

**CITATION ANALYSIS OF LIBRARY AND INFORMATION SCIENCE  
DOCTORAL THESES AWARDED BY NIRF RANKED UNIVERSITIES  
IN INDIA**

**Dissertation**

**SUBMITTED FOR AWARD OF THE DEGREE OF**

**Master of Philosophy  
In  
Library and Information Science**

**SUBMITTED BY**

**Avinash Kumar Singh**

**UNDER THE SUPERVISION OF**

**Dr. Vinit Kumar**



**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE  
(SCHOOL FOR INFORMATION SCIENCE AND TECHNOLOGY)**

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**(A CENTRAL UNIVERSITY)**

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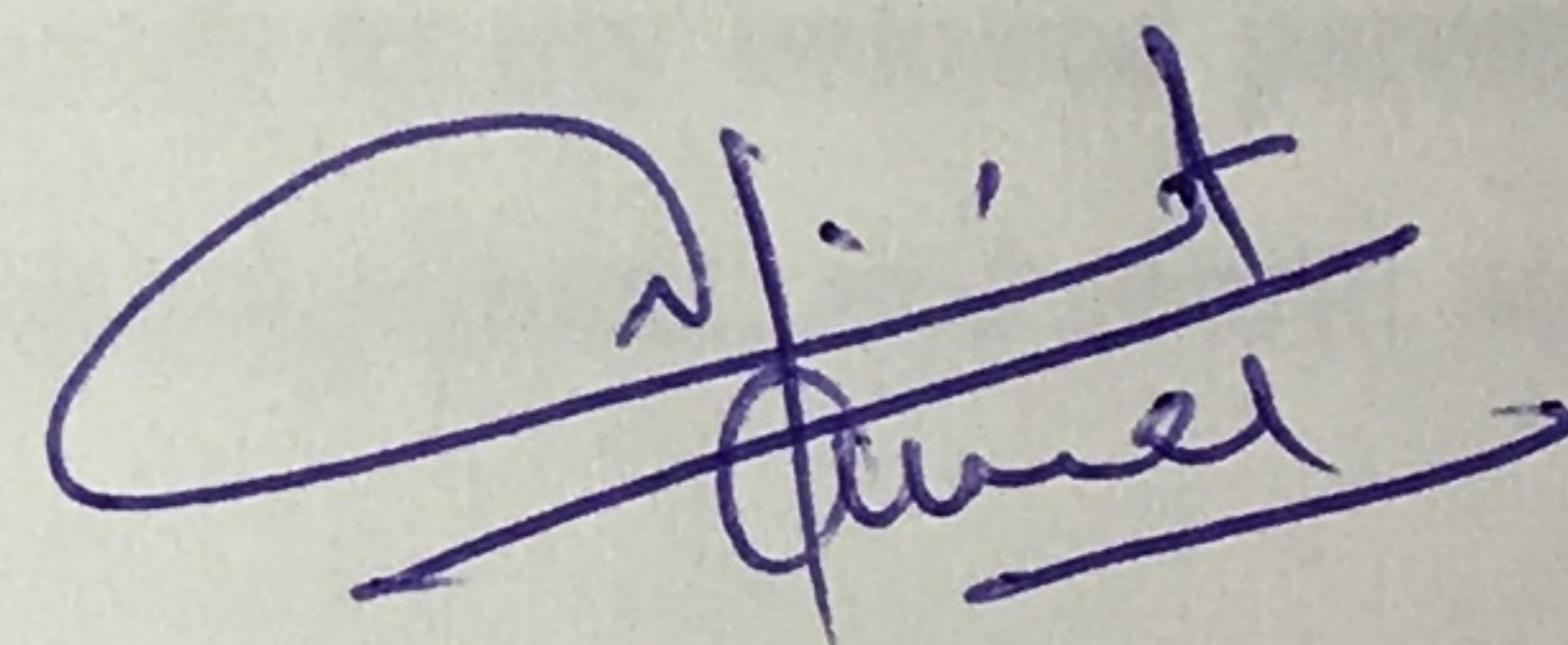
## CERTIFICATE

This is to certify that the dissertation entitled "CITATION ANALYSIS OF LIBRARY AND INFORMATION SCIENCE DOCTORAL THESES AWARDED BY NIRF RANKED UNIVERSITIES IN INDIA" submitted by **Avinash Kumar Singh** is an original research work and has not been previously submitted in part or full for the award of any other degree or diploma to this or any other university.

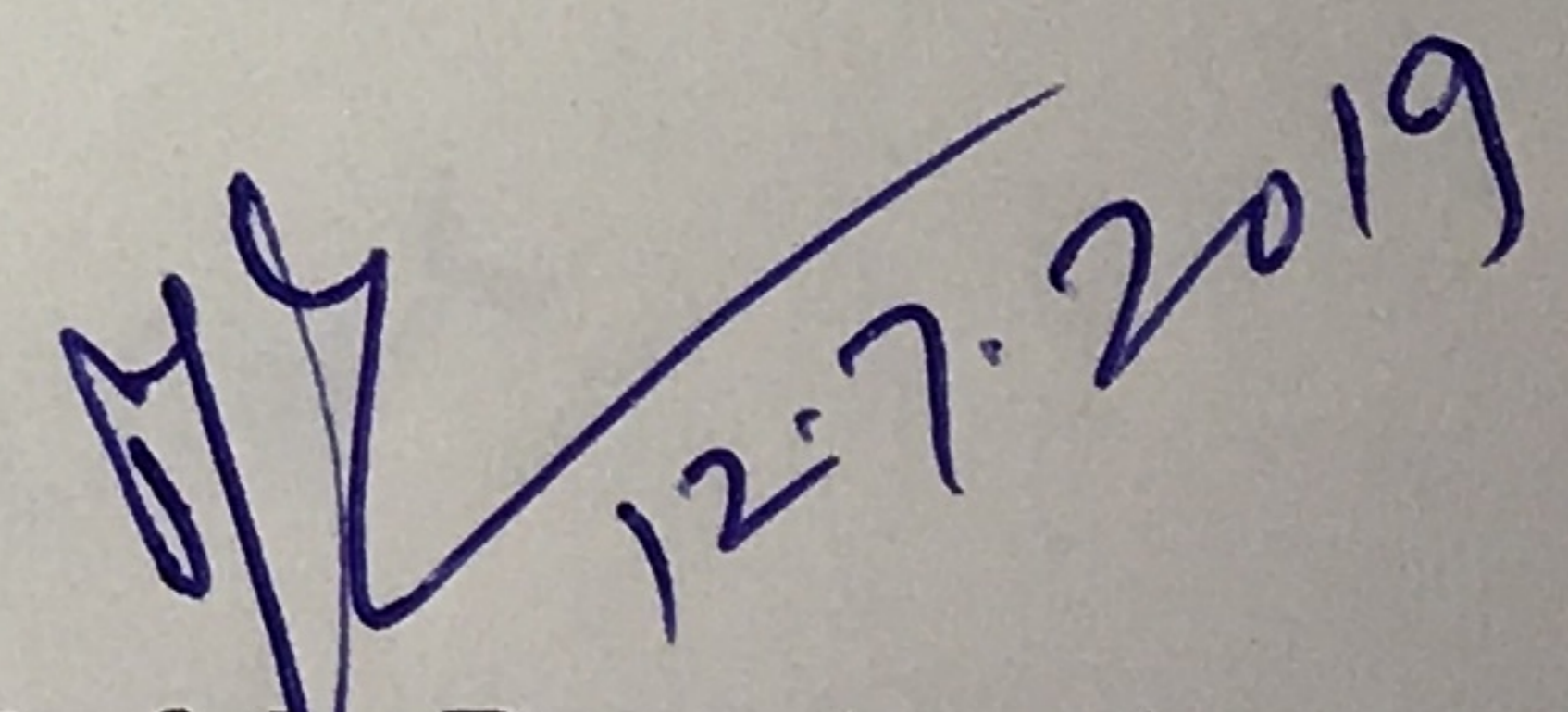
The dissertation submitted to Babasaheb Bhimrao Ambedkar University satisfies all the requirements as stipulated in the Master of Philosophy (M.Phil.) regulations-2016 and it is fit for submission and evaluation for the award of the degree of Master of Philosophy in Library and Information Science of the University.

**Date:** 12/07/2019

**Place:** Lucknow



**Supervisor**



**Head of the Department**



## DECLARATION

I hereby declare that this dissertation entitled “CITATION ANALYSIS OF LIBRARY AND INFORMATION SCIENCE DOCTORAL THESES AWARDED BY NIRF RANKED UNIVERSITIES IN INDIA” submitted by me for the award of Degree of the Master of Philosophy in Library & Information Science to the Department of Library and Information Science, Babasaheb Bhimrao Ambedkar (A Central University), Lucknow is an outcome of my own efforts and is an original work. The contents of this dissertation did not form a basis for the award of any previous degree to anyone else.

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Date:

Department of Library and Information Science

Place: Lucknow

School for Information Science & Technology

Babasaheb Bhimrao Ambedkar University

Lucknow-226025 (U.P)

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**Date:**

**Supervisor**

**Place:**

**Head of the Department**

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At last but not least I also express my sincere gratitude and regards to my beloved parents my father and mother for their never-ending blessings, constant encouragement, and moral support throughout my academic career.

**Date:**

**(Avinash Kumar Singh)**

**Place: Lucknow**

## **PREFACE**

The present study is an effort to identify the information use pattern in the discipline of Library and information science doctoral theses uploaded on Shodhganga on the basis of “**CITATION ANALYSIS OF LIBRARY AND INFORMATION SCIENCE DOCTORAL THESES AWARDED BY NIRF RANKED UNIVERSITIES IN INDIA**”.

The aim of the present study is to know the characteristic features of cited literature on Shodhganga by the research scholars in the field of Library and Information Science. As no other study has been done previously, the present research work has been undertaken. The reports of the study are organized into six chapters.

### **Chapter 1. Introduction**

The chapter deals with the concept of citations meaning and definitions, scope and purpose of citation analysis, the significance of the study, and objectives of the study, hypotheses of the study and scope and limitation of the study.

### **Chapter 2. Review of Literature**

Chapter two presents the review of the literature on the citation analysis, previous studies were done on Library and Information science research covering collaborative research, authorship pattern, scattering and ranking of journals and top areas of research in the field of LIS in India is covered.

### **Chapter 3. Research Methodology**

Chapter four describes the research methodology adopted for the present study.

### **Chapter 4. Data Analysis and Interpretation**

This chapter gives the analysis and interpretation of data covering distribution of data, authorship pattern, ranking of journals, a ranking of authors, distribution of bibliographical form, year-wise distribution, country-wise distribution, language-wise, and year-wise distribution.

### **Chapter 5. Findings, Discussions, Suggestions, and Conclusions**

This chapter focuses on the summary of the findings, conclusions, and suggestions based on the data analyzed chapter and further giving the suggestion to improve the citation patron in the field of LIS.

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# Chapter 1

## Introduction

### 1.1 Introduction

A multitude of academic literature is available in various fields of knowledge, causing dynamic changes in the information needs of the researchers in any discipline. They want an updated piece of information at a particular time. For meeting their information needs plenty of electronic as well as print information resources are available. Information searching is an essential and critical task for any research. The right information at the right time helps to make the right decision regarding any research. This dynamic change in the needs of researchers poses a challenge to library professionals as well as researchers to select the most suitable journals and scholarly databases for a subscription. The limited availability of funds for dispersal to librarians makes the selection of appropriate information sources highly relevant. To resolve these issues, librarians and academicians conduct bibliometric studies to find out the information needs of the researchers. Citation analysis is one of the very popular methods of research under the branch of bibliometrics. The citation analysis is based on the simple logic of utility of resources; the more a resource is cited in the literature, the more value the resource has in that particular field.

The present study explores the citation behaviour of Indian doctoral research scholars of the top five Indian universities in the field of Library and Information Science. The citation behaviour is measured as displayed through their citation pattern in theses submitted for a Ph.D. degree in Library and Information Science. This study will be helpful to know the academic needs of LIS researchers. This study reports the top journals in the field of library science preferred by LIS researchers. Further, this study found the subject areas preferred by LIS researchers for their research work. The motive of this study is to provide a direction for choosing and selecting information sources for researchers like M.Phil. and Ph.D.

### 1.2 Citation analysis

Citation analysis is one of the popular methods of research under the branch of bibliometrics. Citation analysis is a technique or an indirect method. It is helpful for the study of the citations of given references to other books, journals and giving credit to the author for his creation

Citation analysis finds out the trend of research in any particular field. It is collected from different sources of documents and analyzed. Citation analysis also creates a relationship between the cited and citing papers or documents.

According to Krauze "by reference, we mean a footnote in an article which gives bibliographic information about an earlier article." (Krauze and Hillinger, 1971).

Citation analysis is a tool for librarians and academicians to evaluate the needs of the students and to understand the trend of citation in a particular subject. Citation analysis helps acquire books in libraries and the maintenance section for weeding of books. Citation analysis also helpful for exploring the following:

- To know the most cited authors
- To identify the most cited journals
- To find out the half-life of documents

The primary functions of citations are:

- Giving credit to the author for his creation
- Providing background information or in-depth information
- Correcting and analyzing of others work
- Updating or developing knowledge
- To explore the core journals
- Identify the trends and use of documents
- Half-life of documents
- To find out the most cited author
- Authorship studies.

### **1.3 Significance of the problem**

- The present study will be helpful to the library science faculty members as well as the library professionals in understanding the information needs of library and information science researchers.
- Based on the findings of the study, the LIS departments and librarians can prepare a better collection development policy for their LIS collection.

## **1.4 Objectives of the study**

The objectives of this study are as follows.

- To find out the top twenty journals preferred by the doctoral researchers in Library and Information Science by NIRF ranked Universities
- To explore the top areas of research among the doctoral LIS researchers in India
- To find out the preferred types of information sources among the Indian doctoral LIS researchers
- To investigate the preference of Indian doctoral researchers with reference to the age of the document.
- To measure the various citation metrics for the Indian doctoral theses uploaded till date on Shodhganga.

## **1.5 Hypotheses**

This present study attempts to test the following hypotheses.

**H1:** Indian LIS doctoral researchers prefer to work in the area of Information Communication Technology

**H2:** Journal articles are more preferred over books and other information sources.

## **1.6 Research Methodology**

In the present study, citation analysis techniques were used to achieve the objectives of the study. The data was collected from the Shodhganga repository a database of Indian theses available at the <http://shodhganga.inflibnet.ac.in> and collected data were analyzed with the help of JabRef reference management software, Microsoft Excel and Google Sheets used for the tabulation and graphical representation. Chapter 3 discusses in detail the methodology followed in this study.

## **1.7 Scope and Limitation of the study**

The scope of the study was the references listed in theses submitted in the subject of library and information science at the various departments of Library and Information Science in India uploaded on Shodhganga repository. Since there are more than 1500 theses uploaded on Shodhganga repository by the various departments of library and information science of the

Indian Universities, the present study was limited only to theses uploaded by top five universities ranked in the National Institutional ranking Framework (NIRF) for the year 2018. Similarly, theses written in the English Language were only included in the study.

## **1.8 Conclusion**

This study will be helpful for the library science research scholars; faculty members and librarians to know the information needs, trends, as well as update the information of the researchers in the field of library science, even explore the top journals preferred by LIS researchers.

## **1.9 Chapterisation**

The report of the study has been organized in the following chapters:

Chapter 1: Introduction

This chapter will set the background of the study and report the objectives

Chapter 2: Review of Literature

This chapter contains a critical appraisal of the previous studies which are closely related to the current study to understand the methodology, analysis tool, correct approaches of investigation and probable results.

Chapter 3: Research Methodology

In this chapter steps followed during the conduct of this study including-

The JabRef reference management software, Microsoft Excel and Google Sheets.

Chapter 4: Data Analysis and Interpretation

This chapter included different Tables and graphs to represent the objectives of the present study.

Chapter 5: Findings, Discussions, Suggestions, and Conclusions

This chapter summarizes the study and includes the final results of the present study with some suggestions.

## References

- Angamma, A.M.S., & Jayatissa, L.A. (2015). A bibliometric study of postgraduate theses in library and information science: with special reference to University of Kelaniya and University of Colombo, Sri Lanka. *Journal of University Librarians Association of Sri Lanka*, 19(1), 33-52.
- Barik, N., & Jena, P. (2015). Trends in library and information science doctoral research at Utkal University, Bhubaneswar: a bibliometric overview. *VSRD International Journal of Library & Information Science*, 1(1), 31-36.
- Burman, J.S. (2000). Doctoral research in Imtech: documents use pattern. *Annals of Library Science and Documentation*. 47, 121-130.
- Chu, H. (2015). Research methods in library and information science: a content analysis. *Library & Information Science Research*, 37, 36-41.
- Gaikwad, D., & Khokale, R. (2017). Citation analysis of Indian journal of traditional knowledge: a study of citation pattern. *Information Resource journal of Science & Engineering*, 5(2), 11-17. Retrieved from <http://www.irjse.in>, on 20 19 February 27.
- Kaba, A. (2002). Research trends in library and information science at the international Islamic University Malaysia. *Library Review*, 51(1), 32-37.
- Krauze & Hillinger (1971). Citation, reference and the growth of scientific literature: a model of dynamic interaction. *JASIS*, 22, 333-336.

- Kumar, K., Reddy, T.R. (2012). Citation analysis of dissertations submitted to the department of library and information science, Sri Venkateswara University Tirupati. *International Journal of Digital Library Services*, 2(2).
- Kumar, N. (2014). Recent current trends in Lis research in India. *International Research Journal of Management Sociology & Humanity*, 5(3), 238-241.
- Kumar, P.S.G. (1998). Doctoral studies in library and information science in India: a critical study. *DESIDOC Bulletin of Information Technology*, 18(1), 5-8
- Lahiri, R. (1996). Research in library science in India (1950-1995): an account of Ph.D. Programme. *Annals of Library Science and Documentation*, 43 (2), 56-58.
- Mahajan, P. (2016). Citation pattern in Ph.D. theses in the field of philosophy: a study of Panjab University, Chandigarh. *Library Philosophy and Practice (e- Journal)*, 1409, Retrieved from <http://digitalcommons.unl.edu/libphilprac/1409> on 2019 March 3.
- Maity, B.K., & Hatua, S.R. (2015). Research trends of library management in Lis in India since 1950-2012. *Scientometric*, 105 (1), 337-346.
- Panditra, R., & Singh, S. (2017). Doctoral theses awarded in library and information science in India during 2010- 2014: a study. *DESIDOC Journal of Library & Information Technology*, 37(6), 379-386.
- Sharma, J., & Sevakan, R. (2008). Bibliometric analysis of research output of biotechnology faculties in some Indian central universities, *DESIDOC Journal of Library and Information Technology*, 28(6), 11-20.

- Singh, J., Shah, T.A., & Gul, S. (2014). Growth and visibility of Lis journals: an analytical study. *Annals of Library and Information Studies*, 61, 193-198.
- Singh, S.P. (2003). Library and information science education in India: issues and trends. *Malaysian Journal of Library & Information Science*, 8(2), 1-17.
- Small, H.G. (2011). Interpreting maps of science using citation context sentiments: a preliminary investigation. *Scientometric*, 87 (2), 373-388.
- White, M.D., & Marsh, E.E. (2006).Content analysis: a flexible methodology. *Library Trends*, 55(1), 22-40.
- Zhang, G., Ding, Y., & Milojevic, S. (2013). Citation content analysis (cca): a method for syntactic and semantic analysis of citation content. *Journal of the American Society for Information Science and Technology*, 64(7), 1490-1503.

## **Chapter 2**

### **Review of Literature**

#### **2.1 Introduction**

Review of literature is an integral part of any research activity in any subject. It brings out the new and existing knowledge on a particular area and enables the researcher to recognise clearly what has already been done and what remains to be done in those areas. Literature Review is based on the previous study, or it is a process of examining or evaluating the research work as well as it also provides direction and identifies the gaps in the existing literature. Way of finding the unique and something new research on any particular topic.

Literature related to the study was collected from Google Scholar bibliographic database in various journals such as the DESIDOC Journal of Library and Information Technology, Library Management, Library Philosophy and Practice (e-Journal) and many others. Based on depth analysis of literature, it was identified that citation analysis was categorized in different themes such as journal-wise, country wise and university wise which were helpful to understand the published literature in the specific field easily and to know the existing gaps in the literature. Most of the studies related to citation analysis deal with authorship pattern, preferred a type of information sources, the top area of interest in any specific subject and top ten journals in particular subject. It was observed that there were very few studies which aim to examine the top twenty journals in any subject, various citation metrics and age of the document: a present study focused on these aspects of citation analysis.

#### **2.2 Journal wise citation analysis**

Abdi, Idris, Alguliyev, and Aliguliyev (2018) examined 2913 papers in their study entitled ‘Bibliometric Analysis of IP&M Journal (1980–2015)’ from 1980 to 2015. Their study reported that priority is given to articles (67.15%) among the various document types. In this investigation, the researcher has distinguished top 10 productive creators, top 10 foundations and top 24 productive nations with several papers. Analysts from the USA have been made the most level of commitments (50.88%). Researcher additionally recognized that during 1980-1985 and 2010-2015 level of coordinated effort had been expanded in multiple times.

Udo (2018) presented an analysis of 119 journals and 1022 articles published between 2004 to 2013 in library and information science journals available in academic libraries in Imo state, Nigeria. The methodology used in this study was bibliometric analysis for analyzing the data. Objectives of this study were examining the most preferred subject by LIS researchers for their study and find out the authorship pattern. This study found that Information Communication Technology (ICT) was the most preferred subject by LIS researchers for their studies, and the majority of researchers cited single author papers for their study. Based on this study, Journals were most cited, followed by monographs, books, and magazines.

Garg and Sharma (2017) in their study entitled 'Bibliometrics of Library and Information Science research in India during 2004-2015. They studied 2428 papers with the motive of exploring the growth of publication of LIS journals. This study found that the highest number of publication was in 2010, and academic institutions contributed most in the publication of the papers.

Singh and Singh (2017) study analyzed 20 articles which are cited 118 times by Google scholar from 2011-2015 of International Journal of Library and Information Studies. A study showed that the maximum articles were cited in the year 2012, whereas the minimum article was cited in 2015. Majority of two authors contributed articles following single-authored articles, and three authored articles followed further by four authored articles cited in IJLIS Journal. In this study found that single writer Velmurugan, C article deliver 14 (41.18%) references in the year 2013 from Google Scholar.

Similarly, Tupe and Khaparde (2016) in their study entitled 'Scientometric Analysis of Pearl: A Journal of Library and Information Science' analyzed a total of 171 research articles published from 2011 to 2015. Main objectives of this study were to find out the authors productivity, co-author pattern wise, country wise distribution and year wise distribution. This study found that the highest number of authors per paper is 1.98 and 25.5% a maximum number of contributions in the year 2011 and 43 out of 171 papers were published by Indian researchers.

Chatterjee (2015) conducted a research study on 'An Analysis of Citation Pattern of the Journal Opsearch 2013-14: A Case Study'. The study reported 70 articles published from 2013 to 2014 in OPSEARCH. Total 1843 references were cited in the study, and it was found that journal article papers most cited compared to monographs, conference proceedings and e documents.

Pradhan (2015) worked on a citation analysis of scholarly publication in the library and information science in India. The focus of this study was to determine the trend of LIS and authorship pattern during the period of 2001-2010 in international LIS journals. The study also points out the trends of LIS and authorship pattern. A total of 353 papers published during 2001-2010 were analyzed. This study found that maximum paper published in International LIS journals by an Indian author is single author and Delhi is central place having the highest number of the publication.

Teli and Maity (2015) carried out a bibliometric analysis of research articles included in DESIDOC Journal of Library & Information Technology published in the year 2014. The study examined 52 research article papers consist of 761 numbers of citations published by DJLIT in 2014. Results showed that 38.11% have single authored followed by double authored and 137 Citations have no author.

Patra (2014) in his study, "Google Scholar-based citation analysis of Indian library and information science journals" explored that the authors to create a publication profile or citation received h-index and g-index. Even researcher identified the pattern or trends of selected LIS journals based on authorship pattern after the data analysis results found that total 1, 793 single-authored articles of 15 journals, 627 single-authored articles are cited (about 35 percent), and 1, 166 single-authored articles (75 percent) are not cited. Among the total 1, 313, two authored articles, 657 articles (50 percent) are cited, and 656 articles (about 50 percent) are not cited.

Mani (2014) in his study entitled 'Authorship Patterns and Collaborative Research in Malaysian Journal of Library and Information Science, 1996 to 2012' found that the maximum number of papers were published in 2011 and 64.52% of total contribution is collaborative in nature.

Singh (2014), in his study publication trends in library and information science, a bibliometric analysis of Library Management journal, observed that published paper in the Journal was collected from Emerald. Results showed that the majority of the contribution of articles by a single author is near about 56.55% and 28.17% by double authorship. The study also revealed that the USA is the most productivity country and followed by Australia and the UK.

Mitchell and Lange (2013) conducted a bibliometric analysis of two International Studies Association journals named International Studies Quarterly and International Studies Perspectives in 2005. The main objectives of this study were to find out the gender of the authors of articles and the gender of the cited authors in each article bibliography. After analysis, it was

concluded that female author's paper cited most and female author's contributions are more as a comparison to male authors.

Mahesh and Wadhwa (2012) conducted a citation analysis of 10 Indian Journals. The analysis revealed that the highest cited journal by LIS researchers is *Annals of Library Information Studies* and highly cited author was Dr. S.R. Ranganathan followed by Neelameghan, Kaula and others.

Jadhav, Khaparde, and Shelke (2011) based on the analysis of 5968 research papers published from 2004 to 2008 in 'University News'. The study found that single-authored papers cited more in comparison to multiple authors and books are the most preferred source of the documents followed by journals, monographs, etc. and printed documents cited more than electronic documents.

Evans (2010) traced the gender wise publications and highly gender wise cited articles published in *LIBRES* and *Information Research* during 1995-2007. Results disclosed that male authors contributed more paper compared to female authors. Male author's article cited more than female author's article during 13 years in *LIBRES* and *Information Research* journal.

Levitt and Thelwall (2009) in their paper, highlight on the most highly cited library and information science articles: interdisciplinary, first authors and citation patterns. They explored 82 most profoundly referred *Information Science and Library Science* (IS&LS) articles (the top 0.1%) in the *Web of Science* from disciplinarily, yearly reference examples, and first writer reference profiles. The general recurrence of these 82 articles was much lower for articles exclusively in IS&LS than for those in IS&LS and somewhere around one other subject, proposing that the advancement of interdisciplinary research in IS&LS might help improve exploration quality. Second, 66% of the primary creators had an h-index in IS&LS of under eight, demonstrate that researchers deliver much critical research without a high h-index by and large IS&LS look into efficiency. Third, there is a moderate connection (0.46) between reference positioning and the number of years between pinnacle year and year of distribution. Park (2006) in his study entitled 'Authorship from the Asia and Pacific Region in the top Library and Information science journals' selected 20 library science journals categorised by the Institute for Scientific Information (ISI) and covered entire 1, 273 articles published during in 1967-2005. This study found that the top most productive countries are Australia, China, and South Korea, respectively.

### **2.3 Universities wise Citation Analysis**

Osman, Alemna, and Kumah (2018) conducted a research study on “Analysis of Doctoral Thesis Citation Patterns: A Case Study of the Sam Jonah Library, Ghana” to explore the in-depth analysis of the citation patterns in the PhD theses submitted to the Graduate School of the University of Cape Coast in the range of 2005 and 2016. A sum of 35 PhD theses were submitted during this period and was acquired from the Africana segment of the Sam Jonah Library. The reference portion of every thesis was photocopied and manually observed. The study involves examination of 6, 458 references from 35 theses. The study concludes that research papers were the highly preferred document type followed by books, reports and web resources and the results further depicts that majority (73.3%) of the journals cited by PhD. Scholars could be accessed through Sam Jonah library’s subscribed online database.

Kagra (2017) in his study investigated on “A Reference Analysis of Doctoral Theses in History Awarded at Kurukshetra University (KUK), a study” revealed that a total of 54 doctoral theses awarded in KUK 1979 to 2012. The author found that out of 54 Doctoral theses 39 were written in the English language and 19 in the Hindi language. The books were a significant source of information used by researchers in history. The study revealed that single-authored books contribution is highly cited (93.14%), while 0.17% cited five and above authors. Almost half of the total citations (62.69 percent) were books followed by journals (6.51 percent). The study also found that highly cited books were published in India. Majority of (46.09%) references were published in Delhi while 11.25 % from Bombay and 8.15% books from Amritsar.

Nayak and Patil (2017) in their study entitled ‘Citation analysis of Ph.D. Theses in Economics submitted to University of Gulbarga, Karnataka during 1984-2002’. They analysed 1190 citation in 16 PhD theses. This study found that the majority of the contributors to the citations were from books. The study also found that books are the most cited in all theses. 38.32 % of the total journals were cited; it was the second most cited source and edited books, 6.97 percent was cited. The study revealed that the majority of the researchers cited books written by a single author, i.e., 80.0%, 19 percent of the books cited by two authors and barely 1 percent cited above five authors. In this study, included more than 12 countries publications and found that India was ranked first having 84.2% edited book citations and the USA with 15.8% in the department of economics research students in Gulbarga University, Kalaburagi, Karnataka. Economic and

Political Weekly got the first rank, and it is a most important journal in social science research having been cited 79 times. The majority of the citations made national reports, i.e. 45.8 percent, secondly, equal citations, i.e., 25.3 percent of the citations have from internationals and state level reports and only 3.6 percent citation from district-level reports.

Ezema (2016) analysed that 87 theses submitted in the Department of Linguistics and Nigerian Language from 2005-2014. The author using bibliometric indicators to examine the 87 theses. This study found that books and monographs cited most followed by journals, electronic resources.

Mahajan and Saini (2016) in their study entitled 'Citation Pattern In Ph.D. Theses In The Field Of Philosophy: A Study of Punjab University, Chandigarh' examined 8223 citations appended in the 26 doctoral theses of Philosophy submitted to Punjab University, Chandigarh, for the award of doctoral degree during 2002-2012. The motive of this study was to find out the authorship pattern of the citations and form of literature cited. In the field of philosophy, most of the researchers preferred books as a source of information, on the other hand, accounting 40.67% total citations, followed by journals with 17.99% citations. Bradford's law of scattering was used to identify the core journals in the field of Philosophy.

Somashekara and Kumbar (2015) analysed 7728 citations of three universities of Karnataka. This study found that Mysore University has the highest citation compared to Karnataka and Bangalore University. Journals are cited most to other resources, and the highly cited subject is Science, Applied Science, and Medical Science.

Nasir and Kumar (2015) analysed 4, 875 citations from theses submitted in Aligarh Muslim University, Department of Economics from 1990 to 2010. This study found that books are the most cited documents by researchers of AMU, researchers cite the Department of Economics and mostly single-authored papers, and English is the most preferred language of researchers.

Alves (2014) conducted a pilot study to measure the collection of UFSC University and researchers needs. This study found that the library cannot fulfill the needs of researchers, and only 28.81% are physical library collection; mostly researchers preferred online resources compared to printed resources.

Ravichandran, Sivaprasad, and Manoharan (2014) studied four theses submitted in Bharathidasan University in 2008 to 2012 and 791 citations were found. This study found that

journals are cited more than other sources like books, monographs, etc. Foreign journals are cited more as compared to Indian journals.

Keat and Kaur (2008) in their study entitled 'Citation study of Library and Information Science Dissertations for Collection Development' this study used on a citation analysis method. They analysed that Information Resources used by the Master of Library and Information Science at the University of Malaya. They selected sample for 40 MLIS dissertations from 2000 to 2005. They found that books and journals are the most used resources by MLIS students in the University of Malaya and single-authored papers are cited most in comparison to two or three authored papers.

Kushkowsky, Parsons and Wiese (2003) in their paper highlighted on Master's and Doctoral Thesis Citations: Analysis and Trends of a Longitudinal Study found that more than 9100 references from 629 masters and doctoral theses composed somewhere in the range of 1973 and 1992 at an expansive mid-western land-grant university. The consequences of this investigation recommend that graduate understudies composing propositions support flow look into paying little heed to the disciplinary alliance. The length of propositions expanded after some time, and the number of references in theory lists of sources differed by discipline.

Romic and Mitrovic (n.d) in their study entitled 'Using Citation Checking of Ph. D. Dissertation References as a Tool for Evaluating Library Collections of the National and University Library in Zagreb'. This study analysed those 73 Ph.D. dissertations published in 2013 at the University of Zagreb. This study found that most of the postgraduate students cited dissertation at the University of Zagreb compared to other resources and monograph holds second place followed by journals and conference proceedings.

## **2.4 Countries wise**

Yang, Lee and Choi (2016) in their study entitled 'Publication and Citation Patterns of Korean LIS research by subject areas' examined 6838 citations published between 2001-2010. They found that 2, 351 papers were most cited and total 9, 922 times these papers were cited during ten years, and 1, 986 domestic papers were published by 163 faculty members of LIS in Korea.

Aina and Mooko (1999) focused on Library Science research in Africa. This study found that 79.6 % paper contributed by single authors and more than 80% paper contributed by male and

almost paper published in journals followed by monograph and reports and descriptive studies are most preferred types of research by LIS researchers of Africa.

Maharana and Das (2014), in their study, presented the growth of Library and Information Science Research in India. They analysed 140 documents. The outcome of this study was the majority of publications published with collaborations, and the majority of the published papers are articles with 6 to 10 pages, and Lotka's Law was used to measure the author's productivity.

Simisaye and Osinaike (2010) in their study entitled 'Citation Analysis of a journal of library and information science (2004 -2009). They analysed 72 articles under study and 988 citations during five years. The study reveals that the journal is the most cited by authors (37.14 %) of the total citations.

Wani (2008) in his study 'Growth and Development of Library and Information Science Literature' found that U.S.A has the highest number of publication in LIS Literature and academic journals hold first place in publication and also found that regional wise North America holds the first rank in publication and also shows that continual growth of library and information literature all over the countries.

Chatterjee and Maity (n.d) in their study entitled 'A Study on Post-Doctoral Researchers in Library and Information Science in India' attempted to identify the overall growth of Library and Information Science research in India. This study found that Karnataka University contributed the maximum number of theses and also a maximum number of theses produced by Karnataka State and most preferred subject area by LIS researchers are Bibliometric.

Sahoo, Mundhial, and Mohanty (2016) researched 'Indian Doctoral Research in Social Science with special Reference to Library and Information Science' found that 87.46% of theses written in English language and 12.54 % theses written in the Hindi language. This study also revealed that most of the research work done in Commerce, Management, Business Administration and Economics, contributed 54 % of total research work in all education fields.

## **2.5 Miscellaneous**

Rao (2012), in this study, indicated that there is an increasing trend towards collaborative research in the field of Neutrino in India. The publication in journals articles (905) is maximum in the field when compared to the publication in the conferences. The core journals indicated that researchers were selective in publishing their research.

Burman (2012), in his study, collected 20 Doctoral dissertations from the Institute of Microbial Technology Library. The total numbers of 4752 references were analyzed under study. The primary objectives of this study were to find out the authorship pattern and subject dispersion. He found that 85% of citations were from journal literature, and 59% of the journal citations belonged to two subject fields, namely Biochemistry and Microbiology.

## **2.6 Conclusion**

In the present chapter, the researcher categorised available literature in different themes and discussions were made. In reviewing the methodologies of citation analysis studies, the researcher found that in most of the studies data was collected through various databases and recorded manually. Majority of the studies in citation analysis focuses on the ranking of journals, country wise contribution, authorship pattern, analysis of collaborative contribution in the literature. Further, it was found that journals are the most preferred source of information, and single-authored papers are cited mostly by authors.

## **References**

- Abdi, A., Idris, N., & Alguliyev, R.M. (2018). Bibliometric analysis of IP&M Journal (1980-2015). *Journal of Scientometric Research*, 7(1), 54-62.
- Aina, L.O. & Mooko, N.P. (1999). Research and publication pattern in library and information science. *Information Development*, 15 (2), 114-119.
- Alves, M.B.M., Lehmkuhl, K.M., Pinheiro, L.V., & Silva, D.M.N. (2014). Correlation between information needs and the library collection: a citation analysis study of doctoral theses at University Federal de Santa Caterina Library. *Proceeding of the IATUL conferences*, retrieved from <http://docs.lib.purdue.edu/iatu/2014/bibliometrics/> on 2019 march 1.
- Chatterjee. A. (2015). An analysis of citation pattern of the journal Opsearch 2013-14: a case study. *International Journal of Humanities and Social Science Invention*, 4(7), 39-44.

- Chatterjee, A., & Maity, A.C. (n.d). A study on post-doctoral research in library and information science in India. *International Journal of Information Library & Society*, 54-65.
- Evans, L.R. (2010). Gender and citation in two LIS e-journals: a bibliometric analysis of library and information research. *Library and Information Science Research Electronic Journal*, 20(1), 1-18.
- Ezema, I.J. (2016). Scholarly communication from authorship patterns in language research: evidences from citation analysis of language theses in Nigeria. *Ghana Journal of Development Studies*, 13(2), 1-25.
- Gaikwad, D., & Khokale, R. (2017). Citation analysis of Indian Journal of Traditional Knowledge: a study of citation pattern. *Information Resource Journal of Science & Engineering*, 5(2), 11-17. Retrieved from <http://www.irjse.in>, on 20 19 February 27.
- Garg, K.C., & Kumar, S. (2010). An analysis of the citation pattern of Indian science journals indexed by science. *Annals of Library and Information Studies*, 57, 365-372.
- Garg, K.C., & Sharma, C. (2017). Bibliometrics of library and information science research in India during 2004-2015. *DESIDOC Journal of Library & Information Technology*, 37 (3), 221-227.
- Jadhav, V., Khaparde, V., & Shelke, S. (2011). Citation analysis of University News Journal. *Goa University*, 681-690.
- Kagra, S.K. (2017). A reference analysis of doctoral theses in history awarded in Kurukshetra University, Kurukshetra. *Imperial Journal of Interdisciplinary Research*, 3(9).

- Keat, Y.C., & Kaur, K. (2008). Citation study of library and information science dissertations for collection development. *Malaysian Journal of Library & Information Science*, 13(2), 29-47.
- Kousha, K., & Thelwall, M. (2006). Motivations for url citations to open access library and information science articles. *Scientometric*, 68(3), 501-517.
- Kushkowsky, J.D., Parsons, K.A., & Wiese, W.H. (2003). Masters and doctoral thesis citations: analysis and trends of a longitudinal study. *Lowa State University Digital Repository*, retrieved from [http://lib.dr.lstate.edu/refinst\\_pubs/30](http://lib.dr.lstate.edu/refinst_pubs/30) on 2019 February 28.
- Levitt, J.M., & Wall, M.T. (2009). The most highly cited library and information science articles: interdisciplinary, first authors and citation pattern. *Scientometric*, 78(1), 45-67.
- Mahajan, P. (2016). Citation pattern in Ph.D. theses in the field of philosophy: a study of Panjab University, Chandigarh. *Library Philosophy and Practice (e- Journal)*, 1409, Retrieved from <http://digitalcommons.unl.edu/libphilprac/1409> on 2019 March 3.
- Maharana, R.K. (n.d). Growth and development of LIS research in India during 1993-2013: a bibliometric analysis. *Chinese Librarianship: an International Electronic Journal*, 37, 35-46, retrieved from [www.iclc.us/clieJ/CI37MD.pdf](http://www.iclc.us/clieJ/CI37MD.pdf).on 2019 March 1.
- Malliar, A. & Togia, A. (2016). An analysis of research strategies of articles published in library science journals: the example of library and information science research. *Qualitative and Quantitative Methods in Libraries (QQML)*, 5, 805-818.

- Mani, K.T. (2014). Authorship pattern and collaborative research Malaysian Journal of Library Science, 1996-2012. *Library Philosophy and Practice (e- Journal)*, 1177. Retrieved from <http://digitalcommons.unl.edu/libphilprac> on 2019 February 28.
- Mitchell, S.M., Lange, S., & Brus, H. (2013). Gendered citation patterns in international relations journals. *International Studies Perspectives*, 14, 485-492.
- Nasir, J., & Kumar, D. (2015). Citation analysis of doctoral dissertations submitted between 1990-2010 in the Department of Economics, Aligarh Muslim University, Aligarh (India). *Chinese Librarianship: An International Electronic Journal*, 32, retrieved from <http://www.icic.us/clics/cl32NK.pdf> on 2019 March 2.
- Nayak, S.C., & Patil, D.B. (2017). Citation analysis of Ph.D. theses in economics submitted to University of Gulbarga, Karnataka during 1984-2002. *Research Journal of Library Science*, 5(3), 1-8.
- Osman, I., Alemna, A.A. & Kumah, M.A. (2018). Analysis of Doctoral Thesis Citation Patterns: A Case Study of the Sam Jonah Library, Ghana. *Library Philosophy and Practice (e- Journal)*, 1692. Retrieved from <http://digitalcommons.unl.edu/libphilprac>, 2019 February 28.
- Park, T.K. (2006). Authorship from the Asia pacific region in top library and information science journals. *Asia –Pacific Conference on Library & Information Education & Practice*, 555-565.
- Patra, S.K. (2014). Google scholar based citation analysis of Indian library and information science journals. *Annals of Library and Information Studies*, 61, 227-234.

- Pradhan, D.K. (2015). Scholarly publication in library and information science in India: a citation analysis of international LIS journal.10th International CALIBER-2015 *HP University and IAS Shimla, H.P. India, 12*, 244-253.
- Ravichandran, M., & Sivaprasad, G, G. (2014). Bibliometric citations in Ph.D. theses in library and information science at Bharathidasan University, Tiruchi. *International Journal of Digital Library Services, 4 (3)*, 218-230.
- Sahoo, J., Mundhial, S., & Mohunty, B. (2016). Indian doctoral research in social science with specific references to library and information science. *Library Practice (eJournal), 1435*, retrievedfrom<http://digitalcommons.unl.edu/libphilprac>, on 2019 March 1.
- Simisaye, A.O., & Osinaike, A.B. (2010). Citation analysis of journal of library and information science (2004-2009). *Brazilian Journal of Information Science, 4(1)*, 35-60.
- Singh, J., Shah, T.A., & Gul, S. (2014). Growth and visibility of Lis journals: an analysis study. *Annals of Library and Information Studies, 61*, 193-227.
- Singh, K.P., & Chander, H. (2013). Publication trends in library and information science: a bibliometric analysis of library management journal. *Emerald Library Management, 35 (3)*, 134-149.
- Singh, R.K. & Singh, A.P. (2017). Citation analysis of international journal of library and information studies on the impact research of Google scholar: 2011-2015.*International Journal of Library and Information Studies, 7(4)*, 155-161.

- Somashekara, Y.L., & Kumbar, M. (2015). Citation analysis of doctoral theses: an analysis of physics theses submitted to three universities of Karnataka, India. *International Journal of Library and Information Studies*, 5(1), 20-33.
- Teli, S., & Maity, A. (2015). DESIDOC Journal of Library & Information Technology: an analysis of citation pattern. *International Journal of Library and Information Studies*, 5(3), 97-100.
- Tupe, S.K., & Khaparde, V. (2016). Scientometric analysis of Pearl: a journal of library and information science. *International Journal of Library and Information Studies*, 6(4).
- Udo, A.J. (2018). A bibliometric analysis of research productivity of librarians published in library and information science journals available in academic libraries in IMO state, Nigeria, 2004-2013. *Research Journal of Library and Information Science*, 2(1), 15-21.
- Wani, Z.A. (2008). Growth and development of library and information science literature. *Chinese Librarianship: an International Electronic Journal*, 29, 1-17, retrieved from <http://www.iclc.us/clies/clz6wBJ.pdf>.
- Yang, K., Lee, J., & Choi, W. (2016). Publication and citation patterns of Korean LIS research by subject areas. *Malaysian Journal of Library & Information Science*, 21(2), 67-81.

## **Chapter 3**

### **Research Methodology**

#### **3.1 Introduction**

The present study is focused on the citation analysis of the doctoral theses of library and information science awarded by the NIRF ranked universities in India. Primarily study focused on identifying the top journals preferred by Library and Information Science (LIS) researchers. The study also discussed the authorship pattern cited by the researchers and top cited authors by LIS researchers in top five universities ranked by National Institutional Ranking Framework (NIRF) 2018.

The methodology adopted for the present study is described under the following subheadings:-

The population of the study, the sample used for the study; source of data; the process of data collection.

This study is based on the citation analysis pattern followed by LIS researcher Scholars while retrieving their required information. The researcher has taken top five universities ranked by NIRF in 2018 as a population of his study, which is as follows:-

1. Banaras Hindu University (BHU)
2. Jadavpur University (JU)
3. University of Delhi (DU)
4. Savitribai Phule Pune University
5. Aligarh Muslim University (AMU)

#### **3.2 Source of Data**

Shodhganga database ([Shodhganga.inflibnet.ac.in](http://Shodhganga.inflibnet.ac.in)) was the prime source for data collection for the present study.

#### **3.3 Process of Data Collection**

Firstly the researcher identified the top five universities ranked by NIRF in 2018.

Secondly, the researcher examined those top five universities, which are ranked in 2018, has been signed MOU with Shodhganga database repository. Then researcher investigates that which universities out of five offered LIS education. After knowing the institutions which offered LIS education researcher find out those universities which uploaded LIS dissertations and theses on shodhganga till 25 December 2018. Researcher downloaded all the theses uploaded on Shodhganga repository by the above universities till 25 December 2018.

Then the researcher merged all the collected references of particular theses available in various chapters in a single file.

### **3.4 Interpretation of Data**

For assessing the objectives of the study researcher used JabRef reference management software. Researcher manually filled all references in JabRef and exported all the collected data in CSV file format for analysis in MS-Excel and Google Sheets

By using MS-Excel and Google Sheets researcher prepared various charts and tables for interpretation of data.

### **3.5 Conclusion**

This chapter points out the population and sample used in the present study. In this study, the researcher used citation analysis technique for the data analysis and all the collected data has been analyzed and interpreted by using Jabref reference management software and MS-Excel and Google sheets for the tabulation and graphical representation.

All the analysis part of the study had been discussed in the next chapter.

## Chapter 4

### Data Analysis and Interpretation

#### 4.1 Introduction

In the last chapter, the methodology adopted for the study has been discussed. Data has been collected by the following method mentioned, and further analysis has been done. The first objective of the study was to rank the journals in library and information science. For achieving this objective, Firstly references of all library science theses have been collected from Shodhganga database, and the total 18638 references were retrieved.

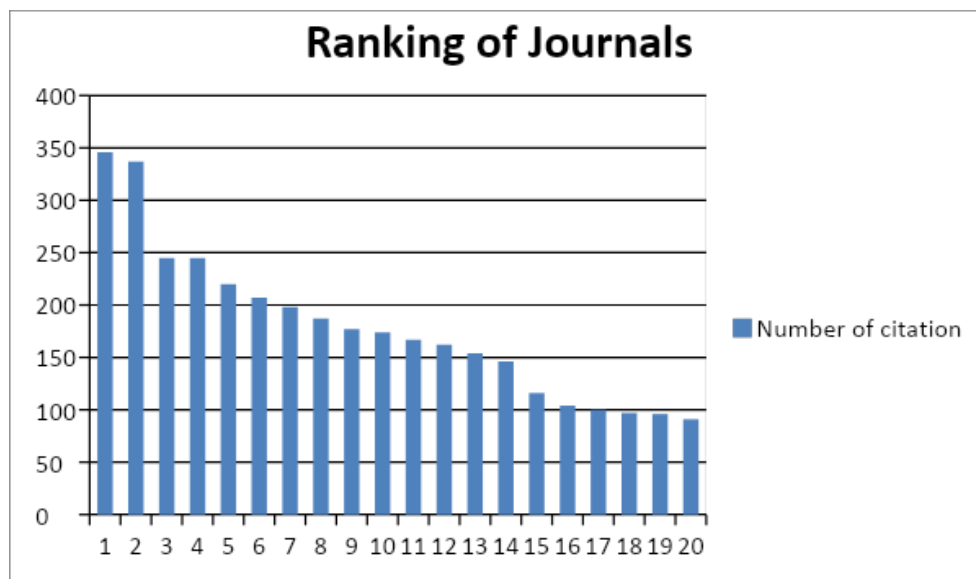
#### 4.2 Data Analysis

**Table: 4.1 Ranking of Journal**

<b>Rank wise</b>	<b>Name of the Journal</b>	<b>Number of citations</b>	<b>Percentage</b>
1	Journal of American Society Information Science Technology	346	17.881
2	Scientometrics	337	17.416
3	Journal of documentation	245	12.661
4	Annals of Library and Information Studies	245	12.661
5	Library trends	220	11.369
6	College and Research Libraries	207	10.697
7	Library Review	198	10.232
8	The Electronic Library	187	9.664
9	Aslib Proceedings	177	9.147
10	Library Hi Tech	174	8.992
11	ILA Bulletin	167	8.631
12	DESIDOC Bulletin of Information Technology	162	8.372
13	Journal of Academic Librarianship	154	7.958
14	Annual Review of Information Science and Technology	146	7.545

15	Library Journal	116	5.994
16	Library Herald	104	5.375
17	Collection Building	100	5.167
18	SRELS Journal of Information Management	97	5.012
19	International Information & Library Review	96	4.961
20	Herald of Library Science	91	4.702

Table 4.1 and figure 4.1 both indicate the ranking of journals in the field of library and Information Science based on the total number of citations in Indian Doctoral Theses uploaded on shodhganga repository. Data indicates that the Journal of American Society Information Science Technology having the highest number of citations, i.e. 346 and secured the first rank out of 1929 national and international journals. While with 337 number of citations Scientometric secured the second rank. Data also denoted that only 6 Indian journals could achieve position in top 20 journals cited by LIS Doctoral researchers: these are Annals of Library and Information Studies (4<sup>th</sup> rank having 245 numbers of citations), ILA Bulletin (11<sup>th</sup> rank having 167 numbers of citations), DESIDOC Bulletin of Information Technology (13<sup>th</sup> rank), Library Herald (16<sup>th</sup> rank), SRELS Journal Information Management (18<sup>th</sup> rank) and Herald of Library Science (20<sup>th</sup> rank having 91 citations). Remaining fourteen journals are international journals.



**Figure no.4. 1 Ranking of Journal**

**Table: 4.2 Subject-wise distribution of research in LIS**

<b>Sl. No.</b>	<b>Subject wise</b>	<b>No. of Theses</b>
1	Academic Libraries	8
2	Bibliometrics	31
3	Cataloguing	2
4	Classification	5
5	Collection Development	5
6	Digital Library	12
7	ICT	20
8	Library Management	30
9	Library Services	8
10	Public Libraries	6
11	Special Libraries	8
12	Reading Habits	6
	Total	141

Table 4.2 depicts the subject wise distribution of the doctoral thesis and dissertation uploaded on Shodhganga repository in the field of LIS. It could be noted that a total of 12 significant areas of research are listed in the table on which the researchers of LIS have conducted their research work. It was observed that in Library and information science mostly researchers showed their research interest in the area of Bibliometrics (31 theses out of 141; 21.99%) followed by Library Management and ICT. Above the table is having great importance not only for the academicians but also for the upcoming researchers. Further, it will be helpful for the selection of the area of research.

**Table: 4.3 Citation of documents**

<b>S.No.</b>	<b>Types of Document</b>	<b>No. of Citations</b>	<b>Percentage</b>
1	Books	3112	16.69
2	In Collections	1165	6.25
3	In Proceedings	656	3.51
4	Articles	10,768	57.78
5	Theses	27	0.15
6	Miscellaneous	2790	14.96
7	Technical Reports	106	0.56

8	Unpublished	14	0.075
	Total	18638	100

Table 4.3 shows the analysis of the usage statistics of various documents by LIS researchers. After analysis, it was observed that the researchers in their thesis had cited eight types of document. It was also observed that articles or research papers cited most (57.78% out of total sample; 10, 768 number of citations) by researchers during their research work followed by books (3, 112 number of citations) and unpublished documents cited least (14 number of citations) by the research scholars of library and information science.

**Table 4.4 Age of Oldest Reference**

<b>year of submission (Sy)</b>	<b>Oldest Reference (Oy)</b>	<b>Age of Oldest Reference (A)</b>
2013	1923	90
2010	1923	87
2015	1938	77
2010	1934	76
2009	1935	74
2008	1934	74
2004	1934	70
2014	1949	65
2013	1949	64
2009	1945	64
2016	1954	62
2012	1955	57
2011	1954	57
2011	1955	56
1999	1943	56
1999	1943	56
2009	1958	51
2001	1991	50
1993	1945	48
2009	1961	48
2013	1965	48
2009	1962	47
2002	1955	47
2012	1965	47
2014	1967	47
2015	1968	47

1997	1950	47
2010	1964	46
2009	1963	46
2013	1967	46
2007	1961	46
2012	1968	44
2006	1962	44
2017	1973	44
2012	1964	43
2011	1968	43
2005	1963	42
2009	1967	42
2001	1961	41
2013	1972	41
2005	1964	41
2012	1972	40
2012	1972	40
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2014	1975	39
2009	1970	39
2014	1978	36
2015	1979	36
2005	1969	36
2015	1980	35
2009	1974	35
2015	1980	35
2008	1974	34
2009	1976	33
2012	1982	30
2010	1980	30
2008	1978	30
2008	1979	29
2010	1982	28
1986	1958	28
2008	1980	28
2011	1984	27
2007	1968	27
2015	1989	26
2015	1990	25
2010	1986	24
2013	1989	24
2010	1987	23

2012	1989	23
1993	1970	23
2005	1982	23
2007	1984	23
2012	1990	22
2016	1994	22
2002	1980	22
2007	1986	21
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2008	1988	20
2005	1986	19
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1987	1968	19
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1989	1974	15
2012	1998	14
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2013	1991	14
2011	1998	13
2011	1998	13
2005	1992	13
2009	1997	12
2011	1999	12
2014	2002	12
2011	2000	11
2011	2000	11
2012	2001	11
2009	2000	9
2005	1997	8

2010	2002	8
2011	2003	8
2009	2001	8
2011	2003	8
2008	2001	7
2010	2003	7
1991	1984	7

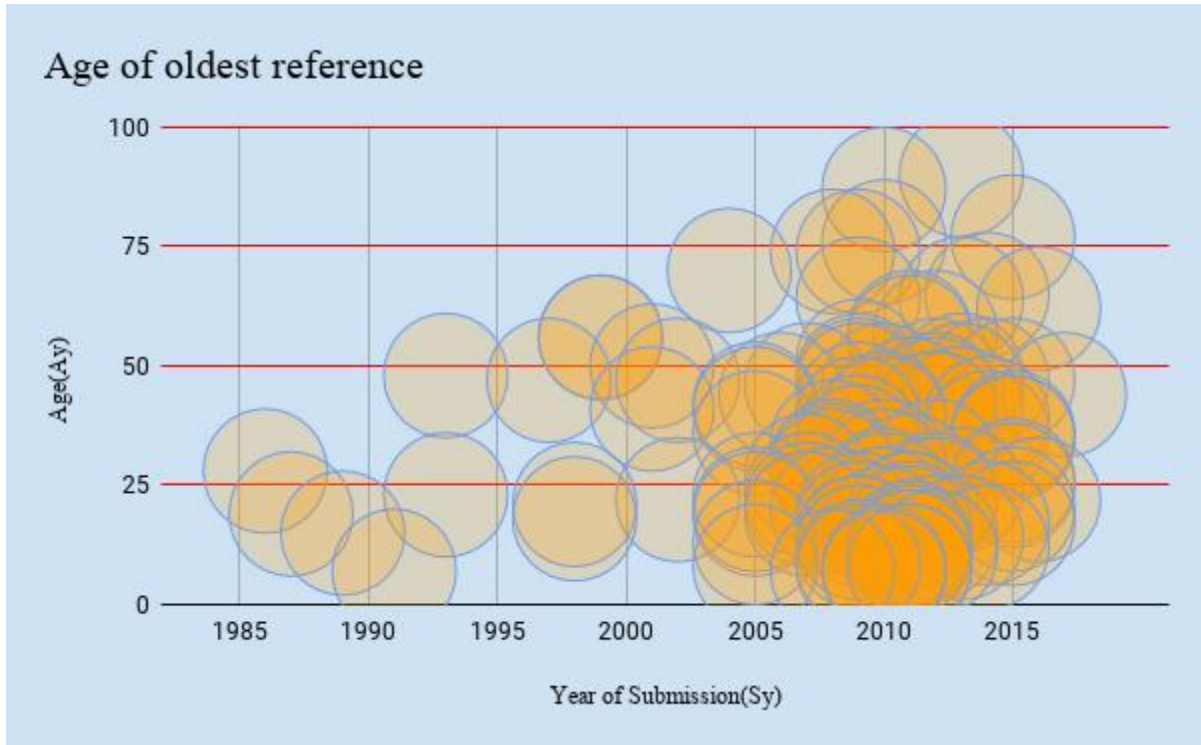
Sy = Year of Submission

Oy = Oldest Reference

A= Age of Oldest Reference

Average = 32.75630252

Table 4.4 displayed the average age of cited documents after calculating the difference between the publication year of the oldest reference and year of submission of the thesis. Here figure 4.2 is based on table 4.4 and depicts the age of the document. The figure indicates that below the age of 32.75, documents got maximum citation having more density in the figure.

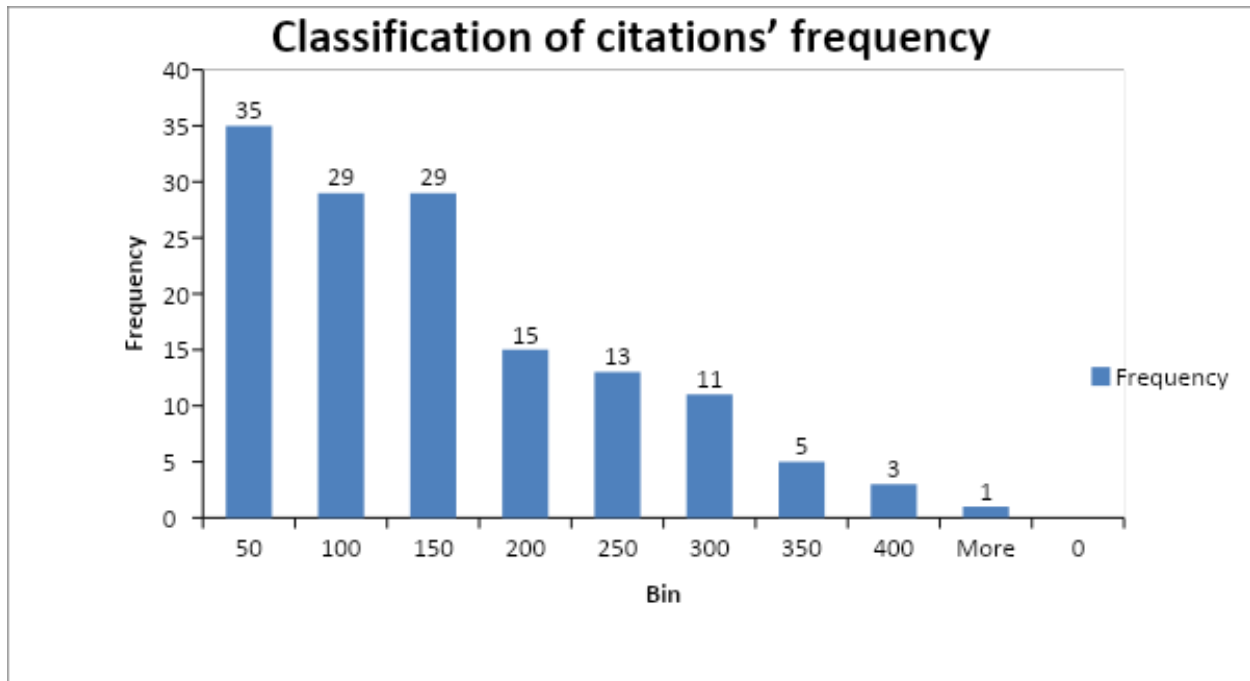


**Figure no.4.2**

**Table 4.5 Classification of citations' frequency**

<i>Class Interval</i>	<i>Cumulative Frequency</i>
50-99	35
100-149	29
150-199	29
200-249	15
250-299	13
300-349	11
350-399	5
400-449	3
450-More	1

Mean	132.18
Median	107
Mode	51



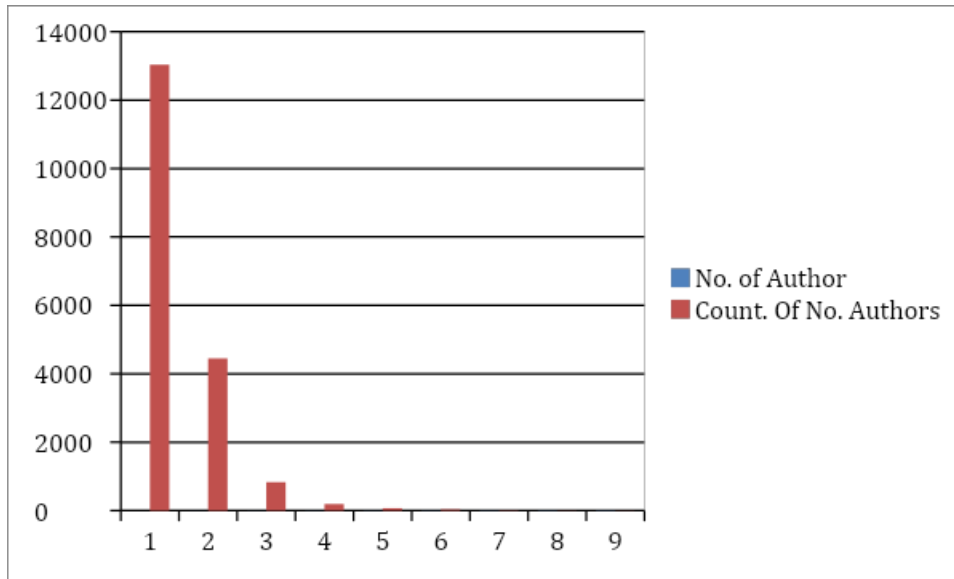
**Figure 4.3**

Table 4.5 depicts the classification of citations' frequency which has been presented in class interval form with their cumulative frequency, which indicates that a maximum of 35 researchers cited around 50-99 references in their theses whereas statistics showed that only three researchers cited more than 400 references in their theses. After calculating cumulative frequency, the central tendency of data has also been calculated, which noted that on an average, 132.18 references had been cited by the researcher in their thesis.

**Table: 4.6 Authorship Pattern**

S.No.	No. of Author	Count. Of No. Authors	Percentage
1	1	13039	69.95
2	2	4446	23.85
3	3	831	4.45
4	4	192	1.04
5	5	71	0.38
6	6	37	0.19
7	7	11	0.06
8	8	6	0.03
9	9	5	0.02
10	Total	18638	100

Table 4.6 shows that a single author paper cited most (69.95) while two or more than two authors got 23.84% and so on. This indicates that only a single author paper got more than 50 %. One more important fact is in the table which shows that papers having nine authors also got citations in theses



**Figure no.4.3 Authorship Pattern**

**Table: 4.7 Top twenty cited authors**

S.No.	Name of Author	Frequency
1	S.R.Ranganathan	97
2	F.W.Lancaster	48
3	Garfield	46
4	M.Thelwall	34
5	M.P.Satija	33
6	K.Kumar	32
7	D.Ellis	32
8	L.Egghe	30
9	T.D.Willson	27
10	J.Bar-ilan	26
11	J.H.Shera	25
12	Derek J.de Solla Price	25

13	R.G. Prasher	25
14	S.P. Singh	22
15	M.B. Line	21
16	C.R. Kothari	18
17	A. Pritchard	17
18	P. Johnson	15
19	G. Salton	15
20	P.N. Kaula	14

Table 4.7 represents the top 20 authors who have been commonly cited by the researchers of LIS. Data indicated that only seven Indian authors got a place in the top 20 cited authors' list. Where S R Ranganathan is on the top rank having the 97 frequency of citation followed by M. P Satija got the 5<sup>th</sup> rank with 33 frequency of citation, then K Kumar is on the sixth rank with the frequency of 32 citations, and then R.G. Prasher is on 13<sup>th</sup> rank with the frequency of 25 and P.N. Kaula got 20<sup>th</sup> rank with 14 frequency. In the above list sixth and 10<sup>th</sup> rank has been shared by K Kumar & D Ellis and J H Shera & D J Solla Price respectively.

### Hypothesis testing

- H1= From table 4.2 shows that Bibliometrics is a core area of research so this hypothesis is rejected
- H2= From Table 4.3 clearly shows that journal is the most preferred source of information by doctoral researchers so this hypothesis is accepted

### 4.3 Conclusion

Citation Analysis is a way of measuring the frequency of citing a particular author, authorship pattern ranking of journals and graphs of citations in the document.

## Chapter 5

### Findings, Discussions, Suggestions, and Conclusions

#### 5.1 Introduction

This chapter focuses on the summary of the findings, conclusions, and suggestions based on the data analysed in the previous chapter. It is noticed that the status of the library and information science professionals is developing considerably fast and marching towards the modernisation technologies. Therefore citation analysis also play an essential role in the modernization life of researchers and others members of profession to know the value of documentation and their details of particulars information which was briefly explored by the authors and many information need to know authorships pattern, core journals half-life and many more things which is depend on the researchers query as well as it is beneficial to the society and upcoming generation of library and information Science professionals for their developments.

#### 5.2 Findings of the study

The findings are based on the analysis of collected data appended in 18638 references from theses submitted in five top LIS departments in India.

- The study found that the Journal of American Society for Information Science Technology having the highest number of citations (17.88%) and secured the first rank out of 1929 national and international cited journals.
- The top twenty core journals found are Journal of American Society Information Science Technology, Scientometrics, Journal of documentation, Annals of Library and Information Studies, Library trends, College and Research Libraries, Library Review, The Electronic Library, Aslib Proceedings, Library Hi Tech, ILA Bulletin, DESIDOC Bulletin of Information Technology, Journal of Academic Librarianship, Annual Review of Information Science and Technology, Library Journal, Library Herald, Collection Building, SRELS Journal Information Management, International Information & Library Review and Herald of Library Science.

- Another finding was that only six Indian journals named Annals of Library and Information Studies, ILA Bulletin, DESIDOC Bulletin of Information Technology, Library Herald, SRELS Journal Information Management, Herald of Library Science could secure a rank in the top twenty cited journal list.
- The study found that Bibliometric studies and library management based studies are popular among the doctoral level researchers in library and information science.
- The study points out that articles or research papers (57.77%) are highly preferred information source among the doctoral level researchers in Library and Information science.
- Study indicates that on an average of 32-year-old documents are cited by the doctoral level researchers in library and information science.
- The study found that single-authored papers highly cited (69%) by the doctoral level researchers in Library and Information science.
- The study found that Dr. S R Ranganathan is on the top rank (1) in the top 20 cited authors' list.

### **5.3 Discussions**

This study reveals that journal articles are the most cited (57.77%) information source among LIS doctoral researchers of total citations. These findings support previous studies done by Udo (2018), Osman, Alemna, and Kumah (2018), Chatterjee (2015), Ravichandran, Sivaprasad and Manoharan (2014). This is because the journals articles always publish primary and current information they are of high value for researchers. Although the study found that the books are also preferred (16.69%) by the researchers.

Collaborative research is better for society, but this study shows that in Library and Information Science, single-authored papers are cited most (69.92%) as compared to more than single-authored papers. This supports studies of Jadhav, Khaparde, and Shelke (2011), Kumar and Reddy (2012), Patra (2014). This may be due to the reason that more single-authored papers are published than double and more than double authored papers.

The study found that Bibliometric studies and library management based studies are popular among the doctoral level researchers in Library and Information science. This may be due to the reason that these areas of research have direct implication in library service, although the study found a considerable number of theses in the areas of ICT.

The study reported that on an average of 32-year-old documents are cited by the doctoral level researchers in Library and Information science. This shows that either The LIS researchers are giving due importance to old research too or the traditional LIS theories and principles are still relevant in LIS research or doctoral researchers are working on old topics, or there is duplication of already established work. Also, since most of the Ranganathan works are in the age of 25-32 years and Ranganathan has written prolifically in all areas of librarianship. Even a 91-year-old document is cited in one of the theses.

#### **5.4 Conclusion**

Growth and development of society entirely depend on continuous research work. Citation analysis is one of the prevalent methods of research under the level of the research quality of any branch of a subject like bibliometric study will be beneficial for all LIS members. It was found that only seven Indian journals got a position in the top twenty most cited journal list by NIRF ranked 2018. The present study shows that there is a need to promote collaborative research and improve the quality of articles published in Indian research journals in the LIS field.

#### **5.5 Suggestion**

According to the findings, some suggestions are being listed below for improving the quality of research and decision making for librarians.

- Usually, the libraries allocate more budgets to books than journal subscriptions. The libraries should allocate more budgets to the subscription of periodicals.
- Indian academician should pay more attention to peer-reviewed journals for their publication so that their research becomes visible to the readers.
- The study strongly recommends that library and information science researchers should pay sincere attention to the upcoming or new idea of research in the field rather than opting already established concepts

- The librarian should not weed out documents having age less than 32 years.

### **5.6 Areas for Future Research**

The present study was carried out on top 5 NIRF Ranked universities in India to find out the citation pattern of doctoral Theses of Library and Information Science. It is suggested that this type of study may be extended to in-depth analysis such as finding the citation pattern of top 20 universities which provide library and information science education. Another area of research could be finding the authorship pattern as well as the age of a document to bring out a more detailed picture of citations.

Here researcher could not adopt this technique due to the limitation of time.

## References

- Chatterjee, A. (2015). An analysis of citation pattern of the journal Opsearch 2013-14: a case study. *International Journal of Humanities and Social Science Invention*, 4(7), 39-44.
- Jadhav, V., Khaparde, V., & Shelke, S. (2011). Citation analysis of University News Journal. *Goa University*, 681-690.
- Patra, S.K. (2014). Google scholar based citation analysis of Indian library and information science journals. *Annals of Library and Information Studies*, 61, 227-234.
- Ravichandran, M., & Sivaprasad, G, G. (2014). Bibliometric citations in Ph.D. theses in library and information science at Bharathidasan University, Tiruchi. *International Journal of Digital Library Services*, 4 (3), 218-230.
- Osman, I., Alemna, A.A. & Kumah, M.A. (2018). Analysis of Doctoral Thesis Citation Patterns: A Case Study of the Sam Jonah Library, Ghana. *Library Philosophy and Practice (e-Journal)*, 1692. Retrieved from <http://digitalcommons.unl.edu/libphilprac>, 2019 February 28.
- Udo, A.J. (2018). A bibliometric analysis of research productivity of librarians published in library and information science journals available in academic libraries in IMO state, Nigeria, 2004-2013. *Research Journal of Library and Information Science*, 2(1), 15-21.

## BIBLIOGRAPHY

- Abdi, A., Idris, N., & Alguliyev, R.M. (2018). Bibliometric analysis of IP&M Journal (1980-2015). *Journal of Scientometric Research*, 7(1), 54-62.
- Aina, L.O. & Mooko, N.P. (1999). Research and publication pattern in library and information science. *Information Development*, 15 (2), 114-119.
- Alves, M.B.M., Lehmkuhl, K.M., Pinheiro, L.V., & Silva, D.M.N. (2014). Correlation between information needs and the library collection: a citation analysis study of doctoral theses at university federal de Santa Caterina library. *Proceeding of the IATUL conferences*, retrieved from <http://docs.lib.purdue.edu/iatu/2014/bibliometrics/> on 2019 march 1.
- Chatterjee, A. (2015). An analysis of citation pattern of the journal Opsearch 2013-14: a case study. *International Journal of Humanities and Social Science Invention*, 4(7), 39-44.
- Chatterjee, A., & Maity, A.C. (n.d). A study on post-doctoral research in library and information science in India. *International Journal of Information Library & Society*, 54-65.
- Evans, L.R. (2010). Gender and citation in two LIS e- journals: a bibliometric analysis of Libres and information research. *Library and Information Science Research Electronic Journal*, 20(1), 1-18.
- Ezema, I.J. (2016). Scholarly communication from authorship patterns in language research: evidences from citation analysis of language theses in Nigeria. *Ghana Journal of Development Studies*, 13(2), 1-25.
- Gaikwad, D., & Khokale, R. (2017). Citation analysis of Indian journal of traditional knowledge: a study of citation pattern. *Information Resource journal of Science & Engineering*, 5(2), 11-17. Retrieved from <http://www.irjse.in>, on 20 19 February 27.

- Garg, K.C., & Kumar, S. (2010). An analysis of the citation pattern of Indian science journals indexed by science. *Annals of Library and Information Studies*, 57, 365-372.
- Garg, K.C., & Sharma, C. (2017). Bibliometric of library and information science research in India during 2004-2015. *DESIDOC Journal of Library & Information Technology*, 37(3), 221-227.
- Jadhav, V., Khaparde, V., & Shelke, S. (2011). Citation analysis of university news journal. *Goa University*, 681-690.
- Kagra, S.K. (2017). A reference analysis of doctoral theses in history awarded in Kurukshetra University, Kurukshetra. *Imperial Journal of Interdisciplinary Research*, 3(9).
- Keat, Y.C., & Kaur, K. (2008). Citation study of library and information science dissertations for collection development. *Malaysian Journal of Library & Information Science*, 13(2), 29-47.
- Kousha, K., & Wall, M.T. (2006). Motivations for url citations to open access library and information science articles. *Scientometric*, 68(3), 501-517.
- Kushkowski, J.D., Parsons, K.A., & Wiese, W.H. (2003). Masters and doctoral thesis citations: analysis and trends of a longitudinal study. *Lowa State University Digital Repository*, retrieved from [http://lib.dr.lstate.edu/refinst\\_pubs/30.%20on%20%092019%20February28](http://lib.dr.lstate.edu/refinst_pubs/30.%20on%20%092019%20February28) on 2019 February28.
- Levitt, J.M., & Wall, M.T. (2009). The most highly cited library and information science articles: interdisciplinary, first authors and citation pattern. *Scientometric*, 78(1), 45-67.

- Mahajan, P. (2016). Citation pattern in Ph.D. theses in the field of philosophy: a study of Panjab University, Chandigarh. *Library Philosophy and Practice (e- Journal)*, 1409, Retrieved from <http://digitalcommons.unl.edu/libphilprac/1409> on 2019 March 3.
- Maharana, R.K. (n.d). Growth and development of Lis research in India during 1993-2013: a bibliometric analysis. *Chinese Librarianship: an International electronic Journal*, 37, 35-46, retrieved from [www.iclc.us/clieJ/Cl37MD.pdf](http://www.iclc.us/clieJ/Cl37MD.pdf). on 2019 March 1.
- Malliar, A. & Togia, A. (2016). An analysis of research strategies of articles published in librarianscience journals: the example of library and information science research. *Qualitative and Quantitative Methods in Libraries (QQML)*, 5, 805-818.
- Mani, K.T. (2014). Authorship pattern and collaborative research Malaysian journal of library science, 1996-2012. *Library Philosophy and Practice (e- Journal)*. 1177. Retrieved from <http://digitalcommons.unl.edu/libphilprac> on 2019 February 28.
- McVeigh, M.E. (2004). Open access journals in the ISI citation databases: analysis of impact factors and citation patterns a citation study from Thomson scientific. *Thomson Corporation*, 1-24.
- Mitchell, S.M., Lange, S., & Brus, H. (2013). Gendered citation patterns in international relations journals. *International Studies Perspectives*, 14, 485-492.
- Nasir, J., & Kumar, D. (2015). Citation analysis of doctoral dissertations submitted between 1990-2010 in the department of economics, Aligarh Muslim University, Aligarh (India). *Chinese Librarianship: An International Electronic Journal*, 32, retrieved from <http://www.icic.us/clics/cl32NK.pdf> on 2019 March 2.

- Nayak, S.C., & Patil, D.B. (2017). Citation analysis of Ph.D. theses in economics submitted to university of Gulbarga, Karnataka during 1984-2002. *Research Journal of Library Science*, 5(3), 1-8.
- Osman, I., Alemna, A.A. & Kumah, M.A. (2018). Analysis of Doctoral Thesis Citation Patterns: A Case Study of the Sam Jonah Library, Ghana. *Library Philosophy and Practice (e-Journal)*, 1692. Retrieved from <http://digitalcommons.unl.edu/libphilprac>, 2019 February 28.
- Park, T.K. (2006). Authorship from the Asia pacific region in top library and information science journals. *Asia –Pacific Conference on Library & Information Education & Practice*, 555-565.
- Patra, S.K. (2014). Google scholar based citation analysis of Indian library and information science journals. *Annals of Library and Information Studies*, 61, 227-234.
- Pradhan, D.K. (2015). Scholarly publication in library and information science in India: a citation analysis of international Lis journal. *HP University and IAS Shimla, H.P. India*, 12, 244-253.
- Ravichandran, M., & Sivaprasad, G, G. (2014). Bibliometric citations in Ph.D. theses in library and information science at Bharathidasan University, Tiruchi. *International Journal of Digital Library Services*, 4 (3), 218-230.
- Sadaiah, K., K., Reddy, V.N. & Kumar, S.S. (2013). Heterosis and combining ability studies for sugar content in sweet corn (zee mays Saccharata 1). *International Journal of Scientific and Research Publication*, 3(3), 9-13.

- Sahoo, J., Mundhial, S., & Mohunty, B. (2016). Indian doctoral research in social science with specific references to library and information science. *Library Practice(eJournal)*, 1435, retrieved from <http://digitalcommons.unl.edu/libphilprac>, on 2019 March 1.
- Simisaye, A.O., & Osinaike, A.B. (2010). Citation analysis of journal of library and information science (2004-2009). *Brazilian Journal of Information Science*, 4(1), 35-60.
- Singh, J., Shah, T.A., & Gul, S. (2014). Growth and visibility of Lis journals: an analysis study. *Annals of Library and Information Studies*, 61, 193-227.
- Singh, K.P., & Chander, H. (2013). Publication trends in library and information science: a bibliometric analysis of library management journal. *Emerald Library Management*, 35 (3), 134-149.
- Singh, R.K. & Singh, A.P. (2017). Citation analysis of international journal of library and information studies on the impact research of Google scholar: 2011-2015. *International Journal of Library and Information Studies*, 7(4), 155-161.
- Somashekara, Y.L., & Kumbar, M. (2015). Citation analysis of doctoral theses: an analysis of physics theses submitted to three universities of Karnataka, India. *International Journal of Library and Information Studies*, 5(1), 20-33.
- Teli, S., & Maity, A. (2015). DESIDOC journal of library & information technology: an analysis of citation pattern. *International Journal of Library and Information Studies*, 5 (3), 97-100.
- Tupe, S.K., & Khaparde, V. (2016). Scientometric analysis of pearl: a journal of library and information science. *International Journal of Library and Information Studies*, 6(4).

- Udo, A.J. (2018). A bibliometric analysis of research productivity of librarians published in library and information science journals available in academic libraries in IMO state, Nigeria, 2004-2013. *Research Journal of Library and Information Science*, 2(1), 15-21.
- Wani, Z.A. (2008). Growth and development of library and information science literature. *Chinese Librarianship: an International Electronic Journal*, 29, 1-17, retrieved from <http://www.iclc.us/clies/clz6wBJ.pdf>.
- Yang, K., Lee, J., & Choi, W. (2016). Publication and citation patterns of Korean Lis research by subject areas. *Malaysian Journal of Library & Information Science*, 21(2), 67-81.
- Ali, N., & Bakhsi, S.I.(2016). Problems and prospects of LIS educations in India with special reference to distance mode. *Research Gate*, 103-112, retrieved from <https://www.researchgate.net/publication/242419750> on 2019 march 25.
- Muthu, M., Sivaraman, P., & Singh, K.(2015) Lis education: issues and challenges in the present era *Gyankosh* , 6(1), 46-56.
- Maharana, R.K., & Das, A.K. (2014). Growth and development of Lis research in India during 1999-2013: a bibliometric analysis. *Chinese Librarianship: an International Electronic Journal*, 37, 35-46. Retrieved from [www.iclc.us/cliej/cl37md.pdf](http://www.iclc.us/cliej/cl37md.pdf).
- Singh, S.P., & Parveen, B. (2014). Doctoral research in library and information science in India: trends and issues. *DESIDOC Journal of Library & Information Technology*, 34(2), 170-180.
- Pandey, S. (2014). Research trends of library and information science (Lis) in India: 2009-2012. *Journal of Advances in Library and Information Science*, 3(4), 335-340.
- Malhan, I.V. (2011). Challenges and problems of library and information education in India: an emerging knowledge society and developing nations of Asia. *Library Philosophy and*

- Practice (e-Journal) 670*. Retrieved from <http://digitalcommons.unl.edu/libphilprac/670>. on 2019 March 25
- Mittal, R. (2011). Library and information science research trends in India. *Annals of Library and Information Studies*, 58(6), 319-325.
- Wagh, S.N. (2011). Research in library and information science in India (2004-08): an analytical study of Ph.D. programme. *International Referred Research Journal*, 1(17), 78-79.
- Patra, S.K., Prakash, C. (2009). Library and information science research in SAARC and ASEAN countries as reflected through LISA. *Annals of Library and Information Studies*, 51, 41-51.
- Astron, F.(2007). Changes in the LIS research front: time sliced co-citation analysis of LIS journal articles, 1990-2004. *Journal of the American Society for Information Science and Technology*, 58(7), 947-957.
- Mahapatra, R.K. & Sahoo, J. (2004). Doctoral dissertation in library and information science in India 1997-2003: a study. *Annals of Library and Information Studies*, 51(1), 58-63.
- Singh, S.P. (2003). Library and information science education in India: issues and trends. *Malaysian Journal of Library & Information Science*, 8(2), 1-17.
- Dutta, B., & Das, A.K.(2001). Higher education in library & information science in India. *ILA Bulletin*, 37(1), 25-30.
- Satiya, M.P. (1998). Forty years of doctoral research in classification and indexing in India, 1957-1997. *Library Herald*, 36(2), 80-87.
- Dhayani, P. (1990). Library science through distance education. *Herald of Library Science*, 29(1), 42.

United States Distance Learning Association-USDLA Retrieved from

<http://www.usdla.org/html/resources/dictionary.htm> accessed on 2019 march 29.

Kumar, K., & Sharma, J. (2010). Library and information science education India: a historical perspective. *DESIDOC Journal of Library & Information Technology*. 30(5), 3

Patra, S.K. & Chand, P. (2006). Library and information science research in India: a bibliometric study. *Annals of Library and Information Studies*, 53 (4), 219-223.

Singh, S.P., & Babbar, p. (2014). Doctoral research in library and information science in India: trends and issues. *DESIDOC Journal of Library & Information Technology*. 34(2), 170-180.

Panditra, R., & Singh, S. (2017). Doctoral theses awarded in library and information science in India during 2010- 2014: a study. *DESIDOC Journal of Library & Information Technology*, 37(6), 379-386.