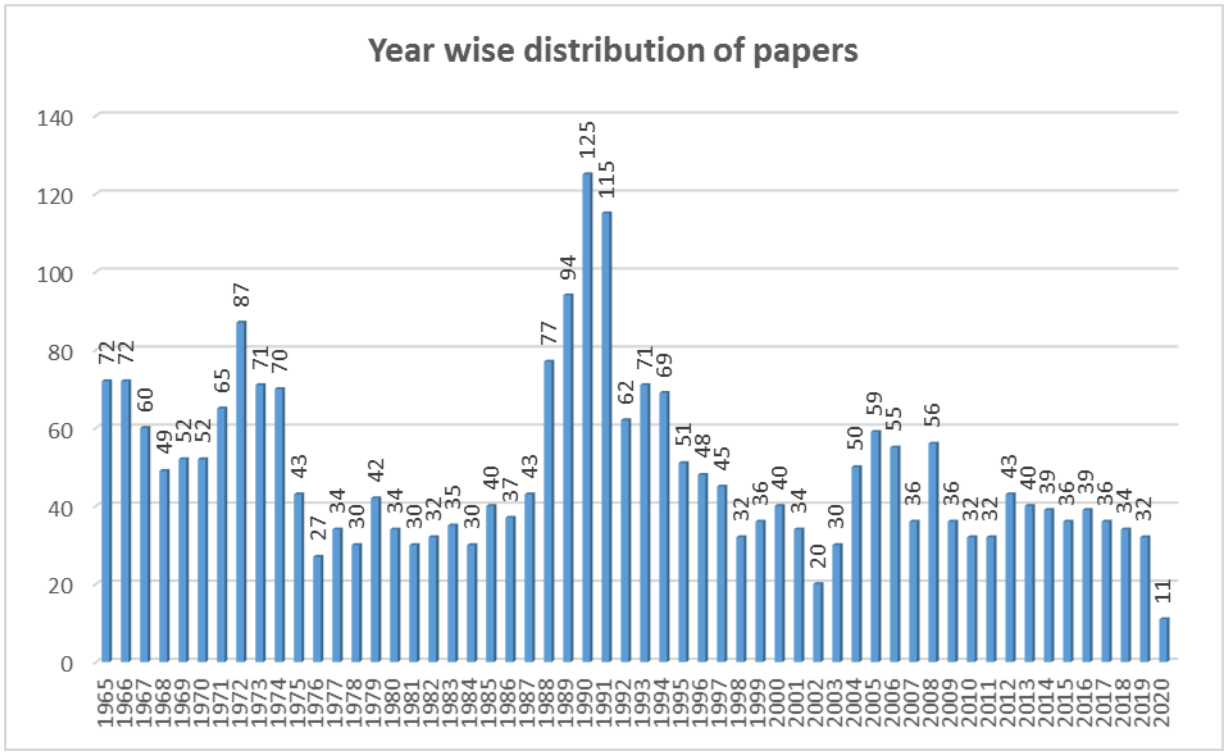

Figure 1. Years wise distribution of publications (1965-2020)

The publications of top twenty authors are signify in table 3. Total 2055 authors have contributed their research work during 1965-2020. The Author Johnson P and Weber MB ranked first in order of list with 28 each publications count. The author Intner SS ranked second with 19 publications count. Chan LM is on third with 17 total publications. The least publications nine (09) retrieved from the authors Atkinson R, Gertz J, Hanscom M, Hill JS, Mugridge RL, Stevens ND and Sullivan RC. A total 3312 authors appearance have been retrieved as 1374 authors of single-authored document, 681 authors of multi-authored documents, 2299 single authored documents, documents per author 1.32, authors per document 0.755 and co-authors per document 1.22 and Collaboration Index 1.61.

Table 3. Distribution of Published Documents by Their Top Twenty Results of Authors' Information (1965-2020)

Author	TP*	TC*	PY*_Start	h_index	g_index	m_index
Johnson P	28	31	1987	4	4	0.114
Weber MB	28	3	1999	1	1	0.043
Intner SS	19	2	1983	1	1	0.026
Chan LM	17	37	1971	4	4	0.078
Richmond PA	17	13	1965	2	3	0.035
Holley RP	14	9	1987	2	2	0.057
Weihs J	14	10	1987	2	3	0.057
Jenkins FW	11	0	1989	0	0	--
Nisonger TE	11	45	1980	5	6	0.119
Swanson E	11	3	1987	1	1	0.029
Veaner AB	11	17	1965	2	3	0.035
Hearn S	10	3	1991	1	1	0.032
Weinberg BH	10	7	1990	1	2	0.031
Atkinson R	9	81	1984	5	9	0.132
Gertz J	9	10	1988	2	3	0.059
Hanscom M	9	0	1987	0	0	--
Hill JS	9	10	1987	1	2	0.029
Mugridge RL	9	37	2004	3	6	0.167
Stevens ND	9	17	1966	2	4	0.036
Sullivan RC	9	16	1967	2	3	0.036

TP* = Total Publication, TC* = Total Citations, PY* = Publication Year

The contribution of authors and their authorship patterns are depicted in table 4. The results described that 1522 (0.741%) authors have preferred to publish their work independently

followed by 282 (0.137%) authors preferred to work as collaboration, 112 (0.055%) authors had showed their interest as three authors of a single paper and only document is written by 30 authors collectively. This indicates that most of the authors have preferred to publish their work as single author instead of working as joint authors.

Table 4. Contribution of Authorship Pattern

Documents Written	Numbers of Authors	Proportion of Authors
1	1522	0.741
2	282	0.137
3	112	0.055
4	56	0.027
5	23	0.011
6	21	0.010
7	14	0.007
8	3	0.001
9	8	0.004
10	2	0.001
11	4	0.002
14	2	0.001
17	2	0.001
19	1	0.000
28	2	0.001
30	1	0.000
Total	2055	100.00

Table 5 indicates the distribution of published documents by top twenty organizations. The outcomes showed that the Library of Congress is on top of the list with 41 total Publications (TP) and 167 total citations (TC). The second most publications 35 TP and 170 TC is of the Univ. Illinois, third most publications received from the Rutgers State University 32 TP and 27 TC. The least publications 10 TP and 31 TC were received from the N Carolina State University Library.

Table 5. Distribution of Published Documents by Top Twenty Organizations (1965-2020)

Organization	TP*	TC*	TLS*	Organization	TP*	TC*	TLS*
Lib. Congress	41	167	13	Univ. N Carolina	17	33	1
Univ. Illinois	35	170	26	Iowa State Univ.	14	66	17
Rutgers State Univ.	32	27	5	Univ. Florida	14	34	8
Univ. Minnesota	26	38	12	Univ. Minnesota Lib	13	49	22
Penn State Univ.	24	40	6	Suny Albany	11	48	9
Ohio State Univ. Lib	21	116	29	Suny Buffalo	11	4	0
Univ. Colorado	21	107	13	Univ. Calif Los Angeles	11	39	3
Case Western Reserve Univ.	18	2	1	Univ. Michigan	11	40	0
Univ. Kentucky	18	31	19	Univ. Tennessee	11	5	2
Cornell Univ.	17	109	17	N Carolina State Univ. Lib	10	31	8

TP* = Total Publication, TC* = Total Citations, TLS* = Total Link Strength

The publication details of the top most twenty countries from all over the world presented in table 6. The USA is on top of the list and far ahead of other countries with 1119 total publications (TP) and 2940 total citations (TC) count. The Canada is on second with 47 TP and 149 TC. The third most published documents were received from the England 16 TP and 50 TC and most of the countries provided in the list published only single document during 1965-2020. It is evident that the USA is producing massive literature in the field of Library and Information Science.

Table 6. Distribution of Published Documents by Top Twenty Counties (1965-2020)

Country	TP*	TC*	TLS*	Country	TP*	TC*	TLS*
USA	1119	2940	423	Hong Kong	1	0	0
Canada	47	149	240	Iran	1	0	0
England	16	50	24	Japan	1	0	8
Spain	4	13	65	Nigeria	1	4	5
Australia	3	11	11	Pakistan	1	2	54
France	3	0	4	Peoples R China	1	5	0
Germany	2	2	55	Saudi Arabia	1	1	9
North Ireland	2	2	0	Serbia	1	9	4
Slovenia	2	7	48	South Africa	1	0	0
Botswana	1	4	6	South Korea	1	1	0

TP* = Total Publication, TC* = Total Citations, TLS* = Total Link Strength

Table 7 highlights 430 most used or common authors' keywords used in 2722 published documents. The results showed that the most determined keyword is Library (57). The second most discussed keyword is Access (20) and the minimum frequency of keywords is Authority Control, Collection, Journals and Preservation (7). Most of the authors have used the keyword "Library" in their publications in time span of 1965 to 2020. Figure 2 also highlights the co-occurrence of keywords and VOS viewer tool has been used for data extracting.

Table 7. Distribution of Published Documents by Top Twenty Keywords (1965-2020)

Keyword	**Occurrences**	**Total Link Strength**	**Keyword**	**Occurrences**	**Total Link Strength**
Library	26	39	Acquisitions	9	27
Access	20	44	Metadata	9	26
Academic-Libraries	14	48	Serials	9	34
Libraries	13	24	Technical-Services	9	23
Records	13	26	Information	8	18
Management	12	36	Services	8	24
Books	10	27	Authority Control	7	28
Catalog	10	15	Collection	7	12
Selection	10	28	Journals	7	17
University	10	41	Preservation	7	12

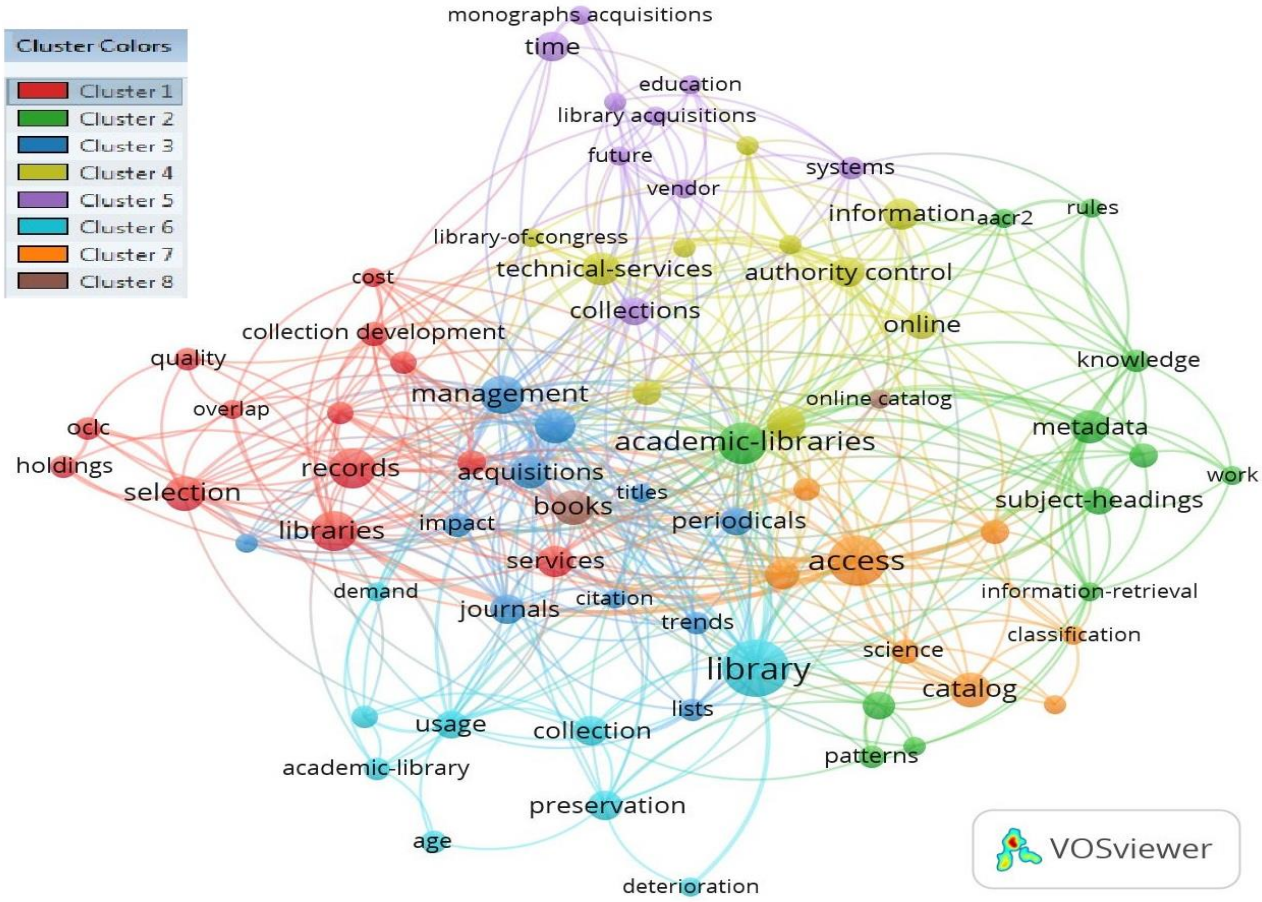

Figure 2. Co-Occurrences of Keywords (1965-2020)

Table 8 identifies the top ten highly cited journal articles published in time span of 1965-2020. The article titled "A circulation analysis of print books and e-books in an academic research library" by Littman, J; Connaway, LS is on top of the list with highest 88 total citations count. The article "Semantic Validity - Concepts of Warrant in Bibliographic Classification Systems" by Beghtol, C ranked second with 59 TC. The third highest cited article is "A Taxonomy of Bibliographic Relationships" by Tillett, BB with 57 TC. The least cited article titled" The impact of automation on job requirements and qualifications for catalogers and reference librarians in academic libraries" was received 26 TC in time span of 1965 to 2020.

Table 8. Distribution of Top Ten Journals Articles by Citations (1965-2020)

TC*	Title	Authors	Vol./No.	Pages.	PY*
88	A circulation analysis of print books and e-books in an academic research library	Littman, J; Connaway, LS	48(4)	7	2004
59	Semantic Validity - Concepts of Warrant in Bibliographic Classification Systems	Beghtol, C	30(2)	17	1986
57	A Taxonomy of Bibliographic Relationships	Tillett, BB	35(2)	9	1991
47	User Tags versus Subject Headings Can User-Supplied Data Improve Subject Access to Library Collections?	Rolla, PJ	53(3)	11	2009
40	Citation analysis of education dissertations for collection development	Haycock, LA	48(2)	5	2004
38	Use of Classification in Online Retrieval	Svenonius, E	27(1)	5	1983
36	Sameness and difference - A cultural foundation of classification	Olson, HA	45(3)	8	2001
36	Scientific and technical serials holdings optimization in an inefficient market: A LSU serials redesign project exercise	Bensman, SJ; Wilder, SJ	42(3)	96	1998
36	Thesis and dissertation citations as indicators of faculty research use of university library journal collections	Zipp, LS	40(4)	8	1996
33	Rising to the top: Evaluating the use of the HTML META tag to improve retrieval of World Wide Web documents through Internet search engines	Turner, TP; Brackbill, L	42(4)	14	1998

Discussion and Findings

Researcher's interest in research production and quality information shows the trend of publishing. This bibliometric analysis highlights the fourteen types of publications which have been published in LRTS during the time of 1965 to 2020. The average of writing trends in LRTS are articles from out of these published data list. The research investigates that most of papers

were produced by single authors. The period 1986-1990 was more productive with highest publications. Researchers' total publications were calculated throughout the following years and the results appropriated that Johnson P and Weber MB were top level authors with highest total publications. Data was gathered from several organizations and numerous countries from all over the world who were active in research publications. Another objective of the study was to evaluate the keywords which were highly used and to find out the highly cited article in this time frame.

Following major findings relates to the research objectives:

- Fourteen types of publications were highlighted in analysis and the trendiest publication was articles. It was also analyzed that 1986-1990 were more productive years with (374) publications and it was clear that an ideal reach for published documents in LRTS during these years.
- Johnson P and Weber MB were most productive authors with highest TP and it was also analyzed that the author's contribution as sole author was most remarkable because a vast input 1522 was the top level contribution as sole author.
- In top twenty organizations Library of Congress was on top in ranking with 41 total Publications (TP) and 167 total citations (TC).
- USA was found the highlighted country in the race of publications and no contradiction was found in the following research findings (H. Ali et al., 2015; Khanna et al., 2018; Naveed, Ali, Aslam, & Siddique, 2021). Various countries were involved in publications from all over the world but USA was a single notable country with his remarkable contribution.
- Various 2722 keywords were found during the analysis but the most significant keyword was "Library" that was repeatedly used during this time frame.
- Analysis disclosed that an article from Littman, J; Connaway, LS titled "A circulation analysis of print books and e-books in an academic research library" was frequently cited article with maximum 88 total citations count.

The study concludes the analysis in a statistical form and will enable the researchers to acquire updated information about the journal of Library Resources and Technical Services at one page. Literature review will also helpful to recognize the bibliometric studies on journals. Researchers can get analysis of these findings with other bibliometric studies and their findings. This study

will also fruitful for researchers who want to know about the publications types of the LRTS journal.

References

Ali, H., Mahadevamurthy, M., & Jagadeesha, B. (2015). A bibliometric analysis of the Journal of Academic Librarianship. *International Journal of Library and Information Studies, 5*(4), 83-90.

Ali, N., Shoaib, M., & Abdullah, F. (2021). Trends of Research Visualization of Digital Collections and Resources in Academic Libraries from 2001 to 2020: A Bibliometric Analysis. *Library Philosophy and Practice*, 1-25.

Arik, E. (2013). A bibliometric analysis of a national Journal: The case of the Turkish Journal of Psychology. *J. Sci. Res., 2*(3), 173-184.

Aslam, S., Ali, N., Naveed, M., & Mairaj, M. I. (2021). Research Productivity of Journal of Librarianship and Information Science from 1999-2019: A Bibliometric Study. *Library Philosophy and Practice*.

Association, A. L. (March 28, 2007). Retrieved June 1, 2021, from http://www.ala.org/alcts/resources/lrts

Awasthi, S. (2015). Library Trends Journal: A Bibliometric Study. *International Journal of Scientific and Research Publications, 5*(9).

Balstad, M. T., & Berg, T. (2020). A long-term bibliometric analysis of journals influencing management accounting and control research. *Journal of Management Control, 30*(4), 357-380.

Bonilla, C. A., Merigó, J. M., & Torres-Abad, C. (2015). Economics in Latin America: a bibliometric analysis. *Scientometrics, 105*(2), 1239-1252.

Gaviria-Marin, M., Merigo, J. M., & Popa, S. (2018a). Twenty years of the Journal of Knowledge Management: A bibliometric analysis. *Journal of Knowledge Management*.

Gaviria-Marin, M., Merigo, J. M., & Popa, S. (2018b). Twenty years of the Journal of Knowledge Management: A Bibliometric Analysis. *Journal of Knowledge Management, 22*(8).

Khanna, S., Bansal, J., Sood, S., & Tiwari, D. (2018). Journal of Academic Librarianship: A Bibliometric Analysis. *International Journal of Library Information Network and Knowledge, 3*(2), 123-133.

Naveed, M., Ali, N., Aslam, S., & Siddique, N. (2021). Research Output of The Library Quarterly: A Bibliometric Analysis during 2010-2019. *Library Philosophy and Practice*.

Pradhan, P., & Chandrakar, R. (2011). Indian LIS literature in international journals with specific reference to SSCI database: A bibliometric study. *Library Philosophy and Practice, 657*, 1-16.

Roy, S. B., & Basak, M. (2013). Journal of Documentation: a bibliometric study. *Library Philosophy and Practice*.

Saravanan, G., & Dominic, J. (2014). A Ten-year bibliometric analysis of research trends in three leading ecology journals during 2003-2012. *Journal of information science theory and practice, 2*(3), 40-54.

Satpathy, S. K., Maharana, R. K., & Das, A. K. (2014). Open source journals of library and information science: a bibliometric study. *Collection Building*.

Siddique, N., Rehman, S. U., Khan, M. A., & Altaf, A. (2021). Library and information science research in Pakistan: A bibliometric analysis, 1957–2018. *Journal of Librarianship and Information Science, 53*(1), 89-102.

Tenopir, C., & King, D. W. (1997). Managing scientific journals in a digital era. *Information Outlook 1*.

Vellaichamy, A., & Jeyshankar, R. (2015). Bibliometric analysis of the Journal Webology from 2004-2013. *Journal of Advances in Library and Information Science, 4*(1), 7-13.