MAPPING OF LIBRARY AND INFORMATION SCIENCE JOURNALS ON SCOPUS: A SCIENTOMETRIC ASSESSMENT

A dissertation submitted in partial fulfillment of the requirement for the Degree of Master of Philosophy in Library and Information Science

Submitted by

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D E C L A R A T I O N

I, **Malsawmkimi**, hereby declare that the subject matter of this dissertation is the record of work done by me, and the contents of this dissertation did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the dissertation has not been submitted by me for any research degree in any other University/ Institute.

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C E R T I F I C A T E

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ABBREVIATIONS

Terms	Description
AIIMS	All India Institute of Medical Sciences
CSAB	Content Selection and Advisory Board
EPO	European Patent Office
GCS	Global Citation Score
IAS	Indian Academy of Science
ICT	Information and Communication Technology
IIG	Indian Institute of Geomagnetism
INSA	Indian National Science Academy
IS	Information Studies
ISI	Institute of Scientific Information
JCR	Journal Citation Report
JPO	Japanese Patent Office
LIS	Library and Information Science
SCI-E	Science Citation Index – Expanded
SERC	Structural Engineering Research Centre
USPTO	US Patent Office
WIF	Web Impact Factor
WIPO	World Intellectual Property Organisation
WoS	Web of Science
WWW	World Wide Web

CHAPTER - 1

INTRODUCTION

1.1 Introduction

The foundation of modern librarianship rests on an essential set of core values that define, inform and guide our professional practice; these values reflect the history and ongoing development of the profession. A definition of the term is offered and the main functional areas of librarianship identified, together with characteristic of activity in the fields. Advancement in Information and Communication Technology (ICT) has brought a multi-dimensional change in libraries and librarianship. Library and Information Science (LIS) professionals are very vigorous to show performance in disseminating knowledge as well as taking every problem in a collaborative way. So, day by day LIS research is going on to update the LIS professional with the current trends and build a rich collection of LIS publication. According to Parker (1974) "international librarianship consists of activities carried out among or between governmental and non-governmental institution, organization, groups or individual of two or more nation, to promote, establish, develop, maintain and evaluate library, documentation and allied service and librarianship and the library profession generally, in any part of the world".

Bibliometrics is a research method used in the field of Library and Information Science. In the recent years bibliometrics has gained considerable significance because of its practical applications in the evolution of library operations and services as a statistical technique. It has extensive quantitative analysis of various aspects of literature used to identify the pattern of publication like authorship, degree of collaboration, place of publication, year-wise citations, co-citations etc. used to know the coverage to gain insight into the dynamics of growth of knowledge in the areas under considerations. This helps in developing the organization of information resources which is essential for efficient and effective use. The term "bibliometrics" was coined by Pritchard in 1969. Bibliometrics has been defined as research of the quantitative aspects of production, distribution and use of all saved information. It can also be defined as the application of mathematics and statistical methods to books and other media of communication. It is the research field that studies scholarly communication, publishing, and the development of literature. Bibliometrics include studies of the growth of the literature, how much literature is contributed by various individuals, groups, or organisations or countries; how much exists in various languages; how the

literature on some subject becomes out of date (studies of obsolescence). Another important bibliometric study includes citation studies and geographical distribution of documents. Bibliometrics uses three main types of indicators: publication count; citations analysis; and co-citation, co-word analysis and bibliographic coupling. Publication count is one means of measuring and comparing the production of various aggregates such as institutions, regions and countries; and can also be used to evaluate output in individual disciplines, such as philosophy and economics, and to track trends in research fields, collaborative research and many other aspects of research output. Citation analysis uses citations in scholarly works to establish links. Co-citation and co-word indicators can be combined with publication and citation counts to build multifaceted representations of research fields, linkages among them, and the actors who are shaping them; and bibliographic coupling links two papers that cite the same articles. The more papers they both cite, the stronger their relationship will be.

"Scientometrics" was introduced by T. Braun in 1977 as the name of a journal. Scientometrics refers to 'those quantitative management methods which are used in the analysis of science regarded as a process of information' (Repanovici, 2011). According to Tague-Sutcliffe (1992), scientometrics is the study of the quantitative aspects of science as a discipline or economic activity. Thus, Scientometrics is a part of the sociology of science and has application to science policy making. Scientometric techniques can be classified into two categories: one-dimensional (or scalar) and two-dimensional (or relational) techniques. One-dimensional techniques are based on direct counts (or occurrences) and graphical representation of specific bibliometric entities (e.g., publications and patents) or particular data-elements in these items such as citations, keywords or addresses. The two-dimensional techniques are based on co-occurrences of specific data-elements such as number of times the keywords, classification codes, citations and addresses are mentioned together. Scientometric measurements include H-index and G-index. The *h*-index was introduced by Hirsch (2005) and simultaneously measures the quality and the sustainability of the impact of a researcher's publication. Egghe (2006) proposed the G-index to measure the productivity of the researchers based on their publications. The G-index is calculated based on the distribution of citations received by a given researcher's publications. Scientometric analyses the quantitative aspects of generation, dissemination and utilization of scientific

information in order to contribute to the understanding of the mechanism of scientific research. The primary data of any scientometric investigation are represented by all the authors, their works, their bibliographical and the citations they receive. The set of data produced by a community (such as research groups, departments of universities, institutions, corporations, societies, countries, geopolitical regions, scientific fields or subfields) represent can vary and thus the evaluation indicators as well. One important tool for measuring scientific research performance is Google Scholar. It is a freely available database of scientific references with links to full text of articles when available. Google Scholar also shows how many and which publications have cited the publications found in a search which will be used for the present study for measuring the web presence of the research publications.

Scopus is the largest abstract and citation database of peer-reviewed literature in the form of scientific journals, books and conference proceedings. Scopus is delivering a comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences, and arts and humanities. Scopus features smart tools to track, analyze and visualize research.

1.2 Significance of the Study

There are number of scientometric studies conducted to map the research of specific field at micro-level and macro level also. In the field of LIS, very few studies have been found which deals with mapping of LIS research in specific topic or country or database whereas no scientometric study conducted so far which have the coverage of global LIS research indexed in Scopus. Therefore, study helped to map the global research published in LIS journals indexed in Scopus. There are various scientometric indicators (SJR index, *h*-index, G-index) which are calculated based on total researches published in the journals and total citations received for that. Nowadays *h*-index, SJR index, G-index and citations are deciding factors for quality of research and builds high reputation of the journal itself. These factors give impression about quality of research of country as well as continent also. There are many famous journals in the field of Physics or Chemistry due to high impact factor, SJR index, citations and *h*-index calculations. The study has given an insight to LIS professionals

to understand and develop interest in such kind of metrics for LIS journals and generated the list of quality journals in the field. Further, prospective researchers of LIS may undertake another similar study to explore the LIS profession in a much better way. Many other important observations can be derived from the results of the study. Thus, the study attempted to showcase the scientometric aspects of research of LIS published in Scopus based journals to the world community by analyzing SJR index, *h*-index, total documents, total citations, country rankings etc.

1.3 Scope of Study

The study was confined to map the research contributions of Library & Information Science (LIS) journals indexed in Scopus database during 2011-2015. There are 198 LIS journals indexed in Scopus database. The list of 198 LIS journals has been alluded in Chapter 3 (section 3.4).

1.4 Review of Literature

The information sources have been reviewed on the areas of scientometric and bibliometric mapping of literature which are mentioned below:

Shukla (2018) analyzed the research performance of Asian region in Library & Information Science during 1996-2016 using Scopus database and found that China has been found to be most productive country in LIS research and receiving citations also amongst Asian region followed by Taiwan and India. **Shukla & Malsawmkimi (2017)** conducted a scientometric analysis of open access LIS journals based on Scopus. As per their study, there were 21 open access LIS journals published in English language and indexed in Scopus. Study established that SJR will be future science quality indicator and in terms of research productivity *Library Philosophy and Practice* is found to be most productive LIS journal. From the study, it has been found that *Library and Information Science Research* has the highest number of citations and *Library Philosophy and Practice* has the highest number of references. As per study, the United States has been found as most prolific country for LIS research. **Maurya & Shukla (2017)** studied the scientometric assessment of research output of African countries in Library and Information Science. Study found that out of 37 African

countries, Nigeria and South Africa have been found to be the most research productive country in LIS research and in terms of receiving citations.

Garg & Tripathi (2017) analyzed 801 papers published in the area of bibliometrics and scientometrics during 1995-2014. As per their study, CSIR-NISTADS is the top producing institute contributing about one-third (31.4%) of the total research output. Further analyzed that the distribution of citation data indicates about one-fifth (27.7%) papers remain un-cited. The study identified journals in which these un-cited research were published, only 15% paper were cited more than 20 times. Most of the prolific authors as well as highly cited authors were from the institution belonging to the Council of Scientific and Industrial Research. Among the authors B M Gupta (CSIR-NISTADS) produced the highest number of research; but the impact as seen in term of citation per paper and relative citation impact, S. Arunachalam (MSSRF) topped the list. **Naheem et al. (2017)** studied the research of Chronic Liver Disease from 1996-2015 by the scientists of SAARC countries through Scopus database. It is found that SAARC countries together contributed 2312 documents during 1996-2015, which is only about 3.49% of the global Chronic Liver Disease output (66200 publications). India is the leading country among SAARC member countries in terms of publication share, leading institutions, and authors. Study analyses that 76% of the papers were published by multiple authors. **Senthilkumar & Muthukrishnan (2017)** studied the scientific publications of research productivity in British Journal of Cancer for a period of 11 years from 2005 to 2015. Source and citation data have been downloaded from the Web of Science (WoS) database. The major contribution to research comes from UK (2146, 31.5%) with a global citation score (GCS) of 54323 (31.7%). The most productive keyword "Cancer" has been used in 3801 (55.70%) records by the researchers with a global citation score of 9921; and local impact of 39.87 citations per paper was scored by the Royal Marsden Hospital.

Dhawan et al. (2016) studied the research output in e-publishing field on a series of scientometric indicators. There were 7010 publications in Scopus during 2005-2014. It is found that e-publishing is still a young field, but growing at slow pace of 3.41% CAGR and average 1.08 citations per paper. The USA is the world leader in e-publishing accounting for

the largest 24.75% global publication share followed by China (10.17% global share). **Manikandan & Amsaveni (2016)** attempted to analyze the research trends in Management Information System with the help of scientific publications reflected in Web of Science during the period from 1989 to 2013. Study found that two author's team has produced the highest number of articles (11306). Huang, G H has the highest published author with 119 records and *h*-index 26. **Rahul & Nishy (2016)** conducted a study on Mycobacterial Tuberculosis and Leprosy in India based on Web of Science data for the period 1987-2012. There are 79,628 research publications on Mycobacterium research in the world; and study shows a positive growth positioning India in the 3rd place with 6470 documents (8.12%) with respect to quality of research output. India is at the 12th position when the countries are ranked on the basis of Energy (X). There were total of 6470 publications from India.

Ambily & Sivaraman (2016) studied the quantitative analyses of research performance of Life Science in Kerala. There are 9833 records for 30 years spanning from 1986 to 2015, retrieved from Scopus and Web of Science. The analysis indicates that the growth of publications increased rapidly and average doubling time for the publication is 4.31 years. It is evident from the growth witnesses starting from 34 publications in 1986 to 1016 publications in 2015. **Alam & Shukla (2016**) studied the growth of Solar Physics research output in India during the period 1960-2014. The data was collected from Web of Science, a total of 2066 articles were published on Solar Physics which received 22,254 citations. The average number of publications per year was 48.04 and the average number of citations per publication was 10.77. The publications peaked in the year 2014 with 168 publications and the highest number of citations (1548) was in 2009. Articles on Solar Physics appeared in 92 journals of which most active journals was "Solar Physics" with 460 publications (22.26%) of the total publications (2066). Indian Institute of Astrophysics, Bangalore (549) is the most productive institution amongst all contributing institutions. The USA produced maximum publications (420) with higher citation rate of 8711. **Dwivedi et al. (2016)** analyzed 34,783 papers published by countries on different aspects of "Allergy" during 1994-2013 as indexed by Science Citation Index- Expanded. Analysis indicates that research output increased over the years with the maximum research output in 2013. The highest number of research output came from USA followed by Germany. The highest output (38.9%) is in the

sub-discipline of Immunology followed by Food Allergy (23.9%). During the period of study, 718, 546 citations were received by 34, 783 papers and the average rate of citation per paper is 20.7. The Harvard University of USA had published highest number of papers (872 papers).

Tripathi & Garg (2016) studied the publication output of India on cereal crops as reflected in Scopus database from 1965 to 2010 and observed that growth of publication output is highest in 2010. There were 38.93% research output in the field of rice; and the highest (33.6%) contribution by India, in domestic & foreign journals, with most of the prolific authors were from IARI, New Delhi. **Renjith & Devarajan (2016)** studied 444 publications published by Indian Institute of Geomagnetism (IIG) scientists during 2010-2015. Multiple authorship patterns are predominant factor in all publications and further linear growth of publications during 2010-2015 has been observed. **Singh et al. (2016)** analyzed 3529 scholastic output on breast cancer in India from 2005 to 2014 using Scopus and found that scholastic contribution is increasing since last 3 years with the highest four authored paper while 80% authors contributed only one paper. Total 25 core journals have been identified with the highest impact factor of 9.329 and observed that 11.81% papers were contributed by Indian researchers in collaboration with US researchers.

Stojanovski et al. (2015) investigated 112 mapping science journals to determine the visibility of scientific publication using 14 bibliographic databases. The highest 94 journals were included in GS, WoS contain the fewest papers from mapping science journals (15,204) but it included an average of 800 papers per journals, which is more than Google Scholar and Scopus. **Patra (2014)** traced the citation and authorship pattern of selected LIS journals during 2000-2013 based on Google Scholar. Publish or Perish software was used for analyzing results and found that Indian LIS journals were not covered in Web of Science whereas their coverage in Scopus and ISI databases was very limited. Finally, concluded that Indian LIS researchers should focus more on collaborative research for better visibility and relevance. **Barik & Jena (2014)** analyzed 385 articles indexed by Scopus database during the period of 2004-2013 to know the growth of LIS research articles of India, and it has been found that highest number of (20.7%) articles published in 2013 with annual

average growth rate of 16.49%. Two authors collaboration has dominated with highest (43.89%) articles, degree of collaboration has range from 0.2 to 0.57 with mean value 0.36.

Khaparde et al. (2014) studied mapping of Library and Information Science research based on USA during the period of 2006-2010. The USA topped the list with first rank and global publication share of 9.13%. The UK ranked second with global publication shares of 7.44%. Among the India's major collaboration partners, the largest share (14.9%) of collaboration during 2006-2010 was with United States. **Nagarkar (2014**) analyzed the research contributions made by the faculty members of the Department of Chemistry at University of Pune based on Web of Science database for the period 1999-2012. Study shows that 30 faculty members have published 811 papers in 258 journals with 8948 citations. About 30% of the papers were published during 2010-2012. The average number of citations received per paper is 11.03. The highest numbers of citations (905) were received for 41 papers published in the Journals of Physical Chemistry. **Bhardwaj & Ram (2013)** studied Indian research output in Osteoporosis based on Scopus database for the period 1973-2012. Scopus has indexed 90,488 documents on Osteoporosis during the study period and out of these 921 documents have been contributed by Indian researchers. The study revealed that USA is the most productive country with the highest number of 24,620 (27.21%) papers on Osteoporosis research. All Indian Institute of Medical Science (AIIMS), Delhi is the most productive institution in India on Osteoporosis research. AIIMS has contributed 8.40% of the total research output. The "Osteoporosis International" is the most productive journal publishing Indian Osteoporosis research (21 papers) and N. Chattopadhyay (25 papers) from Central Drug Research Institute, Lucknow is the most productive author in Osteoporosis research.

Mukherji (2013) studied the publication profile of Prof. Lalji Singh based on Web of Sciences and Scopus during 1968-2011. There are 222 articles indexed in the two databases with an average of 7-8 articles per year and only 18 articles appeared in Indian journals. The highest number of articles appeared in 2006 (27 articles). Kumarasamy Thangaraj, A. Govardhana Reddy, and Gyaneshwer Chaubey from CCMB are top three collaborators with whom more than 70 percentage of publication resulted. The *h*-index of Prof. Singh is 30 in

both the databases. As per WoS and Scopus records, the total 222 works of Prof. Singh have been cited 3978 times with an average of 17.83 citations per paper. **Aswathy & Gopikuttan (2013)** analyzed the productivity pattern of Universities in Kerala during 2005-2009. Mainly the journals articles of three universities viz. University of Kerala, Mahatma Gandhi University, and University of Calicut were considered for the study. The year wise distribution of articles shows an increasing tendency since 2005 to 2009. Designation wise distribution of articles contribution shows that Professors contribute more paper than Lecturers and Readers. It is found that multi-authorship dominates among university teachers and there is statistically no significant difference between the experiences and productivity.

Jalal (2013) investigated the quantitative growth and development of webometric research through the publication output. There are 154 articles published during the study period and average publication per year was 12.83. The journal "Scientometrics" produced highest papers on webometrics. **Wilson et al. (2012)** surveyed 693 Australian LIS educators serving for at least two years in Australian LIS programs from 1959 to 2008 by using 8 databases. They observed mean of over 80% across databases, increase of number of authors; sharing of journals articles in more national than international, a heavily skewed productivity distribution with nearly one third of longer serving academics producing number of journals articles and small number of longer serving academics authoring or co-authoring over one-fourth of all the journals articles. **Gupta (2012)** analyzed the research output of Pakistan for the period of 2001-2010 based on Scopus data and found that Pakistan produced 34,195 research papers during last ten years which is increasing at an annual average growth rate of 20.86%. The Health Science contributed the highest publications share (32.10%) followed by Physical Science (30.15%). The *h*-index of its total publication during 2001-2010 was 85 and the number of highly cited papers recorded was 64.

Mooghali et al. (2011) studied the Scientometrics literature using a bibliographic record from the Social Science Citation Index, Science Citation Index, and Arts & Humanities Citation Index during the period 1980-2009. It is found that out of 691 articles, a total number of 183 articles (24.48%) were written during 1980-2009 by the top ten authors.

Hungarian Academy of Science with 4 records (5.71%) was the most productive institution in the field of Scientometrics. The overwhelming majority of documents were in English and the International Journal of Scientometric was the most prolific journals in the field. It has also been declared that 67.87% of the literature was published in the area of Library and Information Science. **Gupta et al. (2011)** analyzed the Dementia research output from India during 2002-2011 based on Scopus database; there are 1109 research papers during the study period. India ranked 16th with a global publication share of 1.24% and annual average publication growth rate of 25.85% during 2002-2011. Global publication share has increased over the ten years, rising from 0.54% in 2002 to 2.2% during 2011. The global publication share of the top 20 most productive countries in Dementia research varies from 0.91% to 33.59% during the study period. The United States has the highest global publication share of 33.59% during 2002-2011.

Mittal (2011) attempted to trace the research trends in Library and Information Science in India during the period of 1990-2010 as reflected through scholarly journals. The data for the study was downloaded from LISA database and observed that 1408 journal articles of Indian authors are indexed with 4735 descriptors. It is found that 97 most frequent descriptors assigned to these journal articles indexed in LISA. **Hussain & Fatima (2011)** analyzed 62 articles of the specific journal and found that USA has the highest number of contribution and the journal is notably become a scholarly journals for LIS professionals. **Burtis & Taylor (2010)** identified the updated list of core health education journals for the year 2006-2008 and determined the coverage of these journals by electronic indexes. There were 19,907 citations in 602 source articles. Of the 1,896 journal titles cited, 20 (1.1%) made up the core journals. Together, the fields of medicine, health education, and psychology accounted for 85.0% of the journals in the core. Self-citation was found to be a common practice in the source journals. Scopus had the broadest journal coverage of the indexes examined. **Leydesdorff et al. (2010)** using Scopus dataset from 1996-2007, a grand matrix of aggregated journal-journal citations constructed which can be compared in terms of the network structures with the matrix contained in the Journal Citation Reports (JCR) of Institute of Scientific Information (ISI) and find that ISI data are more cleaning, standardization and normalization procedures than Scopus in the cited references.

Joshi et al. (2010) studied a scientometric profile of global forest fungal research during the period of 1987-2008 by using Science Citation Index - Expanded (SCI-E). There were 3313 records that dealt with forest fungi research. The publication output is rising and research was in peak during 2006 with 346 papers. The USA has the highest number of publications while Sweden is top in the citation impact. China leads in terms of the highest rate of annual growth of published paper. **Maheswaran et al. (2009)** analyzed the research publications generated by Structural Engineering Research Center (SERC) during the year 2002-2006. A total of 639 papers were collected from the annual report of SERC and analyzed based on impact factor provided by Journal Citation Report (JCR). The scientists of SERC publish papers in foreign journals has increased percentage from 13.89% to 59.01%. It is found that there is an increase from 13.89% to 40.9% in the publication of SCI journals whereas decline percentage in non-SCI journals from 86.11 to 59.09%. **Krishnamoorty et al. (2009)** analyzed a Diabetes literature indexed the MEDLINE database for the period 1995-2004. Total of 97,454 records were covered in the database MEDLINE on Diabetes. It shows that the maximum number of records 13244 was published during 2003 followed by 12690 in 2002 and 11061 in 2001. The highest number of publications on Diabetes is journal article (79023, 81.09%). *Diabetes Care* and *Diabetes* both published from the USA are the top two leading journals that publish the maximum articles. As a whole, it is noticed that from 1995 onwards there is a gradual increase of Diabetes research productivity every year.

Meho & Sugimoto (2009) studied about uses of citation from 1996 to 2007 to the work of 80 randomly selected full-time, Information Studies (IS) faculty members from North America to examine differences between SCOPUS and Web of Science and found that when analysis is on smaller citing entities (journals, conference proceedings, institution) the two databases produce considerably different result while for large citing entities (research domains, country) produce very similar pictures of scholarly impact. **Davarpanah & Aslekia (2008)** studied a scientometric analysis of international LIS journals. A total of 56 LIS journals indexed in SSCI during the years of 2000-2004 were analyzed. From among the 1361 authors, overwhelming majority of authors (89.93%) wrote one paper. The average number of authors per paper is 1.52. About 48% of citing authors had tendency of self-

citation. It has been observed that 100% of the articles were in English language. **Rajendiran & Parihar (2007)** studied a Laser literature in India during 1995-2005 based on Scopus database. The year 2003 yielded the highest number of articles 371 (13.10%) of the total literature, 97.32% appeared as research articles. The study identified 20 core sources and 23 core journals.

Boell (2007) compiled a comprehensive master list of 1,205 journals publishing articles relevance to LIS over the last 40 years. A total 968 active journals mostly published in English with one third of the journals from US and other third from U.K. and Germany. Nearly 16% of all journals were open access, 11% had ISI-JIF and 42% were peer reviewed. **Costas & Bordons (2007)** found the relationship of *h*-index with other bibliometric indicators at the micro-level, analyzed for 337 Spanish Research Council scientists in the area of "Natural Resources" published during 1994-2004from Web of Science. The findings indicate that production of Natural Resources scientists amounted to 6093 documents and productivity ranged from 1 to 162 documents, while the number of citations ranged from 0 to 2201 and the number of citations per document from 0 to 40.96. The *h*-index ranged between 1 and 29. **Sin (2006)** analyzed the geographical affiliations of authors in 20 International LIS journals which were indexed in SSCI to track the longitudinal changes in LIS authorship patterns. USA contribution was found to be 57%. In 2003, the highest papers were contributed by authors from 51 countries and there were 432 international papers with 703 international authors. Gini co-efficient of LIS publication distribution was found 0.9890 in 1980 and 0.9527 in 2003. Also found that high income countries tend to publish more articles and their publication tends to get cited more often than those of low income countries.

Dutt et al. (2003) studied scientometric analysis of the journal "*Scientometrics*". The data for the study consist of research articles published from volumes 1 (1978) to volume 50 (2001). There are 1317 papers contributed by more than 50 countries in different regions of the globe. The USA is having the highest publications share of 17.7% of the total world output; average number of papers per institution was 0.85; pattern of co-authorship indicates the domination of single authored papers (704, 53.4%). **Jacso (1998)** discussed the use of

advanced search commands and the journal Name Finder database of DIALOG, to simplify the collection and processing of posting information for 42 prestigious LIS serials between 1966 and 1996 in six databases. In his study, it has been found that 42% journals claimed to be core journals by ISA. **Harter (1998)** covered 39 scholarly peer-reviewed e-journals in his study and found that top-five most highly cited e-journals were 'Bulletin of the American Mathematical Society (BAMS)', 'Online Journal of Current Clinical Trials', 'PACS Review', 'Digital Technical Journal', and 'Phycology'. BAMS has the most significant impact and a successful journal on the field of Mathematics. The raw citation data in the study shows that almost none of the scholarly, peer-reviewed electronic journals in the sample have had a significant impact on formal scholarly communication in their respective fields.

Research Gap

On the analysis of above literature review, it has been observed that there are sufficient numbers of researches conducted on the scientometric aspects of journal articles on various levels. Further, various studies have been conducted on specific field, period, and country also but none of the study found till today that deals with the global mapping of LIS journals indexed in Scopus through scientometric approaches. This research gap motivated to undertook the scientometric mapping of Library and Information Science journals indexed in Scopus.

1.5 Research Design

1.5.1 Statement of the Problem

Mapping of research is the process to identify the growth of published literature in specific subject domain. A number of studies have been found on mapping of some specific field in micro-level or specific country level or specific database level. Still there was lack of such research that covers macro level mapping of subjects from specific databases for particular country or worldwide. LIS researchers have conducted numbers of micro-level studies in certain fields of specific subject domain but observed rare studies in the fields of LIS itself; and particularly the global level mapping of LIS research have not been observed from any corner of the world.

The study was required to investigate the global mapping of LIS research published in LIS journals indexed in Scopus database. The study was designed to map the SJR indicator, *h*-index, citations, research productivity, and references of LIS journals of global level. From LIS perspective, it was interesting to investigate the scientometric mapping of LIS journals indexed in Scopus.

1.5.2 Objectives of the Study

The objective of the study was to map the research publications of LIS journals indexed in Scopus at global level. The specific objectives for the study were to:

a) Examine the SJR indicator and *h*-index of LIS journals.
b) Identify most productive journals in the field of LIS.
c) Find out the total published articles and references for LIS journals.
d) Calculate the citation data for LIS journals.
e) Find out the most prolific country for LIS research.
f) Find out continent wise list of qualitative LIS journals.

1.5.3 Research Methodology

The study was designed to investigate the global mapping of LIS research published in journals indexed in Scopus database through scientometric methods. There were 198 LIS journals indexed in Scopus database. The study has been conducted for five years starting from 2011-2015. The online survey method of research was found appropriate for conducting the study. The data were collected from Scopus database through online survey and tabulated in MS-Excel. The primary information was observed through journals' home page and Scopus website. For the analysis of collected data, MS-Excel was entertained.

1.6 Chapterization

The study has been divided into the following chapters:

Chapter 1: Introduction
Chapter 2: Scientometrics: Concepts
Chapter 3: Library and Information Science Journals in Scopus

Chapter 4: Analytical Mapping of LIS Journal's Data and Findings

Chapter 5: Conclusion and Suggestions

Bibliography

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CHAPTER - 2

SCIENTOMETRICS: CONCEPTS

2.1 Introduction

The information explosion is often term as 'White Plague' posed many problems and challenges among library and information professionals. Bibliometrics/ Scientometric study is a special technique which helps us to solve the problems and challenges posed by the so called information explosion. In the twentieth century there has been enormous growth of metric sciences. Scientometric is one of the most important measures for the assessment of scientific production. Among the different metrics, scientometric is the most interesting subject area in the field of Library and Information Science, which can be applied to any discipline irrespective of their period of evolution. It involves quantitative studies of scientific activities. The history of science and technology, philosophy of science and sociology of scientific knowledge are related fields of scientometrics. Bibliometrics/ Scientometrics research includes studies related to the scattering and growth of literature, author productivity, obsolescence of documents, and distribution of scientific literature by country, by language etc. This helps to monitor the growth and pattern of research. Over the years, several new terms have appeared in Library and Information Science. They were known as 'Librametrics' in the 1940's, 'Bibliometrics' in the 1960's, 'Scientometrics' in the 1970's and 'Informetrics' in the 1980's. And now with the advent of information technology, two more new concepts, namely, 'Cybermetrics' and 'Webometrics' emerged in the 1990's.

Scientometrics is concerned with the quantitative features and characteristic of science and scientific research. Emphasis is placed on investigation in which the development and mechanism of science are studied by statistical mathematical methods. Scientometrics includes the journals of research communication studies. Consequently its aim and scope that of the latter, namely, to bring the result of such investigation together in one place. Scientometrics is one of the vital measures for the estimation of scientific production. Scientometrics is concomitant to and has overlapping interest with the idioms 'bibliometrics' and 'informetrics'. The term bibliometrics, scientometrics and informetrics refers to component fields associated with the study of the dynamics of disciplines as reflected in the production of their literature (Hood & Wilson, 2001). The scientometrics studying mainly the quantitative aspects of science has strengthen its position as a significant component of the general science of science, and it appears to be a completed disciplinary field with clearly outlined subjects of research, specific set of

good elaborated research methods and techniques, a significant concerning size and geographical scope research community, numerous research institutions, constituted regular conferences and its own printed organ – the prestigious international journal Scientometrics.

2.2 Bibliometrics

In 1969, Alan Pritchard came up with the term "Bibliometrics" in his article "Statistical bibliography or bibliometrics" in the *Journal of Documentation* and defines it as '*the application of mathematical and statistical method of book and other media of communication*'. The word 'bibliometrics' is a combination of two words i.e. "Biblio" and "metrics". It is derived from Latin/Greek words "Biblio" means "book" and "metrics" means "a scale or measure". It is a research fields that studies scholarly communication, publishing and the development of literature. Bibliometrics studies the growth of literature, how much literature is contributed by various individuals, groups, or organisation or countries and how much exist in various languages, it also studies the geographical distribution of documents and citations. Bibliometrics is the branch of information theory that attempts to analyse quantitatively the properties and behaviour of recorded knowledge. One common way of conducting bibliometrics research is to use the Social Science Citation Index, the Science Citation Index or the Arts and Humanities Citation Index to trace citations.

2.3 Definitions of Bibliometrics

Many attempts have been made to define the term "*Bibliometrics",* some of the definition framed by various individuals are:

Sengupta defined Bibliometrics as, "Organisation, classifications and qualitative evaluation of publication along with their authorship by mathematics and statistical calculus".

J. M. Britain defined Bibliometrics as, "The study of nature, use and non-use of documents only. It deals only with the document that is the unit of analysis the document and its characteristics. It does not deal with users and his needs".

Potter defined Bibliometrics as, "The study and measurement of the publication pattern of all forms of written communication and their authorship".

Ravichandra Rao defined Bibliometrics as, "Bibliometrics is understood to cover the study of statistical distribution of the process relating to the activities of library staff and readers".

2.4 Types of Bibliometrics

Bibliometrics can be divided into two areas:

a) **Productivity count (Descriptive)**

The main purpose of this method is to study the degree of productivity in the scientific community. Productivity count is to identify the growth of subject as a whole or a particular area within a subject. The first trace of Bibliometric study was confined to productivity count of literature in the field of anatomy which was performed by Cole & Eales. Research production is counted on the basis of three heads:

Geographical (countries): Research productivity of a particular geographic area is counted. It can also be extended to institution of several kinds. Identifying the rate of productivity at institution level is an important measure to highlight the research environment prevailing in the particular institution.

Time period (Era): Under this category research publication are counted corresponding to their time period. It can be noted that rate of research publication tends to increase whenever new era is introduced. Some area within a subject attracted more researchers at time of their introduction. Counting publication could be further used to determine obsolesce of a particular literature.

Disciplines (subjects): The main purpose of this count is to identify the growth and decline of a particular subject. Every subject has the possibilities of both growing and declining and every subject does not

have the same share on research output. Research publication produced for a given subject is counted under this head. Productivity count based on the subject creates a clear delineation between those subjects which are followed by the researchers and those which are not.

b) Literature usage count (Evaluative)

It is used for reference counted. Evaluative reference is an integral part of bibliometric studies. It deals with citation in published works, circulation, and frequency of borrowing or browsing different library materials, failure and success in search strategies, search option etc. Evaluative count of references is also intended to identify the frequency used journals which will structure a list of core journals used for reference and the same method can be applied for other information sources, the result of which can be an ideal base for libraries to enhance their collection.

2.5 Laws of Bibliometrics

There are three fundamental laws which laid the formation of bibliometrics. It is one of the most important parts of bibliometrics studies which have been devised to evaluate a given problem in more complex scientific ways. The bibliometrics studies or research is conducted by applying three laws which are:

2.5.1 Lokta's Law of Scientific Productivity

Alfred James Lotka (1880-1949) proposed his inverse square law correlating contributors of scientific papers to their number of contribution. It describes the frequency of publication by authors in a given field. It states that "... the number (of authors) making n contribution is about $1/n^2$ of those making one and the proportion of all contributors, that make a single contribution is about 60 percent". Lokta suggested that once the number of authors contributing a single publication is known then the number of author contributing a single publication is known then the number of authors contributing two or more publication can be predicted.

2.5.2 Bradford's Law of Scattering

Samuel Clement Bradford formulated this law in 1934. The law states that "if scientific journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the study and several groups or zones containing the same number of articles as the nucleus and succeeding zones will be $1:n:n^2$ ... (Hertzel, 2003). It serves as a general guideline to researchers in determining the number of core journals in any given fields. The list was divided into three zones, each containing the same number of articles:

a) Core of journals on the subject, relatively few in number, that produces approximately one-third of all the articles;
b) Second zone, containing the same number of articles as the first, but a greater number of journals; and
c) Third zone, containing the same number of articles as the second, but a still greater number of journals.

2.5.3 Zipf's Law of Word Occurrence

In 1935, George Kingsley Zipf formulated his law to predict the frequency of words within a text. The law states that "in a relatively lengthy text, if you list the words occurring within the text in order of decreasing frequency, the rank of word on the list multiplied by its frequency will equal a constant". The equation for this relationship is: r x f=k where *r* is the rank of the word, *f* is the frequency, and *k* is the constant. This law has great significance in developing indexes.

2.6 Techniques of Bibliometrics

Following are the several techniques of bibliometrics:

2.6.1 Citation Analysis

Citation analysis is the major thrust area of bibliometrics research. It is the activity of analysing the citation or references. Citation analysis prevail the relationship between the references given by an author to the previous work. It is useful technique for studying the trends in scientific research. There are mainly three application areas in citation analysis:

a) Qualitative and quantitative evaluation of scientists, publication and scientific institutions.
b) Modelling of the historical development of science and technology.

c) Information search and retrieval.

2.6.2 Bibliographic Coupling

Bibliographic coupling was introduced by M. M. Kessler. Bibliographic coupling occurs when two works reference a common third work in their bibliographies. The bibliographically coupled documents are presumed to have a relationship in one way or the other. In this regards, citation can serves as a node thus creating a network of inter-related knowledge.

2.6.3 Co-citation

Co-citation is the frequency with which two documents are cited together by other document. Co-citation provides a tool for monitoring the development of scientific field, and for assessing the degree of inter-relation among specialities. It helps in locating network of frequently cited paper. A study on co-cited document can bring to light the subject specialities and sub-specialities, further studies over a period of time. Like documents co-citation, there can also be developed for authors and journals.

2.6.4 Direct Citation Counting

Citation count is the technique to determine the number of citations received by a given document or set of documents over a period of time from a particular set of citing documents, where from citation data for analysis was taken. The impact factor and immediacy index are the two measurements to offset the limitation of citation counting. The impact factor was coined by Eugene Garfield and defines it as “the ratio of the number of times a journal is cited in a given time period to the total number of sources items published in the journal during specified time period”. The results of citation count reflect the impact factor of a journal after taking into consideration the age of publication as well as its size and frequency. The immediacy index is a method of showing the frequency with which a material received by the articles during the year to the number of articles published.

2.7 Scientometrics

The origin of scientometrics can be traced back to the beginning of the 19th century. In the 21st century, the field is growing at an enormous pace and attracts interest for beyond

the walls of universities and institution. Eugene Garfield first describe the impact factor in 1995 as a method of selecting journals for inclusion in a Genetics Citation Index in 1961 as a mean of linking articles together via their references. In 1960, there has been a tremendous growth in the field and has developed into different several specializations. Scientometrics is a part of the sociology of science and has application to science policy making. It involved quantitative studies of scientific activity.

The term was introduced and came into prominence with the founding of the journal named "Scientometrics" by T. Braun in 1977; it was originally published in Hungary and currently from Amsterdam. Scientometrics refers to those quantitative management methods which are used in the analysis of science regarded as a process of information (Repanovici, 2010). Thus, scientometrics is a part of sociology of science and has application to science policy making. It involves quantitative studies of scientific activities, including among other, publication and so overlaps bibliometrics to some extent. Scientometrics is a branch of 'science of science'. The principal aim of scientometrics is to determine the state and prospect of a subject and its further development. Scientometric techniques can be classified into two categories: one dimensional (or scalar) and two-dimensional (or relationship) techniques. One dimensional techniques are based on direct counts (or occurrences) and graphical representation of specific bibliometrics entities or particular data elements in these items such as citation, keywords or address. Two dimensional techniques are based on co-occurrences of specific data elements such as number of times the keywords, classification codes, citation and addresses are mentioned together.

2.7.1 Scientometric measurements

Scientometric measurements include H-index and G-index:

a) H-index

The *h*-index was introduced by J. E. Hirsch (2005) and simultaneously measures the quality and sustainability of the impact of a research publication. It attempts to measure; both the scientific productivity and the apparent scientific impact of a scientist. The *h*-index is based on a scientist's lifetime cited, which incorporates productivity as well as citation impact. All

papers in a publication set which have at least *h* citation are called the 'Hircsh core', publication in the core have the greatest impact. The *h*-index is approximately proportional to the square root of the total citation count and linearly proportional to the total number of publications. Vinkler (2007) reveals that the Scientometrics cannot offer a simple consistent method for measuring the scientific eminence of individuals. According to him the *h*-index was found applicable for evaluating publication of senior scientists with similar publishing features.

b) G-index

The *g*-index was proposed by Leo Egghe (2006) in his paper 'theory and practice of the g-index" in 2006 as an improvement on the *h*-index. The *g*-index is calculated based on the distribution of citation received by a given researchers publications. G-index is to measure the productivity of the researchers based on their publication such that given a set of articles ranked in decreasing order of the number of citation that they received the *g*-index is the unique largest number such that the top *g* articles received together at least g^2 citations.

2.7.2 Definitions of Scientometrics

Several attempts have been made to define the term 'Scientometrics' and several definition did exist, some of the definition framed by various individuals are:

Nalimov and Mulchenko defined scientometrics as the quantitative methods which deals with analysis of science viewed as an information process.

Tague-Sutcliff defined scientometrics as "the study of the quantitative aspect of science as a discipline or economic activity. It is a part of the sociology of science and has application to science policy making. It involves quantitative study of scientific activities including, among other, publication, and so overlaps bibliometrics to some extent".

Dobrov and Karennol defined it as "the measurement of informatics process".

Mikhilov defined it as "that scientific information and the law of processes of scientific discipline devoted to all quantitative aspect of science and scientific research".

Beek has been defined as "the quantitative evaluation and inter comparison of scientific activity, productivity and progress".

Brookstein defined scientometric as "the science of measuring science".

Scientometrics is also considered as a bibliometrics measurement for evaluation of scientific development, social relevance and impact of the application of science and technology etc.

2.8 Informetrics

The term informetrics was first proposed by Otto Nacke of West Germany in 1979. An FID committee with very broadly defined objective in the provision of research and technical data was subsequently given this name. It focuses on information productivity. The field informatics took place of the originally broader speciality bibliometrics. At the third conference of informetrics, held in Bangalore in 1991, informetrics was used as a generic term to mean '*the use and development of a variety of measures to study and analyzed several properties of information in general and document in particular*'. It interprets information technology theory, cybermetrics etc. Informetrics is the study of quantitative aspects of information in any form, not just records or bibliographic and in any special group not just scientist. Informetrics is the quantitative aspect of informal or spoken communication as well as recorded and of information needs and uses of the disadvantages not just the intellectual elite. Obviously Informetrics cover both bibliometrics and scientometrics.

2.8.1 Definitions of Informetrics

Some of the definitions framed by various individuals are:

According to ***Brookes***, "Informetrics is being used to cover both scientometrics and bibliometrics impartially. It has produced no distinctively new ideas of its own but as its

simplicity covers both documentary and electronic forms of communication, it may have a future".

Tague-Sutcliffe defined the term Informetrics as "the study of the quantitative aspect of information in any form, not just records or bibliographies, and in any social group, not just scientist".

2.9 Webometrics

Webometrics basically deals with quantitative analysis of various characteristics of Web resources. The science of Webometrics attempts to measure the World Wide Web (www) to know about the number and type of hyperlinks, structure of the WWW and usage pattern. Use of World Wide Web, a part of Internet has partially webbed the information globally under one roof. Universities, research institutions and business organisations are currently providing information about themselves on the Internet in general and the WWW in particular. Bjorneborn & Ingwersen (2001) proposed a different rated terminology distinguishing between studies of the Web and studies of all Internet application. They named this new research field as 'Webometrics'. Webometrics display several similarities to informetric and scientometric studies and the application of common bibliometric methods. The Web Impact Factor (WIF) was first introduced by Peter Ingwersen. It is measured as the number of Web pages in a websites receiving links from other websites, divided by the number of Web pages published in the site that are accessible to the crawler. Webometrics in general aim at designing and developing methodologies to measures visibility such as WIF. There are four areas of Webometrics research as follows:

a) Web page content analysis.
b) Web link structure analysis.
c) Web usage analysis (including log files of users' search & browsing behavior).
d) Web terminology analysis (including search engine performance).

2.9.1 Definitions of Webometrics

Bjorneborn & Ingwersen defined Webometrics as "the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the web based on bibliometrics and informetrics approaches".

Thomas Almind & Peter Ingwersen defined as, "webometrics is called as research of all network-based communication using informetrics or other quantitative measures".

Webometrics is used to map out areas of the Web that appear to be most useful or influential, based on the number of times they are hyperlinked to other websites. The field of Webometrics study is completely encompassed by bibliometrics because Web document, whether text or multimedia are recorded information stored on Web servers.

2.10 Conclusion

Scientometrics as a subject has seen tremendous growth in recent times. It is one of the most important measures for the assessment of scientific production. Advancement in Information Communication Technology (ICT) has made it much more interesting topic and makes it easy in the data collection process. Today large data can be analyzed easily with the assistance of Web based technologies. Scientometrics is related to and has overlapping interest with Bibliometrics and Informetrics. It can be treated as an analogue concept of Bibliometrics. Scientometrics/ Bibliometrics/ Informetrics techniques are used to analyse various quantitative and qualitative aspects of publication. These techniques have been useful and become important in the field of Library and Information Science. As developing countries trusting more on research and innovation have been very much depended on scientometrics for granting funds for research.

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Note: References are based on Publication Manual of American Psychological Association (6th ed.) with some modifications.

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CHAPTER - 3

LIBRARY AND INFORMATION SCIENCE JOURNALS IN SCOPUS

3.1 Introduction

With the advent of globalisation in the realm of education, there has been information explosion. “The development of Information and Communication Technology (ICT) has made it possible for the library to provide their users with range of different information resources” (Tajafari, 2014). An electronic resource has made libraries to fulfil their user’s information needs. Scholarly literature in the field of Library and Information Science has been growing gradually as new facets are added to the subject progressively due to inter-disciplinary approach and information explosion. “The field of Library and Information Science is no longer confined to four walls of classification and cataloguing but has been broadened to embrace new concepts like automation, information retrieval, metadata, open access, and other web related technologies” (Wani et al., 2008). “The library and information landscape has transformed with the onset of the digital era and today traditional libraries have changed their roles as to serves as knowledge centre with priority on value added electronic information service” (Anjaiah, 2014). The Internet has now a day’s become an important component in academic institution as it play a pivotal role in meeting the information and communication need of institution.

Scholarly journals have traditionally been one of the most significant channels for published research. The world is increasing in globalisation, so is the library profession. Scholarly journal of a country reflect the quality of research being carried out in that part of the world. It gives the researchers a platform to make their research known to their peer group and to promote, share and make accessible their research to work at large. Advancement in Information and Communication Technology (ICT) has brought multi-dimensional changes in libraries and librarianship. It has become more important for librarians and information professionals to know what is going on in libraries around the world. The library is one of the most successful society’s information systems, with a long and fruitful history. Journals play an important role for formal communication. The journal literature in the field of Library and Information Science has grown exponentially. With the growth and development of Internet, there has been growth in the number of new journals. A digital publication has increase day by day. With technological development, print journals are involving to online journals. The journals, *Journals des Scavans* and the *Philosophy Transaction* of the Royal Society that appeared in 1665 were the first journals. In India “*Library and Miscellany*” can be considered as

the first LIS journal that started publishing in 1912 by the State Library Department, Baroda (Mukherjee & Vishwakarma, 2014).

The Scopus database is launched in November 2004. In 2009, the Content Selection and Advisory Board (CSAB) were formed to develop an objective system of evaluation and validation of peer-reviewed journals for inclusion or exclusion in Scopus against transparent and fair criteria. Scopus is the largest abstract and citation database of peer-reviewed literature, featuring smart tools to track, analyze and visualize research. Scopus has content delivery agreement in place with each publisher and received content in both print and electronic format. Currently around 95% of materials is received electronically and/ or sourced from the journal websites.

3.2 Journals

A journal has many publications issued at stated intervals, such academic journals (including scientific journals) or the records of the transactions of a society, are often called journals. In academic use, a journal refers to serious scholarly publication that is peer-reviewed. Peer-reviewed articles are written by experts and are reviewed by several other experts in the same field before the article is published. Journal constitutes useful information resources for researchers, policy makers, teachers and scientists because these provide nascent information expeditiously. Journals have been very important source of scholarly communication among research scholars and scientific communication among scientists and researchers. They serve as an input to ongoing research activities.

3.2.1 Print Journals

The term 'journal' refers to materials which are published in separate parts and at regular interval. Journals are important source of information for subject research. "Print journals have always played an important role in information management. The first journal '*Journal des Scavans*' was published as a new source of communication during 1665" (Angrosh, 2005). Print journals have played a central role in information creation and dissemination. The frequency of publication varies from weekly to annually.

3.2.2 E – Journals

"The term 'electronic journal' can be defined as a publication, often scholarly, accessible in a computerized format and distributed electronically. The distribution can be both offline and online" (Mukherjee, 2008). With the arrival of Web, e-journal in all disciplines has proliferated, finding widespread and enthusiastic acceptances by end users. Some electronic publications replicate existing print publications, other start only in electronic form. "Journals that are one of the vital resources for the researchers are increasingly available in electronic form. The e-journals enable timely and easy to access to information in addition to several other benefits" (Vishala & Bhandi, 2006). With the steady growth of e-journals on the Internet, it was found that creativity and productivity has also improved due to network technologies. E-journals could be distributed more economically than paper journals. Some journals are born digital in that they are solely published on the Web and in a digital format, but most electronic journals originated as print journals.

Characteristics of E-journals (Mahajan & Verma, 2015)

a) Immediate access to high demand and frequently used items.
b) Information is stored in data format.
c) Easier access to individual component within items.
d) Rapid access of the required materials.
e) Reducing the problem of cost of delivery.

3.3 Open Access Journals

"Open access journals can be defined as a journal which provide free access to their available literature altogether with facilities to download, print and use without any legal restriction" (Kaushik, 2012). Open access archives contain the full-text and data of any published research articles, available free of charge to anyone. The goal of the open access movement is to make scholarly articles freely available in digital form worldwide with minimal restrictions in their use. Open access is an effective way to disseminate and use information. "Open access journals maintain the traditional values of journals notably peer-review, but also editing and forming and marketing" (Sangam & Prakash, 2006). According to Velterop (2003) there are three criteria for a journal to be open access i.e. freely accessibility to all articles, the depositing of all articles in an archive/repository, and license granted for the right to copy or disseminate. Open access

movement has given a new opportunity to the libraries/ information seekers by establishing a bridge between information and information seeker without paying anything. The open access e-journal in Library and Information Science has been growing exponentially since the year 2000. Open access has brought a new vista for disseminating of scholarly content. "Open access operates within the legal frame work and own the original copyrights for their work" (Sangita & Sophia Rani, 2008). Open access journals maintain the traditional values of journals notably peer-review, but also editing and formatting and marketing. Scopus includes an open access indicator for journals indexed in Scopus. More than 3,600 journals titles are open access journals indexed in Scopus. The indicator allows users to easily identify open access journals within Scopus via the Browse Sources link. This link provides an alphabetical list of all journals, book series, trade publications and conference proceedings available in Scopus.

Salient Features of Open Access (Sangita & Sophia Rani, 2008)

a) Open access literature is digital, free of charge and free of copyright.
b) OA is compatible with copyright, peer-review, revenue, print, preservation, prestige, career, advancement, indexing, and supportive, service, associated with conventional scholarly literature.
c) OA campaign focuses on the literature that authors give to the world without expectation of payment.
d) OA is compatible with peer-review and all the major OA initiatives for scientific & scholarly literature insist on its importance.

3.3.1 Open Access Journal Providers in India

a) Indian National Science Academy (INSA)

Indian National Science Academy was established in January 1935 with the object of promoting science in India and harnessing scientific knowledge for the cause of humanity and national welfare. It is a scientific academy funded by the Govt. of India. INSA published journals, organise scientific discussion and bring out monographs and other publications. The e-journals@insa is a project of the INSA that was started in July 2002. All INSA journals are open access and full text is available as PDF files from the common journals gateway.

b) The Indian Academy of Science (IAS)

It was founded by Sir C. V. Raman in 1934. It is a scientific academy funded by the Govt. of India. Total 11 journals are open access and full-text literature is available as PDF files on each journals websites. All the articles in current issues of these journals are born digital.

c) IndianJournals.com

It provides single window access to multidisciplinary Indian journals published by different scholarly societies and institution. It provides access to eleven open access journals and periodicals. This journals gateway also provides access to subscription – based content.

d) Kamla-Raj Enterprises

It is one of the leading educational publishers for quality and scholarly publication of international reputed journals. It is a Delhi based publisher established in 1933. Kamla-Raj publishes over 15 print based peer-reviewed scholarly journals mainly in the areas of Social Science which are also available in electronic format in an open access platform.

e) The Indian MEDLARS Centre

The National Informatics Centre has initiated two unique projects with support from the Indian Council of Medical Research. The first one is INDMED@NIC that indexes 100 Biomechanical journals of India from 1985 onwards. The INDMED bibliographic database is available online. Another project, MEDIND@NIC is an open access initiatives from NIC that provides open access to the full text content of 38 Indian Biomedical journals. MEDIND@NIC aims at providing online access to full-text Indian Biomedical periodicals to the users within and outside India.

f) Medknow Publication Private Limited

Medknow provides publishing services for peer-reviewed, online and print plus online journals in Medicine on behalf of learned societies and association with a focus on emerging markets. Medknow was acquired by Wolters Klumer in

December 2011 and has continued to grow its journal portfolio, extending its publishing partnership in China, the Middle-East and other growth market. Today Medknow provides publishing services to over 350 media society journals in over 40 specialities.

3.3.2 Open Access LIS Journals Indexed in Scopus

There are 21 open access LIS journals published in English language worldwide and indexed in Scopus. The list of open access LIS journals are given in Table 3.1.

Table 3.1: List of open access LIS journals indexed in Scopus

SN	Journal Titles
1.	Annals of Library and Information Studies
2.	ASLIB Journal of Information Management
3.	College and Research Libraries
4.	DESIDOC Journal of Library and Information Technology
5.	D-Lib Magazine
6.	Evidence Based Library and Information Practice
7.	Information Research
8.	Information Technology and Libraries
9.	International Journal of Information Science and Management
10.	Issues in Science and Technology Librarianship
11.	Journal of Educational Media and Library Science
12.	Journal of the Medical Library Association
13.	LIBER Quarterly
14.	Library
15.	Library and Information Science Research
16.	Library Philosophy and Practice
17.	Libres
18.	Pakistan Journal of Library and Information Science
19.	School Library Media Research
20.	Transinformacao
21.	Webology

3.4 Library and Information Science Journals in Scopus

Library and Information Science is one of the most challenging subjects in the era of Information Technology. Journals have been very important source of scholarly communication among research scholars and scientific communication among scientists and researchers. Scopus is an online bibliographical abstracting and indexing service developed and operated by the publishing group Reed Elsevier. Scopus was launched in November 2004 and it covers 22,800 titles from more than 5000 international publishers. Scopus delivers the most comprehensive view of the world's research output in the field of Science, Technology, Medicine, Social Science and Arts and Humanities. Scopus searches the Web using the Elsevier Science Internet search engine and claims to include the largest collection of abstracts. "Scopus is sold to both commercial and educational institution by subscription, which varies according to the size of the institution. Scopus offer quick, basic and advance search functionally and result can be viewed and ranked by date, relevance, authors, source title and number of citations" (Sangam & Prakash, 2006). "Scopus allows the user to browse the cited references, view citation of individual documents from other documents in the database, setup documents citation alerts for new articles that cites a chosen document, and export citation counts for individual search results" (Hardy et al., 2005). The Table 3.2 represents a list of LIS journals indexed in Scopus.

Table 3.2: List of LIS journals indexed in Scopus

SN	Title of the Journal	Country
1.	Accountability in Research	United Kingdom
2.	African Journal of Library Archives and Information Science	Nigeria
3.	AIB Studi	Italy
4.	American Archivist	United States
5.	Anales de Documentacion	Spain
6.	Annals of Library and Information Studies	India
7.	Archival Science	Netherlands
8.	Archivaria	Canada
9.	Archives	United Kingdom
10.	Archives and Manuscripts	United Kingdom

SN	Title of the Journal	Country
11.	Aslib Journal of Information Management	United Kingdom
12.	Australian Academic and Research Libraries	United Kingdom
13.	Australian Library Journal	United Kingdom
14.	Behavioral and Social Sciences Librarian	United States
15.	Biblios	United States
16.	BiD	Spain
17.	BilgiDunyasi	Turkey
18.	Bottom Line	United Kingdom
19.	Bulletin des Bibliotheques de France	France
20.	Bulletin. John Rylands University Library of Manchester	United Kingdom
21.	Canadian Journal of Information and Library Science	Canada
22.	Canadian Journal of Program Evaluation	Canada
23.	Cataloging and Classification Quarterly	United States
24.	Ciencia da Informacao	Brazil
25.	Collection Building	United Kingdom
26.	Collection Management	United States
27.	College and Research Libraries	United States
28.	College and Research Libraries News	United States
29.	College and Undergraduate Libraries	United States
30.	Communications in Information Literacy	United States
31.	Community and Junior College Libraries	United States
32.	Computers in the Schools	United States
33.	Cuadernos.info	Chile
34.	Cybermetrics	Spain
35.	DESIDOC Journal of Library and Information Technology	India
36.	Development and Learning in Organisations	United Kingdom
37.	D-Lib Magazine	United States
38.	Document Numerique	France
39.	Documentaliste: Sciences de l'Information	France
40.	East Asian Publishing and Society	Netherlands
41.	Education and Information Technologies	United Kingdom

SN	Title of the Journal	Country
42.	Education for Information	Netherlands
43.	Electronic Library	United Kingdom
44.	Ethics and Information Technology	Netherlands
45.	European Journal of Information Systems	United Kingdom
46.	Evidence Based Library and Information Practice	Canada
47.	FontesArtisMusicae	Switzerland
48.	Gazette des Archives	France
49.	Government Information Quarterly	United Kingdom
50.	Grey Journal	Netherlands
51.	Harvard Library Bulletin	United States
52.	Health information and libraries journal	United Kingdom
53.	Ibersid	Spain
54.	IEEE Transactions on Information Theory	United States
55.	IFLA Journal	United States
56.	Informacion, Cultura y Sociedad	Argentina
57.	Information and Organization	United Kingdom
58.	Information Communication and Society	United Kingdom
59.	Information Design Journal	Netherlands
60.	Information Development	United States
61.	Information Processing and Management	United Kingdom
62.	Information Research	United Kingdom
63.	Information Resources Management Journal	United States
64.	Information Retrieval	Netherlands
65.	Information Services and Use	Netherlands
66.	Information Systems Management	United Kingdom
67.	Information Systems Research	United States
68.	Information Technology and Libraries	United States
69.	Information Technology and People	United Kingdom
70.	Information-Wissenschaft und Praxis	Germany
71.	Informing Science	United States
72.	Insights	United Kingdom

SN	Title of the Journal	Country
73.	Interlending and Document Supply	United Kingdom
74.	International Information and Library Review	United States
75.	International Journal of Data Mining and Bioinformatics	United Kingdom
76.	International Journal of Geographical Information Science	United Kingdom
77.	International Journal of Information Management	United Kingdom
78.	International Journal of Information Science and Management	Iran
79.	International Journal of Law and Information Technology	United Kingdom
80.	International Journal of Metadata, Semantics and Ontologies	United Kingdom
81.	International Journal of Multimedia Information Retrieval	United Kingdom
82.	International Journal of the Book	United States
83.	International Journal on Digital Libraries	Germany
84.	Internet Reference Services Quarterly	United States
85.	InvestigacionBibliotecologica	Mexico
86.	Issues in Science and Technology Librarianship	United States
87.	Journal of Academic Librarianship	United Kingdom
88.	Journal of Access Services	United States
89.	Journal of Archival Organization	United States
90.	Journal of Business and Finance Librarianship	United States
91.	Journal of Chemical Information and Modeling	United States
92.	Journal of Cheminformatics	United Kingdom
93.	Journal of Classification	Germany
94.	Journal of Digital Information	United Kingdom
95.	Journal of Digital Information Management	India
96.	Journal of Documentation	United Kingdom
97.	Journal of Educational Media and Library Science	Taiwan
98.	Journal of Electronic Resources in Medical Libraries	United States
99.	Journal of Electronic Resources Librarianship	United States
100.	Journal of Enterprise Information Management	United Kingdom
101.	Journal of Health Communication	United Kingdom
102.	Journal of Hospital Librarianship	United States

SN	Title of the Journal	Country
103.	Journal of Information and Computational Science	China
104.	Journal of Information and Knowledge Management	United States
105.	Journal of Information and Organizational Sciences	Croatia
106.	Journal of Information Ethics	United States
107.	Journal of Information Literacy	United Kingdom
108.	Journal of Information Science	United States
109.	Journal of Information Science and Engineering	Taiwan
110.	Journal of Information Technology	United Kingdom
111.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	United States
112.	Journal of Librarianship and Information Science	United States
113.	Journal of Library Administration	United States
114.	Journal of Library and Information Services in Distance Learning	United States
115.	Journal of Library Metadata	United Kingdom
116.	Journal of Map and Geography Libraries	United States
117.	Journal of the Association for Information Science and Technology	United Kingdom
118.	Journal of the Medical Library Association : JMLA	United States
119.	Journal of Web Librarianship	United States
120.	Knowledge Management Research and Practice	United Kingdom
121.	Knowledge Organization	Germany
122.	Language Resources and Evaluation	Germany
123.	Law Library Journal	United States
124.	Legal Reference Services Quarterly	United States
125.	LIBER Quarterly	Germany
126.	Libraries and the Cultural Record	United States
127.	Library	United Kingdom
128.	Library and Archival Security	United States
129.	Library and Information Science	Japan
130.	Library and Information Science Research	United Kingdom

SN	Title of the Journal	Country
131.	Library Collections, Acquisition and Technical Services	United Kingdom
132.	Library Hi Tech	United Kingdom
133.	Library Hi Tech News	United Kingdom
134.	Library Journal	United States
135.	Library Leadership and Management	United States
136.	Library Management	United Kingdom
137.	Library Philosophy and Practice	United States
138.	Library Quarterly	United States
139.	Library Resources and Technical Services	United States
140.	Library Review	United Kingdom
141.	Library Trends	United States
142.	Libres	Australia
143.	Libri	Germany
144.	Malaysian Journal of Library and Information Science	Malaysia
145.	Masaryk University Journal of Law and Technology	Czech Republic
146.	Medical Reference Services Quarterly	United States
147.	Microform and Digitization Review	Germany
148.	Music Reference Services Quarterly	United States
149.	New Library World	United Kingdom
150.	New Review of Academic Librarianship	United Kingdom
151.	Notes	United States
152.	Notes and queries	United Kingdom
153.	OCLC Systems and Services	United Kingdom
154.	Online Information Review	United Kingdom
155.	Pakistan Journal of Information Management and Libraries	Pakistan
156.	Papers of the Bibliographical Society of America	United States
157.	Performance Measurement and Metrics	United Kingdom
158.	PerspectivasemCiencia da Informacao	Brazil
159.	Preservation, Digital Technology and Culture	Germany
160.	Proceedings of the ASIST Annual Meeting	United States
161.	Profesional de la Informacion	Spain

SN	Title of the Journal	Country
162.	Program	United Kingdom
163.	Progress in Informatics	Japan
164.	Prologue	United States
165.	Public Library Quarterly	United States
166.	Quaerendo	Netherlands
167.	Records Management Journal	United Kingdom
168.	Reference and User Services Quarterly	United States
169.	Reference Librarian	United States
170.	Reference Services Review	United Kingdom
171.	Research Evaluation	United Kingdom
172.	Revista Espanola de DocumentacionCientifica	Spain
173.	Revista General de Informacion y Documentacion	Spain
174.	School Library Media Research	United States
175.	Science and Technology Libraries	United States
176.	Scientific data	United Kingdom
177.	Scientometrics	Hungary
178.	Scire	Spain
179.	Script and Print	Australia
180.	Scriptorium	Belgium
181.	Serials Librarian	United States
182.	Serials Review	United Kingdom
183.	SIMILE	Canada
184.	Slavic and East European Information Resources	United States
185.	Social Science Computer Review	United States
186.	Social Science Information	United States
187.	Technical Services Quarterly	United States
188.	Terminology	Netherlands
189.	The Book Collector	United Kingdom
190.	Transactions of the Cambridge Bibliographical Society	United Kingdom
191.	Transinformacao	Brazil
192.	Tuna	Estonia

SN	Title of the Journal	Country
193.	VINE	United Kingdom
194.	VjesnikBibliotekaraHrvatske	Croatia
195.	VOEB-Mitteilungen	Austria
196.	Webology	Iran
197.	World Patent Information	United Kingdom
198.	ZeitschriftfürBibliothekswesen und Bibliographie	Germany

3.4.1 Countries for LIS Research

There are more than 192 countries in the world. Every country is involved in higher education and research for the development of Country as a whole and society at particular. There are 198 LIS journals from all over the world indexed in Scopus. The Table 3.3 represents the number of LIS journals published by countries which will indicate the status of LIS research at world level.

Table 3.3: No. of LIS journals from world countries

SN	Name of the Country	No. of Journals
1.	United States	67
2.	United Kingdom	63
3.	Germany	10
4.	Netherlands	10
5.	Spain	8
6.	Canada	5
7.	France	4
8.	Brazil	3
9.	India	3
10.	Australia	2
11.	Croatia	2
12.	Iran	2
13.	Japan	2
14.	Taiwan	2
15.	Argentina	1

16.	Austria	1
17.	Belgium	1
18.	Chile	1
19.	China	1
20.	Czech Republic	1
21.	Estonia	1
22.	Hungary	1
23.	Italy	1
24.	Malaysia	1
25.	Mexico	1
26.	Nigeria	1
27.	Pakistan	1
28.	Switzerland	1
29.	Turkey	1
	Total	**198**

Table 3.3 displays the list of countries with their productive journals indexed in Scopus. There are only 29 countries from the world are contributing to LIS research through journals indexed in Scopus. United States and United Kingdom are the top most countries for contributing LIS research through LIS journals.

3.4.2 Coverage of Source Type

Scopus covers different source types:

i) Serial Source Type

Scopus indexes serial publications that have been assigned an ISSN.

a) ***Journals***: Journals make up the bulk of the content on Scopus and can have various physical formats. Titles are selected according to the content coverage policy. Any serial publication with an ISSN, excluding one off proceeding, newsletter, secondary source or patent publication can be suggested for review and covered on Scopus.

b) ***Trade journals***: Trade journals are serial publication covering and intended to reach a specific industry, trade or type of business. Trade journals are included on Scopus because users and librarian consider selected articles to be scientifically relevant. Only articles a review of scientific relevance are included on Scopus.

c) ***Book series***: A book series is a serial publication that has an overall series title, an ISSN, and in which every volume and / or issue in the series is also a book with an ISBN. Book series are usually published irregularly.

d) ***Conference material***: Conference materials enters in Scopus in two different ways: (i) as a special issue of a regular journal (ii) as a dedicated conference proceeding. Scopus covers conferences that published full-text papers, where as conferences which published only abstract are not considered for coverage. Over 10% of the Scopus database is comprised of conference papers (over 8 million) of which 2.3 million are published in journal, book, series and other sources.

ii) Non-Serial Sources

A non-serial source is a publication with an ISBN unless it is report, part of a book series, proceeding or patent. It can be both print and electronic formats and is usually a monograph or composed work. Over 150,000 titles have now been added to Scopus and approximately 20,000 titles are added annually.

iii) Other Sources

a) ***Secondary documents:*** On Scopus, approximately 147 million records are non-core or secondary documents. These are records that have been cited in Scopus core records, but are not themselves indexed on Scopus. The most highly cited of these non-core items are often books and older journal articles.

b) ***Patents:*** Over 39 million patent records derived from five patent office's available on Scopus:

i. Worlds Intellectual Property Organisation (WIPO).

ii. European Patent Office (EPO).
iii. US Patent Office (USPTO)
iv. Japanese Patent Office (JPO).
v. UK Intellectual Property Office (IPO.GOV.UK).

Scopus indexed journals are global by design to best serve researchers' needs and ensure that relevant scientific information is not omitted from the database. All geographical regions are covered, including non-English titles as long as English abstracts can be provided with the articles. In fact, approximately 22% of titles on Scopus are published in languages other than English. In addition, more than half of Scopus content originates from outside North America representing various countries in Europe, Latin America and the Asia-Pacific regions.

3.5 Conclusion

The growth of Library and Information Science literature is at good pace. It provides current as well as archival access to high quality of e-resources to academic institution to improve teaching, learning and research. Use of Internet and e-resources particularly World Wide Web, as a new medium of information storage and delivery represent a revolution, which will have lasting impact on the publishing and information delivery system in the 21st century. Electronic journal open up many exciting opportunities and potential for science and technological libraries in research and development institution. To develop the e-journals in research and development, it is important that the libraries should improve in their ICT infrastructure. Journal is very important for scholarly communication and very less work has been done to trace their growth and development especially in the field of Library and Information Science. Even though developing countries are lagging in publishing open access LIS journals, India have taken a lead in publishing open access journals.

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CHAPTER - 4

ANALYTICAL MAPPING OF LIS JOURNAL'S DATA AND FINDINGS

4.1 Introduction

The analysis involves critical examination of data with the objectives in mind for determining the pattern of relationship among the variables. Data analysis and findings are crucial for a scientific study and for that; the scholar has taken the relevant data obtained through online survey for making an exhaustive analysis and draws the inferences.

4.2 Analysis of Data

The analysis and interpretation of data involve the objective material in the possession of the researcher and his subjective reaction and desires to derive from the data, the inherent meaning in their relation to the problem. Analysis of data is the most skilled task of all the stages of research. It is a task calling for the researcher's own judgment and skill. Proper analysis requires a familiarity with the background of the study. Keeping in view the objectives of the study in mind, an online survey was conducted to get the relevant data from the Scopus database. The collected data were analyzed, tabulated, interpreted to draw the inferences.

4.2.1 Mapping of LIS Journals based on SJR indicator

The SCImago Journal Rank (SJR indicator) is a statistical technique to measure the scientific influence of scholarly journals that accounts for both the number of citations received by them and the importance or prestige of the journals where such citations come from. The SJR indicator has been developed to be used in large and heterogeneous journal citation networks. SJR indicator values for the journals represents their "**average prestige per article**" and not for the whole journal and this indicator can be used for journal comparisons in science evaluation processes. The following table (Table 4.1) represents the SJR indicator values to the LIS journals indexed in Scopus database for five years. The average SJR value has been calculated for every LIS journal indexed in Scopus from their five years SJR values. The LIS journals which have missing SJR values for any time frame, their Average SJR value have been calculated for representing years only. For instance, Journal of Information Science have SJR values for 4 years only, so Average SJR have been calculated for 4 years base only (i.e. divided by 4 only).

Table 4.1: SJR indicator values of LIS journals indexed in Scopus

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
1.	Information Systems Research	3.582	3.274	3.313	2.999	3.873	3.4082
2.	College and Research Libraries	1.898	2.471	3.649	3.24	2.508	2.7532
3.	IEEE Transactions on Information Theory	2.779	2.838	3.012	1.944	1.796	2.4738
4.	Scientific data	---	---	---	---	2.049	2.049
5.	Information and Organization	1.293	1.153	2.277	2.941	1.24	1.7808
6.	Library and Information Science Research	1.558	1.935	1.824	1.688	1.642	1.7294
7.	Journal of the Association for Information Science and Technology	1.376	1.435	1.758	1.431	1.575	1.515
8.	Journal of Chemical Information and Modeling	1.323	1.506	1.647	1.447	1.582	1.501
9.	European Journal of Information Systems	1.659	1.33	1.326	1.088	1.967	1.474
10.	Journal of Academic Librarianship	1.612	1.744	1.39	0.998	1.41	1.4308
11.	Information Communication and Society	0.985	0.85	0.959	1.96	2.082	1.3672
12.	Scientometrics	1.257	1.345	1.377	1.125	1.205	1.2618
13.	Government Information Quarterly	1.097	1.29	1.025	1.431	1.371	1.2428
14.	Reference Services Review	1.011	1.511	1.342	0.88	1.466	1.242
15.	Journal of Information Technology	0.851	1.138	1.456	1.558	1.157	1.232
16.	Collection Management	1.18	1.39	1.65	0.929	0.755	1.1808
17.	Journal of Health Communication	0.907	1.253	1.236	1.157	1.172	1.145
18.	International Journal of Information Management	0.797	1.268	1.225	1.065	1.085	1.088
19.	Journal of Cheminformatics	0.804	0.871	1.004	0.907	1.703	1.0578
20.	Journal of Library Administration	0.796	1.247	1.127	1.102	0.883	1.031
21.	Social Science Computer Review	0.743	0.974	1.374	1.104	0.913	1.0216
22.	International Journal of Geographical Information Science	0.923	1.023	1.018	1.015	1.127	1.0212
23.	Reference and User Services Quarterly	1.315	1.107	0.859	0.686	1.072	1.0078
24.	Information Technology and Libraries	0.699	0.765	1.32	1.014	1.104	0.9804
25.	Library Quarterly	0.855	1.044	0.999	0.821	1.118	0.9674
26.	Reference Librarian	0.787	1.858	0.826	0.455	0.808	0.9468
27.	Journal of the Medical Library Association : JMLA	0.894	1.433	0.756	0.879	0.771	0.9466
28.	Journal of Documentation	1.038	1.185	0.738	0.785	0.946	0.9384
29.	Library Hi Tech	0.889	0.995	0.909	0.795	0.915	0.9006
30.	Journal of Information Science	0.918	1.157	---	0.849	0.564	0.872

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
31.	New Review of Academic Librarianship	0.718	0.635	1.222	1.027	0.669	0.8542
32.	Library Resources and Technical Services	0.572	0.807	1.244	0.834	0.8	0.8514
33.	Research Evaluation	0.921	0.704	0.863	0.732	0.901	0.8242
34.	Internet Reference Services Quarterly	1.055	0.874	0.616	0.501	0.822	0.7736
35.	Journal of Librarianship and Information Science	0.852	0.878	0.621	0.509	1.004	0.7728
36.	New Library World	0.717	0.902	0.726	0.873	0.601	0.7638
37.	Electronic Library	0.728	0.915	0.752	0.819	0.593	0.7614
38.	College and Research Libraries News	0.588	0.729	0.659	0.835	0.908	0.7438
39.	College and Undergraduate Libraries	0.576	0.371	1.118	0.481	1.153	0.7398
40.	Information Processing and Management	0.865	0.608	0.707	0.783	0.732	0.739
41.	Journal of Classification	0.898	1.025	0.479	0.457	0.806	0.733
42.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	0.574	0.925	0.998	0.781	0.228	0.7012
43.	Journal of Web Librarianship	0.372	0.78	0.827	0.594	0.897	0.694
44.	Library Management	0.461	0.659	0.866	0.772	0.66	0.6836
45.	Library Collections, Acquisition and Technical Services	0.641	0.983	0.63	0.738	0.389	0.6762
46.	Aslib Journal of Information Management	0.79	0.804	0.514	0.571	0.615	0.6588
47.	American Archivist	0.602	0.987	0.581	0.725	0.312	0.6414
48.	Cataloging and Classification Quarterly	0.519	0.716	0.712	0.743	0.508	0.6396
49.	Program	0.486	0.617	0.482	0.923	0.669	0.6354
50.	Serials Librarian	0.479	0.919	0.767	0.571	0.397	0.6266
51.	Health Information and Libraries Journal	0.573	0.512	0.781	0.547	0.61	0.6046
52.	Journal of Information Literacy	---	---	1.021	---	0.184	0.6025
53.	Information Retrieval	0.653	0.442	0.585	0.713	0.541	0.5868
54.	Archival Science	0.41	0.4	0.481	0.801	0.84	0.5864
55.	Interlending and Document Supply	0.379	0.728	0.602	0.681	0.526	0.5832
56.	Online Information Review	0.754	0.54	0.614	0.433	0.554	0.579
57.	Cybermetrics	0.26	0.331	0.447	0.632	1.179	0.5698
58.	Journal of Business and Finance Librarianship	0.602	0.34	0.65	0.706	0.476	0.5548
59.	Information Technology and People	0.546	0.614	0.536	0.533	0.529	0.5516

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
60.	Science and Technology Libraries	0.349	1.017	0.638	0.456	0.288	0.5496
61.	Performance Measurement and Metrics	0.742	0.466	0.372	0.516	0.623	0.5438
62.	Communications in Information Literacy	0.14	0.322	0.515	0.841	0.892	0.542
63.	D-Lib Magazine	0.463	0.454	0.58	0.817	0.371	0.537
64.	Collection Building	0.557	0.381	0.373	0.529	0.836	0.5352
65.	Medical Reference Services Quarterly	0.565	0.517	0.539	0.528	0.525	0.5348
66.	Library Trends	0.752	0.454	0.493	0.479	0.423	0.5202
67.	Ethics and Information Technology	0.399	0.445	0.545	0.622	0.563	0.5148
68.	Journal of Library and Information Services in Distance Learning	0.584	0.376	0.38	0.473	0.675	0.4976
69.	Insights	0.642	0.634	0.626	0.329	0.215	0.4892
70.	Journal of Electronic Resources Librarianship	0.394	0.578	0.669	0.423	0.338	0.4804
71.	Information Systems Management	0.393	0.302	0.619	0.481	0.603	0.4796
72.	Serials Review	0.47	0.659	0.358	0.477	0.427	0.4782
73.	Behavioral and Social Sciences Librarian	0.257	0.494	0.551	0.498	0.59	0.478
74.	Knowledge Management Research and Practice	0.483	0.568	0.463	0.368	0.5	0.4764
75.	Archivaria	0.295	0.334	0.795	0.499	0.458	0.4762
76.	Information Research	0.503	0.548	0.493	0.382	0.443	0.4738
77.	Computers in the Schools	0.86	0.325	0.394	0.339	0.392	0.462
78.	Public Library Quarterly	0.235	0.7	0.386	0.417	0.521	0.4518
79.	Journal of Library Metadata	0.372	0.332	0.261	0.739	0.55	0.4508
80.	Library Review	0.516	0.374	0.483	0.402	0.447	0.4444
81.	Libri	0.545	0.48	0.468	0.25	0.468	0.4422
82.	Journal of Enterprise Information Management	0.458	0.472	0.405	0.417	0.427	0.4358
83.	Australian Academic and Research Libraries	0.19	0.309	0.622	0.477	0.498	0.4192
84.	Canadian Journal of Program Evaluation	0.11	0.159	0.244	0.831	0.616	0.392
85.	Revista Espanola de DocumentacionCientifica	0.322	0.314	0.454	0.478	0.391	0.3918
86.	Language Resources and Evaluation	0.248	0.261	0.246	0.381	0.738	0.3748
87.	Education and Information Technologies	0.438	0.216	0.403	0.358	0.457	0.3744
88.	Technical Services Quarterly	0.392	0.44	0.366	0.23	0.4	0.3656
89.	Profesional de la Informacion	0.283	0.306	0.358	0.451	0.428	0.3652
90.	Journal of Digital Information	0.664	0.582	0.189	0.258	0.107	0.36

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
91.	Issues in Science and Technology Librarianship	0.225	0.461	0.443	0.403	0.224	0.3512
92.	Accountability in Research	0.242	0.405	0.393	0.346	0.346	0.3464
93.	Malaysian Journal of Library and Information Science	0.269	0.417	0.377	0.297	0.369	0.3458
94.	Journal of Archival Organization	0.322	0.563	0.32	0.22	0.292	0.3434
95.	Journal of Electronic Resources in Medical Libraries	0.355	0.377	0.433	0.315	0.237	0.3434
96.	IFLA Journal	0.196	0.274	0.433	0.487	0.316	0.3412
97.	Knowledge Organization	0.317	0.366	0.275	0.285	0.445	0.3376
98.	Bottom Line	0.509	0.38	0.345	0.25	0.201	0.337
99.	Law Library Journal	0.237	0.303	0.28	0.46	0.392	0.3344
100.	Evidence Based Library and Information Practice	---	0.101	0.308	0.338	0.586	0.33325
101.	World Patent Information	0.292	0.358	0.356	0.276	0.345	0.3254
102.	Journal of Access Services	0.237	0.269	0.35	0.309	0.449	0.3228
103.	International Journal of Data Mining and Bioinformatics	0.279	0.247	0.383	0.374	0.282	0.313
104.	Library Hi Tech News	0.336	0.36	0.331	0.282	0.254	0.3126
105.	Social Science Information	0.459	0.194	0.321	0.298	0.289	0.3122
106.	International Journal on Digital Libraries	0.23	0.414	0.227	0.326	0.337	0.3068
107.	VINE	0.247	0.287	0.4	0.243	0.356	0.3066
108.	Annals of Library and Information Studies	---	0.142	0.283	0.355	0.427	0.30175
109.	International Information and Library Review	0.244	0.249	0.404	0.302	0.308	0.3014
110.	Archives and Manuscripts	---	---	---	0.432	0.168	0.3
111.	OCLC Systems and Services	0.261	0.266	0.374	0.278	0.296	0.295
112.	Information Development	0.173	0.345	0.255	0.314	0.369	0.2912
113.	International Journal of Metadata, Semantics and Ontologies	0.357	0.299	0.272	0.211	0.26	0.2798
114.	Journal of Map and Geography Libraries	0.322	0.203	0.246	0.323	0.301	0.279
115.	Australian Library Journal	0.204	0.275	0.37	0.266	0.236	0.2702
116.	Information Services and Use	0.355	0.254	0.228	0.227	0.281	0.269
117.	Webology	0.247	0.259	0.257	0.347	0.232	0.2684
118.	Journal of Hospital Librarianship	0.219	0.335	0.268	0.243	0.269	0.2668
119.	LIBER Quarterly	0.213	0.335	0.268	0.226	0.29	0.2664
120.	Canadian Journal of Information and Library Science	0.205	0.27	0.405	0.223	0.228	0.2662
121.	International Journal of Law and Information Technology	0.202	0.504	0.197	0.17	0.241	0.2628

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
122.	Terminology	0.382	0.13	0.317	0.285	0.197	0.2622
123.	Records Management Journal	0.139	0.289	0.238	0.32	0.322	0.2616
124.	Library Philosophy and Practice	0.274	0.326	0.185	0.317	0.172	0.2548
125.	Education for Information	0.175	0.222	0.267	0.252	0.322	0.2476
126.	DESIDOC Journal of Library and Information Technology	---	---	0.138	0.252	0.333	0.241
127.	Journal of Information Science and Engineering	0.205	0.207	0.249	0.301	0.237	0.2398
128.	Legal Reference Services Quarterly	0.214	0.159	0.194	0.162	0.453	0.2364
129.	Proceedings of the ASIST Annual Meeting	0.198	0.279	0.252	0.218	0.167	0.2228
130.	Music Reference Services Quarterly	0.204	0.178	0.22	0.175	0.299	0.2152
131.	Progress in Informatics	0.193	0.395	0.195	0.175	0.114	0.2144
132.	Library Leadership and Management	0.108	0.237	0.344	0.144	0.237	0.214
133.	Libres	0.417	0.137	0.134	0.149	0.196	0.2066
134.	Community and Junior College Libraries	0.131	0.225	0.334	0.18	0.162	0.2064
135.	Informing Science	0.276	0.221	0.158	0.189	0.157	0.2002
136.	PerspectivasemCiencia da Informacao	0.162	0.207	0.169	0.217	0.234	0.1978
137.	Journal of Information and Knowledge Management	0.143	0.174	0.138	0.139	0.326	0.184
138.	Information Resources Management Journal	0.264	0.232	0.122	0.168	0.133	0.1838
139.	School Library Media Research	0.184	0.188	0.101	0.202	0.238	0.1826
140.	AIB Studi	---	---	---	---	0.172	0.172
141.	Grey Journal	0.17	0.203	0.18	0.168	0.128	0.1698
142.	Library Journal	0.147	0.154	0.206	0.179	0.161	0.1694
143.	VjesnikBibliotekaraHrvatske	0.139	0.201	0.187	0.187	0.123	0.1674
144.	ZeitschriftfürBibliothekswesen und Bibliographie	0.188	0.123	0.188	0.189	0.148	0.1672
145.	Preservation, Digital Technology and Culture	---	---	---	0.177	0.156	0.1665
146.	African Journal of Library Archives and Information Science	0.315	0.162	0.109	0.112	0.13	0.1656
147.	Journal of Information Ethics	0.128	0.143	0.195	0.167	0.174	0.1614
148.	Cuadernos.info	---	---	---	0.175	0.145	0.16
149.	Information Design Journal	0.192	0.104	0.24	0.147	0.113	0.1592
150.	Journal of Information and Computational Science	0.124	0.15	0.165	0.175	0.178	0.1584
151.	International Journal of Information Science and Management	0.175	0.201	0.136	0.115	0.142	0.1538

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
152.	Information-Wissenschaft und Praxis	0.147	0.176	0.174	0.1	0.154	0.1502
153.	SIMILE	0.102	0.198	---	---	---	0.15
154.	Library and Archival Security	0.101	0.217	0.111	0.162	0.156	0.1494
155.	Scire	---	0.101	0.125	0.183	0.176	0.14625
156.	InvestigacionBibliotecologica	0.126	0.152	0.139	0.16	0.154	0.1462
157.	Journal of Educational Media and Library Science	0.149	0.146	0.182	0.135	0.116	0.1456
158.	International Journal of the Book	---	0.16	0.14	0.142	0.132	0.1435
159.	Journal of Digital Information Management	0.152	0.167	0.116	0.137	0.132	0.1408
160.	Notes	0.138	0.179	0.112	0.135	0.13	0.1388
161.	Ciencia da Informacao	0.222	0.125	0.122	0.106	0.116	0.1382
162.	Revista General de Informacion y Documentacion	0.103	0.1	0.111	0.123	0.246	0.1366
163.	Journal of Information and Organizational Sciences	0.118	0.146	0.161	0.123	0.13	0.1356
164.	Documentaliste: Sciences de l'Information	0.1	0.137	0.13	0.101	0.187	0.131
165.	FontesArtisMusicae	0.1	0.101	0.118	0.207	0.117	0.1286
166.	Development and Learning in Organisations	0.152	0.122	0.123	0.117	0.127	0.1282
167.	Library	0.167	0.116	0.101	0.151	0.101	0.1272
168.	Libraries and the Cultural Record	0.152	0.123	0.101	0.123	---	0.12475
169.	Papers of the Bibliographical Society of America	0.111	0.1	0.136	0.113	0.163	0.1246
170.	Pakistan Journal of Information Management and Libraries	0.104	0.101	0.143	0.158	0.112	0.1236
171.	BilgiDunyasi	---	---	---	0.124	0.123	0.1235
172.	International Journal of Multimedia Information Retrieval	---	---	0.122	0.123	0.124	0.123
173.	Transinformacao	0.101	0.101	0.113	0.131	0.167	0.1226
174.	BiD	---	---	0.121	0.112	0.131	0.121333
175.	Microform and Digitization Review	---	0.101	0.119	0.163	0.101	0.121
176.	VOEB-Mitteilungen	0.1	0.14	0.1	0.104	0.149	0.1186
177.	Library and Information Science	0.122	0.1	0.125	0.115	0.112	0.1148
178.	Slavic and East European Information Resources	0.11	0.106	0.111	0.135	0.111	0.1146
179.	Notes and queries	0.117	0.117	0.102	0.123	0.11	0.1138
180.	Ibersid	---	---	0.102	0.111	0.125	0.112667
181.	Bulletin. John Rylands University Library of Manchester	---	---	0.101	0.105	0.13	0.112
182.	Document Numerique	0.108	0.111	0.113	0.109	0.117	0.1116

SN	Title of the Journal	SJR Values – Year wise					Avg. SJR Value
		2011	2012	2013	2014	2015	
183.	Informacion, Cultura y Sociedad	---	---	0.102	0.111	0.109	0.107333
184.	Quaerendo	0.116	0.1	0.1	0.1	0.119	0.107
185.	Scriptorium	0.1	0.111	0.1	0.1	0.123	0.1068
186.	Bulletin des Bibliotheques de France	---	---	0.111	0.101	0.102	0.104667
187.	East Asian Publishing and Society	---	0.104	0.102	0.101	0.101	0.102
188.	Prologue	0.109	0.1	0.101	0.1	0.1	0.102
189.	Transactions of the Cambridge Bibliographical Society	0.102	0.102	0.103	0.101	0.101	0.1018
190.	Archives	---	0.103	0.102	0.101	0.101	0.10175
191.	Biblios	---	---	---	0.102	0.101	0.1015
192.	Anales de Documentacion	---	---	---	0.101	0.101	0.101
193.	Masaryk University Journal of Law and Technology	---	---	---	0.101	0.101	0.101
194.	Script and Print	0.1	0.101	0.101	0.101	0.101	0.1008
195.	Harvard Library Bulletin	0.1	0.101	0.1	0.101	0.101	0.1006
196.	Gazette des Archives	---	---	0.101	0.1	0.1	0.100333
197.	The Book Collector	0.1	0.1	0.1	0.1	0.1	0.1
198.	Tuna	---	0.1	0.1	0.1	0.1	0.1

The SJR values for the LIS journals have been arranged based on the highest to the lowest Average SJR values. From the observation of table 4.1, it has been found that journal *Information Systems Research* has the highest Average SJR indicator (3.4082) during five years amongst 198 LIS journals indexed in Scopus which displays the highest average prestige per article for the journal followed by *College and Research Libraries* (2.7532), *IEEE Transactions on Information Theory* (2.4738), *Scientific Data* (2.049), *Information and Organization* (1.7808), *Library and Information Science Research* (1.7294), *Journal of the Association for Information Science and Technology* (1.515), *Journal of Chemical Information and Modeling* (1.501), *European Journal of Information Systems* (1.474), *Journal of Academic Librarianship* (1.4308), *Information Communication and Society* (1.3672), and *Scientometrics* (1.2618). In the case of Indian LIS journals, there have been three journals *Annals of Library and Information Studies*, *DESIDOC Journal of Library and Information Technology* and *Journal of Digital Information Management* are in the list. The Average SJR indicator value for *Annals of Library and Information Studies*, *DESIDOC Journal of Library and Information Technology* and *Journal of Digital Information Management* are 0.30175, 0.241, and 0.1408 respectively. The Average SJR indicator values

for Indian LIS journals are very less than *Information Systems Research* but comparatively higher than many other LIS journals. Form the observation of Table 4.1, it has been found that there are 23 LIS journals having Average SJR indicator ≥ 1.0; 44 LIS journals having Average SJR indicator ≥ 0.5 but <1.0; and rest of the 131 LIS journals having Average SJR indicator <0.5. There are only 23 LIS journals (11.61%) have Average SJR indicator equal to or more than 1.0 and show that these are the most prestigious journals of LIS field indexed in the Scopus.

The figure 4.1 displays graphical representation of SJR indicators for LIS journals which also proves the correct interpretation of data given in table 4.1.

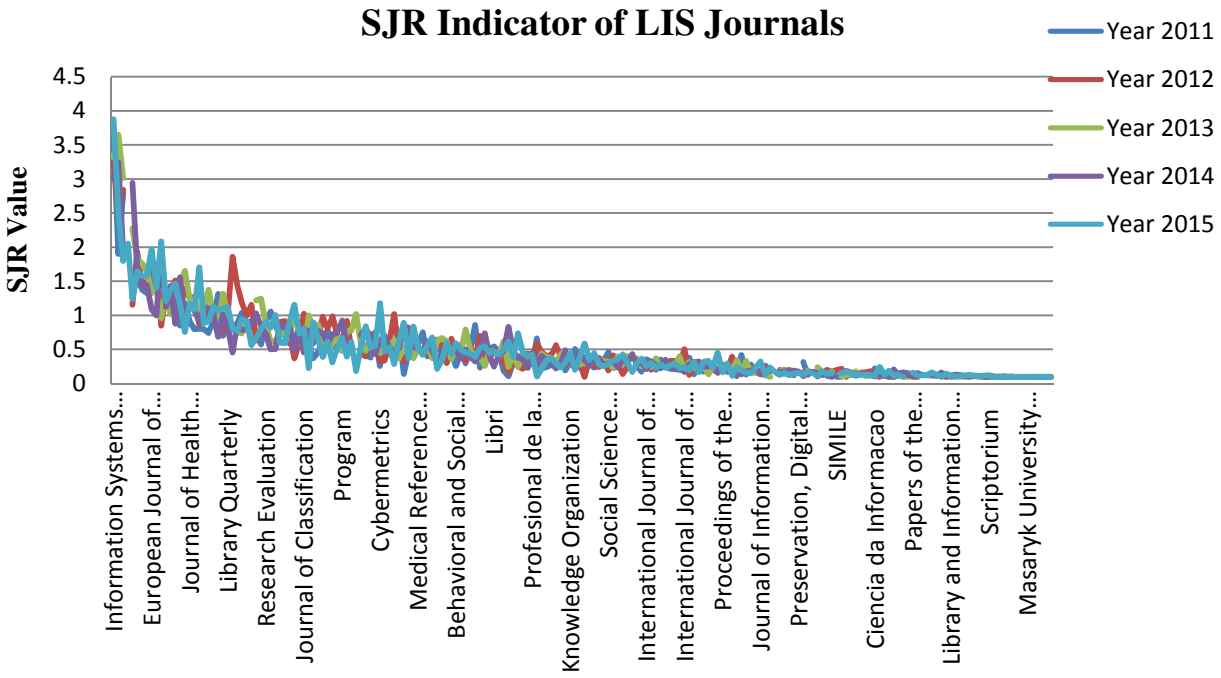

Fig. 4.1: Graphical representation of SJR indicators of LIS journals

4.2.2 Mapping of LIS Journals based on h-index

J. E. Hirsch (2005) made an effort to quantify an individual's scientific research output and finally proposed *h*-index, defined as the number of papers with citation number higher or equal to *h* as a useful index to characterize the scientific output of a researcher. Similarly,

the values and methodology of *h*-index have been applied to know the scientific research output of journals in various disciplines also. The higher *h*-index value for the journal represents higher level of scientific research output of the journal in particular field. The table 4.2 displays the *h*-index values for the LIS journals indexed in Scopus.

Table 4.2: *h*-index values of LIS journals indexed in Scopus

SN	Title of the Journal	*h*-index (2015)	Average SJR Value
1.	IEEE Transactions on Information Theory	232	2.4738
2.	Journal of Chemical Information and Modeling	131	1.501
3.	Information Systems Research	128	3.4082
4.	Journal of the Association for Information Science and Technology	112	1.515
5.	Scientometrics	86	1.2618
6.	International Journal of Geographical Information Science	85	1.0212
7.	European Journal of Information Systems	84	1.474
8.	Information Processing and Management	80	0.739
9.	International Journal of Information Management	77	1.088
10.	Government Information Quarterly	71	1.2428
11.	Journal of Health Communication	64	1.145
12.	Journal of Information Technology	61	1.232
13.	Social Science Computer Review	54	1.0216
14.	Journal of Documentation	53	0.9384
15.	Journal of Information Science	51	0.872
16.	Information and Organization	49	1.7808
17.	Journal of the Medical Library Association : JMLA	48	0.9466
18.	Information Retrieval	47	0.5868
19.	Information Systems Management	47	0.4796
20.	Journal of Academic Librarianship	47	1.4308
21.	Information Communication and Society	46	1.3672
22.	Library and Information Science Research	45	1.7294
23.	Journal of Enterprise Information Management	43	0.4358
24.	Online Information Review	43	0.579
25.	D-Lib Magazine	42	0.537
26.	College and Research Libraries	41	2.7532
27.	Information Research	38	0.4738
28.	Library Trends	38	0.5202
29.	Ethics and Information Technology	37	0.5148
30.	Information Technology and People	35	0.5516
31.	Language Resources and Evaluation	34	0.3748
32.	Research Evaluation	33	0.8242
33.	Aslib Journal of Information Management	32	0.6588

SN	Title of the Journal	*h*-index (2015)	Average SJR Value
34.	Health Information and Libraries Journal	32	0.6046
35.	Journal of Classification	31	0.733
36.	Proceedings of the ASIST Annual Meeting	31	0.2228
37.	Journal of Cheminformatics	30	1.0578
38.	Journal of Information Science and Engineering	30	0.2398
39.	Library Quarterly	30	0.9674
40.	Social Science Information	30	0.3122
41.	Electronic Library	29	0.7614
42.	Library Hi Tech	29	0.9006
43.	Information Resources Management Journal	28	0.1838
44.	International Journal on Digital Libraries	28	0.3068
45.	Reference and User Services Quarterly	28	1.0078
46.	Information Technology and Libraries	27	0.9804
47.	Education and Information Technologies	25	0.3744
48.	Archival Science	24	0.5864
49.	Knowledge Management Research and Practice	24	0.4764
50.	Reference Services Review	24	1.242
51.	World Patent Information	23	0.3254
52.	American Archivist	22	0.6414
53.	Informing Science	22	0.2002
54.	Journal of Digital Information	22	0.36
55.	Journal of Librarianship and Information Science	22	0.7728
56.	Knowledge Organization	22	0.3376
57.	Program	22	0.6354
58.	Accountability in Research	21	0.3464
59.	Archivaria	21	0.4762
60.	International Information and Library Review	21	0.3014
61.	Journal of Library Administration	21	1.031
62.	Library Resources and Technical Services	21	0.8514
63.	New Library World	21	0.7638
64.	Library Management	20	0.6836
65.	Library Review	20	0.4444
66.	Libri	20	0.4422
67.	Scientific data	19	2.049
68.	Serials Review	19	0.4782
69.	VINE	19	0.3066
70.	Journal of Information and Computational Science	18	0.1584
71.	Library Collections, Acquisition and Technical Services	18	0.6762
72.	Terminology	18	0.2622
73.	College and Research Libraries News	17	0.7438
74.	Information Design Journal	17	0.1592
75.	Library Journal	17	0.1694
76.	Profesional de la Informacion	17	0.3652

SN	Title of the Journal	*h*-index (2015)	Average SJR Value
77.	Education for Information	16	0.2476
78.	International Journal of Data Mining and Bioinformatics	16	0.313
79.	International Journal of Metadata, Semantics and Ontologies	16	0.2798
80.	Malaysian Journal of Library and Information Science	16	0.3458
81.	OCLC Systems and Services	16	0.295
82.	Performance Measurement and Metrics	16	0.5438
83.	Reference Librarian	16	0.9468
84.	Science and Technology Libraries	16	0.5496
85.	Computers in the Schools	15	0.462
86.	Information Services and Use	15	0.269
87.	Medical Reference Services Quarterly	15	0.5348
88.	Australian Academic and Research Libraries	14	0.4192
89.	Canadian Journal of Information and Library Science	14	0.2662
90.	Cataloging and Classification Quarterly	14	0.6396
91.	Collection Building	14	0.5352
92.	Collection Management	14	1.1808
93.	College and Undergraduate Libraries	14	0.7398
94.	Information Development	14	0.2912
95.	Internet Reference Services Quarterly	14	0.7736
96.	Cybermetrics	13	0.5698
97.	Interlending and Document Supply	13	0.5832
98.	Journal of Information and Knowledge Management	13	0.184
99.	Records Management Journal	13	0.2616
100.	Serials Librarian	13	0.6266
101.	Journal of Business and Finance Librarianship	12	0.5548
102.	Journal of Web Librarianship	12	0.694
103.	Law Library Journal	12	0.3344
104.	Library Hi Tech News	12	0.3126
105.	Library Philosophy and Practice	12	0.2548
106.	Revista Espanola de DocumentacionCientifica	12	0.3918
107.	IFLA Journal	11	0.3412
108.	Insights	11	0.4892
109.	Journal of Library Metadata	11	0.4508
110.	Technical Services Quarterly	11	0.3656
111.	Behavioral and Social Sciences Librarian	10	0.478
112.	Bottom Line	10	0.337
113.	Development and Learning in Organisations	10	0.1282
114.	Issues in Science and Technology Librarianship	10	0.3512
115.	Journal of Digital Information Management	10	0.1408
116.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	10	0.7012
117.	LIBER Quarterly	10	0.2664
118.	Library	10	0.1272

SN	Title of the Journal	*h*-index (2015)	Average SJR Value
119.	New Review of Academic Librarianship	10	0.8542
120.	Webology	10	0.2684
121.	Australian Library Journal	9	0.2702
122.	Canadian Journal of Program Evaluation	9	0.392
123.	International Journal of Law and Information Technology	9	0.2628
124.	Journal of Electronic Resources Librarianship	9	0.4804
125.	Journal of Information Ethics	9	0.1614
126.	Journal of Library and Information Services in Distance Learning	9	0.4976
127.	Journal of Map and Geography Libraries	9	0.279
128.	Progress in Informatics	9	0.2144
129.	Public Library Quarterly	9	0.4518
130.	School Library Media Research	9	0.1826
131.	Ciencia da Informacao	8	0.1382
132.	Communications in Information Literacy	8	0.542
133.	Evidence Based Library and Information Practice	8	0.33325
134.	International Journal of Information Science and Management	8	0.1538
135.	Journal of Archival Organization	8	0.3434
136.	Library Leadership and Management	8	0.214
137.	Libres	8	0.2066
138.	African Journal of Library Archives and Information Science	7	0.1656
139.	Information-Wissenschaft und Praxis	7	0.1502
140.	Journal of Access Services	7	0.3228
141.	Journal of Electronic Resources in Medical Libraries	7	0.3434
142.	Journal of Information and Organizational Sciences	7	0.1356
143.	Notes	7	0.1388
144.	Notes and Queries	7	0.1138
145.	Annals of Library and Information Studies	6	0.30175
146.	InvestigacionBibliotecologica	6	0.1462
147.	Journal of Educational Media and Library Science	6	0.1456
148.	Journal of Hospital Librarianship	6	0.2668
149.	Legal Reference Services Quarterly	6	0.2364
150.	Music Reference Services Quarterly	6	0.2152
151.	PerspectivasemCiencia da Informacao	6	0.1978
152.	Community and Junior College Libraries	5	0.2064
153.	DESIDOC Journal of Library and Information Technology	5	0.241
154.	Grey Journal	5	0.1698
155.	Harvard Library Bulletin	5	0.1006
156.	Scriptorium	5	0.1068
157.	ZeitschriftfürBibliothekswesen und Bibliographie	5	0.1672
158.	Archives and Manuscripts	4	0.3
159.	Document Numerique	4	0.1116
160.	Documentaliste: Sciences de l'Information	4	0.131

SN	Title of the Journal	*h*-index (2015)	Average SJR Value
161.	Library and Archival Security	4	0.1494
162.	Library and Information Science	4	0.1148
163.	Papers of the Bibliographical Society of America	4	0.1246
164.	Quaerendo	4	0.107
165.	The Book Collector	4	0.1
166.	Transinformacao	4	0.1226
167.	Bulletin. John Rylands University Library of Manchester	3	0.112
168.	FontesArtisMusicae	3	0.1286
169.	Journal of Information Literacy	3	0.6025
170.	Microform and Digitization Review	3	0.121
171.	Pakistan Journal of Information Management and Libraries	3	0.1236
172.	Preservation, Digital Technology and Culture	3	0.1665
173.	Revista General de Informacion y Documentacion	3	0.1366
174.	Scire	3	0.14625
175.	Script and Print	3	0.1008
176.	Slavic and East European Information Resources	3	0.1146
177.	Transactions of the Cambridge Bibliographical Society	3	0.1018
178.	VOEB-Mitteilungen	3	0.1186
179.	AIB Studi	2	0.172
180.	BiD	2	0.121333
181.	BilgiDunyasi	2	0.1235
182.	Bulletin des Bibliotheques de France	2	0.104667
183.	Cuadernos.info	2	0.16
184.	East Asian Publishing and Society	2	0.102
185.	Informacion, Cultura y Sociedad	2	0.107333
186.	International Journal of the Book	2	0.1435
187.	Prologue	2	0.102
188.	Tuna	2	0.1
189.	VjesnikBibliotekaraHrvatske	2	0.1674
190.	Anales de Documentacion	1	0.101
191.	Archives	1	0.10175
192.	Biblios	1	0.1015
193.	Gazette des Archives	1	0.100333
194.	Ibersid	1	0.112667
195.	International Journal of Multimedia Information Retrieval	1	0.123
196.	Masaryk University Journal of Law and Technology	1	0.101
197.	Libraries and the Cultural Record	--	0.12475
198.	SIMILE	--	0.15

Table 4.2 represents *h*-index values of the LIS journals indexed in Scopus. From the observation of table 4.2, it has been found that journal *IEEE Transactions on Information*

Theory has the highest *h*-index value (232) amongst all LIS journals. It has been observed that except *IEEE Transactions on Information Theory*, no other journal has *h*-index value equal to 200 or more than that. There are three journals *Journal of Chemical Information and Modeling* (131), *Information Systems Research* (128), and *Journal of the Association for Information Science and Technology* (112) that have *h*-index values more than 100 but less than 200. There are 4 online journals in the field of LIS which have *h*-index values more than 100. Further there are 11 LIS journals that have *h*-index values more than 50 but less than 100. There are 105 LIS journals that have *h*-index values equal to or more that 10 but less than 50. This range of journals covers 53% of total LIS journals indexed in Scopus. There are 76 LIS journals that have *h*-index values less than 10 and cover 38% journals in this category. Two journals *Libraries and the Cultural Record* and *SIMILE* do not recorded any *h*-index values. The journal *IEEE Transactions on Information Theory* has the highest *h*-index values followed by *Journal of Chemical Information and Modeling* (131), *Information Systems Research* (128), *Journal of the Association for Information Science and Technology* (112), *Scientometrics* (86), *International Journal of Geographical Information Science* (85), *European Journal of Information Systems* (84), *Information Processing and Management* (80), *International Journal of Information Management* (77), and *Government Information Quarterly* (71). Moreover, the *h*-index values of some other well known and prestigious journals of LIS are as follows: *Journal of Documentation* (53), *Journal of Information Science* (51), *Journal of the Medical Library Association : JMLA* (48), *Information Systems Management* (47), *Journal of Academic Librarianship* (47), *Library and Information Science Research* (45), *Online Information Review* (43), *D-Lib Magazine* (42), *College and Research Libraries* (41), *Information Research* (38), *Aslib Journal of Information Management* (32), *Library Quarterly* (30), *Electronic Library* (29), *Library Hi Tech* (29), *International Information and Library Review* (21), *Libri* (20), *Library Journal* (17), *Malaysian Journal of Library and Information Science* (16), *Collection Building* (14), *Law Library Journal* (12), *Library Philosophy and Practice* (12), *IFLA Journal* (11), and *Webology* (10). In the case of Indian LIS journals, journals *Journal of Digital Information Management* (10), *Annals of Library and Information Studies* (6), and *DESIDOC Journal of Library and Information Technology* (5) are in the list. Form the observation of Table 4.2, it

has been found that there are 15 LIS journals (7.57%) having *h*-index values ≥ 50; 181 LIS journals having *h*-index values ≥ 1 but <49; and 2 journals does not have any *h*-index values.

Figure 4.2 represents *h*-index values for the LIS journals. The graphical representation of *h*-index values and SJR indicator shows positive correlation except few cases. The higher *h*-index value leads to higher SJR value and vice versa.

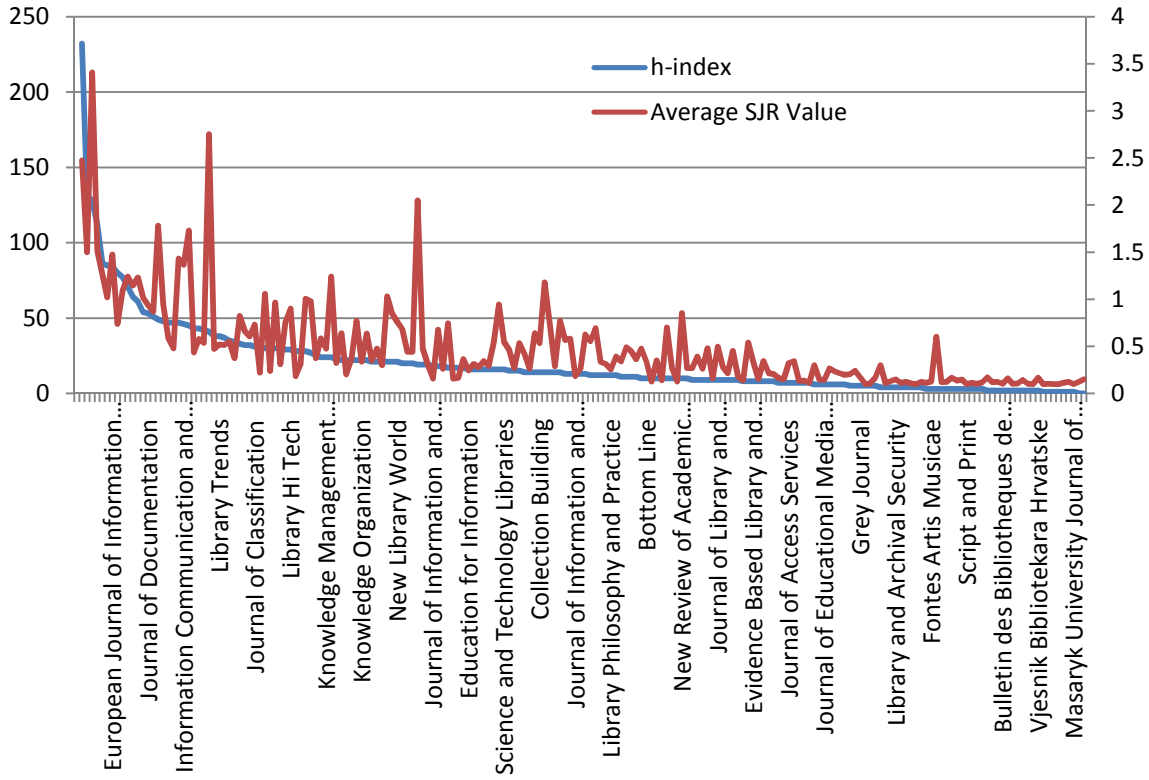

Fig. 4.2: Graphical representation of *h*-index of LIS journals

4.2.3 Mapping of Productivity of LIS Journals

The journals produces number of scholarly research papers in an issue. Every journal has its own publication policy and accordingly they accept manuscripts for publishing. The periodicity of the journal also varies and it affects the total research production in the volume. The Scopus counts year wise research production of LIS journals. The study covers the research production of LIS journals for five years. The table 4.3 represents the total

research productivity of LIS journals during the study period as well as year wise research productivity also.

Table 4.3: Most productive LIS journals indexed in Scopus

SN	Title of the Journal	Documents – Year wise					Total Docs.
		2011	2012	2013	2014	2015	
1.	Journal of Information and Computational Science	472	620	625	677	696	3090
2.	IEEE Transactions on Information Theory	573	504	561	518	449	2605
3.	Scientometrics	228	267	265	396	344	1500
4.	Journal of Chemical Information and Modeling	305	308	302	315	247	1477
5.	Journal of the Association for Information Science and Technology	196	186	210	195	201	988
6.	Library Journal	171	156	201	306	106	940
7.	Notes and queries	187	178	191	195	182	933
8.	Journal of Health Communication	131	141	134	141	190	737
9.	Proceedings of the ASIST Annual Meeting	170	201	173	164	0	708
10.	International Journal of Geographical Information Science	107	116	129	134	116	602
11.	Library Philosophy and Practice	195	78	0	156	64	493
12.	College and Research Libraries News	97	95	95	99	96	482
13.	Journal of Information Science and Engineering	120	67	72	108	115	482
14.	Documentaliste: Sciences de l'Information	97	20	155	90	115	477
15.	Journal of Academic Librarianship	77	55	89	106	110	437
16.	Development and Learning in Organisations	145	130	56	43	53	427
17.	Profesional de la Informacion	93	87	71	73	89	413
18.	International Journal of Information Management	72	66	95	82	82	397
19.	Information Communication and Society	61	70	82	91	92	396
20.	Information Processing and Management	66	82	93	62	73	376
21.	Government Information Quarterly	56	77	61	90	56	340
22.	Serials Librarian	68	60	64	76	72	340
23.	Journal of Cheminformatics	120	38	48	48	83	337
24.	Journal of the Medical Library Association : JMLA	57	77	57	54	65	310
25.	Evidence Based Library and Information Practice	--	67	87	68	83	305
26.	Journal of Information Science	52	43	62	66	80	303
27.	Journal of Digital Information Management	46	59	76	54	64	299
28.	Technical Services Quarterly	56	22	60	79	81	298
29.	Electronic Library	63	50	60	53	70	296

SN	Title of the Journal	Documents – Year wise					Total Docs.
		2011	2012	2013	2014	2015	
30.	Information Systems Research	51	76	63	51	48	289
31.	Online Information Review	58	57	68	53	52	288
32.	Journal of Documentation	57	50	50	55	63	275
33.	PerspectivasemCiencia da Informacao	54	38	57	80	46	275
34.	International Journal of Data Mining and Bioinformatics	42	44	54	52	73	265
35.	Cataloging and Classification Quarterly	38	47	52	75	50	262
36.	VOEB-Mitteilungen	63	54	49	51	44	261
37.	Information Research	56	52	52	52	46	258
38.	New Library World	53	56	56	41	52	258
39.	Journal of Library Administration	55	57	36	55	53	256
40.	D-Lib Magazine	44	41	43	58	67	253
41.	Library Hi Tech News	55	52	55	47	44	253
42.	Information Development	38	36	41	83	51	249
43.	Serials Review	57	52	59	31	49	248
44.	World Patent Information	52	47	39	55	52	245
45.	Library Review	66	51	58	33	34	242
46.	Insights	59	45	42	54	41	241
47.	Library Management	59	37	53	40	49	238
48.	Library Hi Tech	54	49	47	46	41	237
49.	Information-Wissenschaft und Praxis	58	55	32	44	47	236
50.	Bulletin des Bibliotheques de France	--	--	159	41	35	235
51.	Social Science Computer Review	37	37	51	53	51	229
52.	VjesnikBibliotekaraHrvatske	43	31	71	37	45	227
53.	College and Research Libraries	39	38	40	46	63	226
54.	Library Trends	44	43	48	38	52	225
55.	European Journal of Information Systems	53	45	43	42	41	224
56.	Gazette des Archives	--	--	58	95	59	212
57.	Reference and User Services Quarterly	42	44	44	40	42	212
58.	ZeitschriftfürBibliothekswesen und Bibliographie	45	35	45	52	33	210
59.	Reference Services Review	44	43	45	35	40	207
60.	Education and Information Technologies	22	29	72	49	34	206
61.	Knowledge Organization	33	37	34	45	57	206
62.	Medical Reference Services Quarterly	37	38	42	45	44	206
63.	Health information and libraries journal	45	40	39	42	39	205
64.	Library and Information Science Research	43	40	41	28	45	197
65.	Journal of Hospital Librarianship	38	40	38	38	40	194
66.	Journal of Enterprise Information Management	40	29	40	42	41	192
67.	Knowledge Management Research and Practice	36	35	38	39	40	188
68.	Aslib Journal of Information Management	39	40	36	35	36	186

SN	Title of the Journal	Documents – Year wise					Total Docs.
		2011	2012	2013	2014	2015	
69.	DESIDOC Journal of Library and Information Technology	--	--	66	63	54	183
70.	Language Resources and Evaluation	26	34	60	40	23	183
71.	Reference Librarian	40	44	33	34	31	182
72.	Research Evaluation	42	37	32	31	37	179
73.	Journal of Information and Knowledge Management	31	31	42	37	36	177
74.	Revista Espanola de DocumentacionCientifica	29	35	41	39	33	177
75.	IFLA Journal	39	31	32	39	35	176
76.	Journal of Electronic Resources Librarianship	34	24	40	35	43	176
77.	International Information and Library Review	60	54	26	16	10	166
78.	Bottom Line	45	33	30	30	21	159
79.	Information Systems Management	33	35	32	30	29	159
80.	Library Leadership and Management	31	28	36	34	30	159
81.	Social Science Information	38	32	32	29	27	158
82.	Journal of Information Technology	33	38	24	28	34	157
83.	Information Services and Use	33	29	33	41	20	156
84.	Interlending and Document Supply	36	35	23	33	29	156
85.	Issues in Science and Technology Librarianship	36	27	18	35	36	152
86.	Australian Library Journal	38	27	28	27	31	151
87.	InvestigacionBibliotecologica	27	27	27	31	36	148
88.	College and Undergraduate Libraries	34	27	30	28	28	147
89.	FontesArtisMusicae	8	18	3	85	33	147
90.	Australian Academic and Research Libraries	40	39	23	23	20	145
91.	Journal of Library and Information Services in Distance Learning	20	32	35	24	31	142
92.	Accountability in Research	30	25	26	27	33	141
93.	Prologue	39	39	33	20	10	141
94.	Annals of Library and Information Studies	--	29	27	45	38	139
95.	Journal of Electronic Resources in Medical Libraries	40	28	22	25	23	138
96.	Information Technology and Libraries	32	32	26	19	27	136
97.	Collection Building	41	26	33	17	18	135
98.	International Journal of Metadata, Semantics and Ontologies	20	25	31	33	25	134
99.	Law Library Journal	37	17	27	28	25	134
100.	Journal of Librarianship and Information Science	24	24	23	31	28	130
101.	Library Quarterly	21	22	26	33	28	130

SN	Title of the Journal	Documents – Year wise					Total Docs.
		2011	2012	2013	2014	2015	
102.	Libri	30	22	22	32	24	130
103.	VINE	26	25	23	28	27	129
104.	Science and Technology Libraries	29	26	27	27	19	128
105.	Ethics and Information Technology	28	26	24	24	25	127
106.	Program	33	23	25	20	25	126
107.	Information Retrieval	28	24	28	20	24	124
108.	OCLC Systems and Services	28	25	26	24	21	124
109.	International Journal of Information Science and Management	15	26	23	37	20	121
110.	Information Technology and People	23	20	19	21	36	119
111.	Journal of Web Librarianship	28	28	29	21	11	117
112.	Transinformacao	18	18	24	30	27	117
113.	American Archivist	37	24	28	25	0	114
114.	Archival Science	22	26	17	33	16	114
115.	Ciencia da Informacao	35	17	34	0	25	111
116.	Journal of Business and Finance Librarianship	17	24	25	21	24	111
117.	Public Library Quarterly	20	21	22	24	24	111
118.	International Journal of the Book	--	53	27	16	14	110
119.	Malaysian Journal of Library and Information Science	28	20	22	20	20	110
120.	Slavic and East European Information Resources	20	26	22	20	21	109
121.	Behavioral and Social Sciences Librarian	24	17	24	22	21	108
122.	Journal of Educational Media and Library Science	25	25	19	21	18	108
123.	Journal of Map and Geography Libraries	23	22	22	20	21	108
124.	Library and Information Science	22	4	41	36	3	106
125.	Collection Management	23	25	21	20	16	105
126.	Computers in the Schools	22	22	23	20	17	104
127.	Journal of Classification	23	18	20	17	23	101
128.	Library Resources and Technical Services	20	23	15	27	15	100
129.	The Book Collector	32	30	33	5	0	100
130.	Grey Journal	21	19	14	22	23	99
131.	New Review of Academic Librarianship	15	14	22	19	27	97
132.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	23	24	19	15	15	96
133.	Music Reference Services Quarterly	19	20	19	22	16	96
134.	Journal of Access Services	22	17	20	24	12	95
135.	Communications in Information Literacy	16	16	23	19	18	92
136.	LIBER Quarterly	16	37	8	18	13	92
137.	Revista General de Informacion y Documentacion	16	15	18	17	26	92

SN	Title of the Journal	Documents – Year wise					Total Docs.
		2011	2012	2013	2014	2015	
138.	Scire	--	25	18	36	13	92
139.	Information Resources Management Journal	20	19	17	19	16	91
140.	Quaerendo	33	23	9	12	12	89
141.	Journal of Library Metadata	11	24	21	16	16	88
142.	Performance Measurement and Metrics	18	22	16	13	19	88
143.	Tuna	--	48	29	10	0	87
144.	Document Numerique	21	18	19	19	6	83
145.	Canadian Journal of Information and Library Science	20	8	16	16	22	82
146.	Records Management Journal	20	15	16	13	16	80
147.	BiD	--	--	29	24	26	79
148.	Scientific data	--	--	--	--	79	79
149.	Legal Reference Services Quarterly	22	13	15	13	14	77
150.	Archivaria	14	13	16	20	12	75
151.	International Journal on Digital Libraries	0	21	7	26	21	75
152.	Canadian Journal of Program Evaluation	0	21	40	7	6	74
153.	Information Design Journal	27	0	21	26	0	74
154.	Journal of Information Ethics	20	22	22	10	0	74
155.	International Journal of Law and Information Technology	17	16	13	14	13	73
156.	Community and Junior College Libraries	22	16	9	11	14	72
157.	Internet Reference Services Quarterly	15	8	19	18	11	71
158.	Journal of Information and Organizational Sciences	15	15	12	13	16	71
159.	Scriptorium	15	15	15	13	13	71
160.	Information and Organization	11	15	18	13	11	68
161.	Library Collections, Acquisition and Technical Services	14	15	15	11	9	64
162.	Papers of the Bibliographical Society of America	14	12	18	13	6	63
163.	Script and Print	13	11	10	17	11	62
164.	Cuadernos.info	--	--	--	30	29	59
165.	Webology	10	10	12	15	12	59
166.	Library	11	13	10	10	14	58
167.	Terminology	13	12	10	12	11	58
168.	Archives and Manuscripts	--	--	--	43	14	57
169.	Bulletin. John Rylands University Library of Manchester	--	--	0	34	23	57
170.	Journal of Archival Organization	15	14	10	17	0	56
171.	Notes	9	12	11	12	12	56
172.	Biblios	--	--	--	27	25	52
173.	Ibersid	--	--	21	18	10	49
174.	School Library Media Research	11	14	8	7	7	47

SN	Title of the Journal	Documents – Year wise					Total Docs.
		2011	2012	2013	2014	2015	
175.	African Journal of Library Archives and Information Science	13	13	0	18	0	44
176.	Informacion, Cultura y Sociedad	--	--	13	15	16	44
177.	Pakistan Journal of Information Management and Libraries	17	7	7	6	6	43
178.	Education for Information	0	18	5	4	14	41
179.	Harvard Library Bulletin	5	33	0	0	0	38
180.	Progress in Informatics	13	7	11	7	0	38
181.	BilgiDunyasi	--	--	--	22	13	35
182.	Libres	6	1	7	11	7	32
183.	Masaryk University Journal of Law and Technology	--	--	--	15	17	32
184.	Transactions of the Cambridge Bibliographical Society	4	0	12	9	7	32
185.	Archives	--	5	9	6	9	29
186.	AIB Studi	--	--	--	--	28	28
187.	Preservation, Digital Technology and Culture	--	--	--	3	24	27
188.	Journal of Digital Information	11	15	0	0	0	26
189.	Journal of Information Literacy	--	--	--	--	25	25
190.	Microform and Digitization Review	--	24	0	0	0	24
191.	East Asian Publishing and Society	--	5	7	6	5	23
192.	Informing Science	4	3	7	2	7	23
193.	Library and Archival Security	10	6	6	0	0	22
194.	Anales de Documentacion	--	--	--	9	9	18
195.	International Journal of Multimedia Information Retrieval	--	--	0	0	13	13
196.	Cybermetrics	1	4	1	0	1	7
197.	Libraries and the Cultural Record	1	0	0	0	--	1
198.	SIMILE	0	0	--	--	--	0

From the observation of Table 4.3, it has been found that journal *Journal of Information and Computational Science* has produced the highest number of research papers (3090) during the period of study and identified as most productive journal in LIS followed by *IEEE Transactions on Information Theory* (2605), *Scientometrics* (1500), *Journal of Chemical Information and Modeling* (1477), *Journal of the Association for Information Science and Technology* (988), *Library Journal* (940), *Notes and queries* (933), *Journal of Health Communication* (737), *Proceedings of the ASIST Annual Meeting* (708), *International Journal of Geographical Information Science* (602), and *Library Philosophy and Practice* (493). The journal *Journal of Information and Computational Science* is the single journal

that has more than 3000 research production during five year period whereas *IEEE Transactions on Information Theory* is the journal that has more than 2000 research articles during the study period. There are 4 LIS journals which have more than 1000 research production in a five year period and 6 LIS journals have more than 500 research publications. The journal *SIMILE* could not produce any research during five year period while journal *Libraries and the Cultural Record* produced only one research during the study period. The journal *Cybermetrics* has produced only 7 research articles in a five year term. The following table represents the number of journals and research production range of them:

Table 4.4: Research production range of LIS journals

Research Production Range	No. of Journals	% of Total Journals	% of Total Research Production
3000 or more	1	0.5%	7.32%
2000–2999	1	0.5%	6.17%
1000–1999	2	1.01%	7.05%
0–999	194	97.97%	79.45%

From the observation of Table 4.4, it has been inference that majority of LIS journals (194, 97.97%) belong to 0 – 999 research production range and produced 79.45% research of total research. The publication range 1000 – 1999 covers only 2 LIS journals (1.01% of total journals) and produced more than 7% of research. A single journal falling under the range of 2000 – 2999 research articles cover total 6.17% of research publications whereas another single journal falling under the range of 3000 or more cover 7.32% research publications. The top 10 LIS journals (5.05% of total journals) cover 32.17% of research publications and considered as most productive LIS journals than others. There are total 42203 research publications produced by 198 LIS journals during 5 year period. By calculating the average publication per journal, the figure comes at 213 research articles per journal. Using this average publication per journal as a parameter, it has been found that there are 55 LIS journals which have produced more than the average publication and considered as most productive journal of the field. The Indian LIS journals *DESIDOC Journal of Library and Information Technology* (183) and *Annals of Library and Information Studies* (139) have produced less than average research publications and falls under the category of less productive journals whereas another Indian LIS journal *Journal of Digital Information*

Management (299) produced more than average research articles and is placed in 27th position amongst all LIS journals. There are 143 LIS journals (72%) falls under the category of less productive journals whereas 55 LIS journals (28% of total LIS journals) fall under the most productive journals category. A total of 64.64% research publications have been produced by 55 LIS journals while 35.36% research has been produced by 143 LIS journals which are categorized as less productive journals.

4.2.4 Mapping of Total Published Articles and References in LIS Journals

The LIS journals indexed in Scopus has produced 42203 research articles during five year period. For writing the research article, author cites related works carried out by other researchers in the same field and these related works gathered as references. The higher number of references indicates the depth of the work carried out by the author. The number of references varies based on the topic of study and its origin. If the research topic is very recent in origin, there will be lack of sufficient number of research articles for citation and thus references in the author's work. Though, higher number of references in a research article is good but it does not denote the high quality of the research paper. The total references have been counted for all the LIS journals for five years. There is no difference in the terms article, paper and documents, so the term research papers, research articles and research documents have been used interchangeably in the study.

Table 4.5: Total published articles and references in LIS journals

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
1.	IEEE Transactions on Information Theory	16250	14944	17006	16506	14874	79580	2605	30.55
2.	Journal of Chemical Information and Modeling	14422	15234	15498	16238	14035	75427	1477	51.07
3.	Scientometrics	6602	8367	9800	14032	13241	52042	1500	34.69
4.	Journal of the Association for Information Science and Technology	8831	8850	9219	9592	10805	47297	988	47.87
5.	Journal of Information and Computational Science	6541	9061	9083	9950	10274	44909	3090	14.53
6.	Journal of Health Communication	5289	4575	5308	5948	8287	29407	737	39.90
7.	International Journal of Geographical Information Science	4482	5254	5571	5919	4868	26094	602	43.35
8.	International Journal of Information Management	3161	2998	4896	4137	4382	19574	397	49.30
9.	Information Systems Research	2815	4588	4437	3359	3224	18423	289	63.75
10.	Information Communication and Society	2781	3135	3234	4261	4557	17968	396	45.37
11.	Government Information Quarterly	2711	3955	3013	4825	3007	17511	340	51.50
12.	European Journal of Information Systems	3080	3002	3347	2751	3234	15414	224	68.81
13.	Information Processing and Management	2509	3199	3755	2785	3126	15374	376	40.89
14.	Journal of Documentation	2691	2138	2093	2780	3838	13540	275	49.24
15.	Proceedings of the ASIST Annual Meeting	2979	3495	3676	2955	0	13105	708	18.51
16.	Journal of Information Science and Engineering	2740	1423	1818	3047	3034	12062	482	25.02
17.	Journal of Information Science	1949	1462	2560	2429	3532	11932	303	39.38
18.	Notes and queries	2170	2332	2079	3002	2163	11746	933	12.59
19.	Journal of Academic Librarianship	2265	1269	1989	2557	3633	11713	437	26.80
20.	Online Information Review	2248	2065	2354	2338	2608	11613	288	40.32
21.	Information Research	2109	1989	2526	2277	2548	11449	258	44.38
22.	Journal of Cheminformatics	2102	1270	1982	2030	3505	10889	337	32.31

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
23.	Knowledge Management Research and Practice	1822	1441	2297	2602	2680	10842	188	57.67
24.	Journal of Enterprise Information Management	1825	1568	1925	2464	3033	10815	192	56.33
25.	Library Philosophy and Practice	3509	1494	0	3875	1911	10789	493	21.88
26.	Library and Information Science Research	1652	1899	1780	1394	2341	9066	197	46.02
27.	Profesional de la Informacion	1648	1697	1448	1633	2598	9024	413	21.85
28.	College and Research Libraries	1158	1090	1456	2608	2591	8903	226	39.39
29.	Library Trends	1548	1517	2022	1290	2513	8890	225	39.51
30.	Social Science Computer Review	1220	1301	1997	1951	2390	8859	229	38.69
31.	Electronic Library	1325	1667	1417	1863	2586	8858	296	29.93
32.	Journal of Information Technology	1455	1699	1760	1669	1932	8515	157	54.24
33.	Cataloging and Classification Quarterly	1174	1711	1674	1696	2023	8278	262	31.59
34.	International Journal of Data Mining and Bioinformatics	1255	1198	1591	1733	2363	8140	265	30.72
35.	Journal of Information and Knowledge Management	1251	1220	1864	1844	1686	7865	177	44.44
36.	Aslib Journal of Information Management	1375	1169	1370	1680	2117	7711	186	41.46
37.	Social Science Information	1555	1310	1720	1757	1283	7625	158	48.26
38.	Information Development	818	768	1145	3187	1644	7562	249	30.37
39.	Information Technology and People	1075	1112	1224	1402	2625	7438	119	62.50
40.	VINE	1251	1287	1325	1739	1791	7393	129	57.31
41.	Information Systems Management	1304	1168	1501	1613	1659	7245	159	45.57
42.	Law Library Journal	1877	1108	1147	1922	1187	7241	134	54.04
43.	Library Review	1552	1567	1264	1390	1372	7145	242	29.52
44.	Education and Information Technologies	636	924	2464	1852	1103	6979	206	33.88
45.	Language Resources and Evaluation	886	1221	2119	1734	983	6943	183	37.94
46.	PerspectivasemCiencia da Informacao	1354	982	1116	2055	1313	6820	275	24.8
47.	Library Hi Tech	1227	1147	1410	1647	1339	6770	237	28.57

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
48.	Research Evaluation	1229	1170	1220	1448	1659	6726	179	37.58
49.	International Journal of Law and Information Technology	1589	1652	1677	637	916	6471	73	88.64
50.	Knowledge Organization	1141	1160	1086	1268	1755	6410	206	31.12
51.	New Library World	1234	1045	1099	1116	1856	6350	258	24.61
52.	Archivaria	1040	1530	1138	1109	1260	6077	75	81.03
53.	American Archivist	1630	1282	1782	1152	0	5846	114	51.28
54.	Archival Science	930	1281	927	1888	677	5703	114	50.03
55.	Reference Services Review	1100	891	1095	1146	1238	5470	207	26.43
56.	Information and Organization	836	1209	1267	1190	893	5395	68	79.34
57.	Information Retrieval	987	1058	1255	949	1116	5365	124	43.27
58.	Revista Espanola de DocumentacionCientifica	700	1068	1098	1370	1089	5325	177	30.08
59.	Libri	969	938	826	1360	1166	5259	130	40.45
60.	Journal of Librarianship and Information Science	794	815	968	1373	1308	5258	130	40.45
61.	Library Management	1157	707	1209	812	1336	5221	238	21.94
62.	Ethics and Information Technology	1280	887	917	1048	1069	5201	127	40.95
63.	Health information and libraries journal	929	1075	1088	905	1177	5174	205	25.24
64.	Journal of the Medical Library Association: JMLA	1173	999	1122	970	729	4993	310	16.11
65.	Accountability in Research	1254	795	960	862	1037	4908	141	34.81
66.	Legal Reference Services Quarterly	625	1083	1211	762	1035	4716	77	61.25
67.	International Information and Library Review	1592	1150	928	577	353	4600	166	27.71
68.	Journal of Digital Information Management	743	950	959	822	1091	4565	299	15.27
69.	Program	773	896	980	767	968	4384	126	34.79
70.	Reference and User Services Quarterly	1143	849	1040	642	662	4336	212	20.45
71.	Science and Technology Libraries	954	998	832	913	632	4329	128	33.82
72.	Journal of Library Administration	917	888	701	947	829	4282	256	16.73

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
73.	InvestigacionBibliotecologica	685	708	678	770	1339	4180	148	28.24
74.	Library Quarterly	816	898	675	847	924	4160	130	32
75.	International Journal of Metadata, Semantics and Ontologies	781	731	909	998	701	4120	134	30.75
76.	Information Resources Management Journal	779	931	978	682	738	4108	91	45.14
77.	Tuna	--	1510	2298	256	0	4064	87	46.71
78.	Scriptorium	770	828	788	806	853	4045	71	56.97
79.	Journal of Educational Media and Library Science	788	794	817	761	763	3923	108	36.32
80.	Library and Information Science	1108	75	1041	1569	48	3841	106	36.24
81.	World Patent Information	929	636	569	807	777	3718	245	15.18
82.	Script and Print	643	682	590	817	952	3684	62	59.42
83.	Library Resources and Technical Services	883	1045	489	945	320	3682	100	36.82
84.	VjesnikBibliotekaraHrvatske	699	636	1041	799	479	3654	227	16.09
85.	Computers in the Schools	592	924	683	773	658	3630	104	34.90
86.	Malaysian Journal of Library and Information Science	819	617	580	685	791	3492	110	31.75
87.	D-Lib Magazine	541	544	570	629	1164	3448	253	13.63
88.	IFLA Journal	598	553	672	627	986	3436	176	19.52
89.	Library	681	548	628	955	513	3325	58	57.33
90.	Evidence Based Library and Information Practice	--	794	1038	511	961	3304	305	10.83
91.	Information-Wissenschaft und Praxis	867	682	470	622	641	3282	236	13.91
92.	Serials Librarian	564	329	614	740	885	3132	340	9.21
93.	Australian Library Journal	808	573	732	406	546	3065	151	20.29
94.	Journal of Classification	522	515	610	520	799	2966	101	29.37
95.	Australian Academic and Research Libraries	533	539	603	741	548	2964	145	20.44
96.	Documentaliste: Sciences de l'Information	476	339	862	664	540	2881	477	6.04

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
97.	Reference Librarian	510	580	531	680	569	2870	182	15.77
98.	Scientific data	--	--	--	--	2845	2845	79	36.01
99.	International Journal of Information Science and Management	322	547	598	759	617	2843	121	23.49
100.	DESIDOC Journal of Library and Information Technology	--	--	995	933	899	2827	183	15.45
101.	ZeitschriftfürBibliothekswesen und Bibliographie	553	437	565	612	639	2806	210	13.36
102.	Annals of Library and Information Studies	--	468	596	1043	696	2803	139	20.17
103.	Bulletin. John Rylands University Library of Manchester	--	--	0	2009	706	2715	57	47.63
104.	Transinformacao	462	412	563	624	653	2714	117	23.19
105.	International Journal on Digital Libraries	0	762	272	882	781	2697	75	35.96
106.	Revista General de Informacion y Documentacion	432	458	492	427	871	2680	92	29.13
107.	Canadian Journal of Information and Library Science	549	278	557	627	649	2660	82	32.44
108.	Quaerendo	483	650	479	461	580	2653	89	29.81
109.	Serials Review	728	505	555	365	497	2650	248	10.69
110.	College and Undergraduate Libraries	479	419	529	560	614	2601	147	17.69
111.	International Journal of the Book	--	1206	590	406	380	2582	110	23.47
112.	Information Technology and Libraries	558	608	382	440	552	2540	136	18.68
113.	Medical Reference Services Quarterly	398	504	575	492	560	2529	206	12.28
114.	Papers of the Bibliographical Society of America	593	636	525	417	356	2527	63	40.11
115.	Records Management Journal	467	491	477	455	625	2515	80	31.44
116.	Slavic and East European Information Resources	698	507	410	541	341	2497	109	22.91
117.	Ciencia da Informacao	894	314	1004	0	273	2485	111	22.39

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
118.	New Review of Academic Librarianship	454	331	599	531	538	2453	97	25.29
119.	Library Hi Tech News	511	355	713	366	452	2397	253	9.47
120.	Insights	492	415	381	580	438	2306	241	9.57
121.	Terminology	420	480	453	394	539	2286	58	39.41
122.	Document Numerique	521	590	489	503	166	2269	83	27.34
123.	Cuadernos.info	--	--	--	956	1271	2227	59	37.75
124.	College and Research Libraries News	328	457	374	589	462	2210	482	4.59
125.	Journal of Hospital Librarianship	472	424	374	460	478	2208	194	11.38
126.	Journal of Library Metadata	244	662	539	455	305	2205	88	25.06
127.	Journal of Library and Information Services in Distance Learning	253	545	514	363	526	2201	142	15.5
128.	Journal of Electronic Resources Librarianship	441	410	453	505	379	2188	176	12.43
129.	Public Library Quarterly	409	504	325	350	581	2169	111	19.54
130.	Journal of Business and Finance Librarianship	445	402	385	394	517	2143	111	19.31
131.	Journal of Map and Geography Libraries	494	206	524	506	413	2143	108	19.84
132.	Behavioral and Social Sciences Librarian	639	291	517	319	358	2124	108	19.67
133.	VOEB-Mitteilungen	295	553	560	402	288	2098	261	8.04
134.	Canadian Journal of Program Evaluation	0	569	1036	216	236	2057	74	27.79
135.	School Library Media Research	548	538	325	260	386	2057	47	43.77
136.	Journal of Web Librarianship	330	432	576	468	222	2028	117	17.33
137.	Interlending and Document Supply	422	433	230	475	408	1968	156	12.62
138.	Scire	--	606	354	692	306	1958	92	21.28
139.	Issues in Science and Technology Librarianship	500	423	222	405	396	1946	152	12.80
140.	Library Leadership and Management	306	399	374	288	537	1904	159	11.97
141.	Communications in Information Literacy	309	394	313	448	432	1896	92	20.61
142.	Journal of Information and Organizational Sciences	377	300	244	304	666	1891	71	26.63

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
143.	Collection Building	261	300	458	446	372	1837	135	13.61
144.	OCLC Systems and Services	414	285	383	414	331	1827	124	14.73
145.	Webology	289	380	296	436	404	1805	59	30.59
146.	Collection Management	293	363	431	322	301	1710	105	16.29
147.	Notes	367	283	208	417	415	1690	56	30.18
148.	Performance Measurement and Metrics	304	270	336	235	473	1618	88	18.39
149.	LIBER Quarterly	207	538	133	425	310	1613	92	17.53
150.	Grey Journal	286	391	186	332	348	1543	99	15.59
151.	Technical Services Quarterly	324	223	433	291	265	1536	298	5.15
152.	Information Services and Use	520	181	364	289	180	1534	156	9.83
153.	Archives and Manuscripts	--	--	--	858	645	1503	57	26.37
154.	Journal of Archival Organization	535	369	371	206	0	1481	56	26.45
155.	BiD	--	--	447	406	605	1458	79	18.46
156.	Internet Reference Services Quarterly	201	85	567	284	315	1452	71	20.45
157.	Library Collections, Acquisition and Technical Services	365	321	225	250	249	1410	64	22.03
158.	Journal of Electronic Resources in Medical Libraries	463	195	167	261	322	1408	138	10.20
159.	Transactions of the Cambridge Bibliographical Society	201	0	495	317	362	1375	32	42.97
160.	Information Design Journal	398	0	486	478	0	1362	74	18.41
161.	Music Reference Services Quarterly	379	381	233	189	133	1315	96	13.69
162.	Community and Junior College Libraries	219	266	283	186	351	1305	72	18.13
163.	FontesArtisMusicae	143	222	25	539	374	1303	147	8.86
164.	Education for Information	0	317	166	157	661	1301	41	31.73
165.	African Journal of Library Archives and Information Science	437	365	0	473	0	1275	44	28.98
166.	East Asian Publishing and Society	--	291	413	248	296	1248	23	54.26

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
167.	Biblios	--	--	--	516	721	1237	52	23.79
168.	Bulletin des Bibliotheques de France	--	--	590	517	110	1217	235	5.18
169.	Informacion, Cultura y Sociedad	--	--	374	422	413	1209	44	27.48
170.	Journal of Information Ethics	437	186	295	248	0	1166	74	15.76
171.	Bottom Line	307	250	212	171	221	1161	159	7.30
172.	BilgiDunyasi	--	--	--	697	444	1141	35	32.6
173.	Informing Science	192	119	361	119	323	1114	23	48.43
174.	Archives	--	131	380	268	239	1018	29	35.10
175.	Gazette des Archives	--	--	113	794	110	1017	212	4.79
176.	Libres	197	29	175	337	271	1009	32	31.53
177.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	282	268	178	152	125	1005	96	10.47
178.	Ibersid	--	--	352	400	147	899	49	18.35
179.	AIB Studi	--	--	--	--	889	889	28	31.75
180.	Masaryk University Journal of Law and Technology	--	--	--	493	371	864	32	27
181.	Development and Learning in Organisations	156	156	168	122	177	779	427	1.82
182.	Progress in Informatics	369	74	204	132	0	779	38	20.5
183.	Pakistan Journal of Information Management and Libraries	111	146	154	208	157	776	43	18.05
184.	Journal of Access Services	103	140	199	222	84	748	95	7.87
185.	The Book Collector	223	218	275	6	0	722	100	7.22
186.	International Journal of Multimedia Information Retrieval	--	--	0	0	556	556	13	42.77
187.	Journal of Information Literacy	--	--	--	--	514	514	25	20.56
188.	Library and Archival Security	182	184	145	0	0	511	22	23.23
189.	Preservation, Digital Technology and Culture	--	--	--	75	427	502	27	18.59
190.	Journal of Digital Information	297	204	0	0	0	501	26	19.27

SN	Title of the Journal	References – Year Wise					Total Refs.	Total Docs.	Avg. Ref./Docs.
		2011	2012	2013	2014	2015			
191.	Anales de Documentacion	--	--	--	249	250	499	18	27.72
192.	Harvard Library Bulletin	331	87	0	0	0	418	38	11
193.	Prologue	169	85	8	25	0	287	141	2.04
194.	Microform and Digitization Review	--	190	0	0	0	190	24	7.92
195.	Cybermetrics	30	97	25	0	29	181	7	25.86
196.	Library Journal	0	0	52	0	0	52	940	0.06
197.	Libraries and the Cultural Record	0	0	0	0	--	0	1	0
198.	SIMILE	0	0	--	--	--	0	0	--
	Total						1159494	42203	27.47

From the observation of Table 4.5, it has been found that 198 LIS journals have produced 42203 research articles during five year period and 11,59,494 references were mentioned in all of the research articles. The average reference per article for all the journals over five year is 27.47. There are 96 LIS journals that have higher average reference per article whereas 100 LIS journals have lower average reference per article. There is a journal *Libraries and the Cultural Record* which have recorded only 1 research article in the five year of span but recorded zero references, so not counted in this particular analysis. Similarly another journal *SIMILE* has also not recorded any research articles as well as references during five years of study period. The journal *International Journal of Law and Information Technology* has the highest number of average reference per article (88.64) followed by *Archivaria* (81.03), *Information and Organization* (79.34), *European Journal of Information Systems* (68.81), *Information Systems Research* (63.75), *Information Technology and People* (62.5), *Legal Reference Services Quarterly* (61.25), *Script and Print* (59.42), *Knowledge Management Research and Practice* (57.67), and *Library* (57.33). The journal *IEEE Transactions on Information Theory* has the highest number of references (79580) for the articles published in the journal during five year period followed by *Journal of Chemical Information and Modeling* (75427), *Scientometrics* (52042), *Journal of the Association for Information Science and Technology* (47297), *Journal of Information and Computational Science* (44909), *Journal of Health Communication* (29407), *International Journal of Geographical Information Science* (26094), *International Journal of Information Management* (19574), *Information Systems Research* (18423), and *Information Communication and Society* (17968). There are 25 LIS journals that have more than 10,000 references and cumulatively consists 5,99,515 references which is 51.7% of total references for 198 LIS journals during five year period. The journal *IEEE Transactions on Information Theory* alone covers 6.86% references of total references. Indian LIS journals *Journal of Digital Information Management*, *DESIDOC Journal of Library and Information Technology*, and *Annals of Library and Information Studies* have 4565, 2827, and 2803 references respectively during the study period and all the three Indian LIS journals have less number of references per article than average reference per article.

4.2.5 Citations Mapping to the LIS Journals

The table 4.6 displays citation patterns of LIS journals on 3 years base. The 3 years base counts previous three years citations from the current year. Technically it is interpreted as "number of citations received in the selected year by a journal to the documents published in the three previous years i.e. citations received in year X to documents published in years X-1, X-2 and X-3. In this calculation, all types of documents are considered. For example, in the case of total citations for the year 2011, documents published in the year 2010, 2009, and 2008 will be counted. Average citations for the LIS journals have been also calculated to analyze the citation data logically.

Table 4.6: Citation mapping of LIS journals indexed in Scopus

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
1.	IEEE Transactions on Information Theory	6449	6433	7201	6451	5341	6375
2.	Journal of Chemical Information and Modeling	3273	3470	3886	3776	4039	3688.8
3.	Journal of the Association for Information Science and Technology	1934	2049	2202	1851	1937	1994.6
4.	Scientometrics	1295	1625	2153	2188	2194	1891
5.	Government Information Quarterly	737	772	942	1053	1302	961.2
6.	International Journal of Information Management	558	746	900	971	1102	855.4
7.	Information Systems Research	761	72	1043	1185	1176	847.4
8.	Journal of Health Communication	464	702	956	954	1009	817
9.	International Journal of Geographical Information Science	601	711	803	914	1023	810.4
10.	European Journal of Information Systems	642	607	552	633	638	614.4
11.	Information Communication and Society	312	10	538	759	1118	547.4
12.	Journal of Cheminformatics	142	362	561	725	706	499.2
13.	Information Processing and Management	709	145	475	578	572	495.8
14.	Journal of Information and Computational Science	181	344	463	554	575	423.4
15.	Journal of Information Science	400	364	347	330	353	358.8
16.	Journal of Academic Librarianship	350	296	318	272	367	320.6
17.	Journal of Information Technology	313	363	355	279	281	318.2
18.	Online Information Review	393	308	315	286	284	317.2

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
19.	Information Systems Management	214	798	170	138	173	298.6
20.	Social Science Computer Review	216	239	314	354	336	291.8
21.	Library and Information Science Research	229	250	275	273	265	258.4
22.	Journal of Documentation	274	282	234	237	263	258
23.	College and Research Libraries	166	183	282	291	290	242.4
24.	Journal of the Medical Library Association : JMLA	217	263	208	235	210	226.6
25.	Electronic Library	243	269	208	243	167	226
26.	Journal of Information Science and Engineering	246	245	247	216	167	224.2
27.	Journal of Enterprise Information Management	230	229	196	152	212	203.8
28.	Proceedings of the ASIST Annual Meeting	160	247	243	207	147	200.8
29.	Library Hi Tech	193	202	180	189	197	192.2
30.	Information and Organization	125	273	187	223	150	191.6
31.	Information Retrieval	247	38	241	213	191	186
32.	Journal of Library Administration	169	194	248	133	183	185.4
33.	Scientific data	--	--	--	--	182	182
34.	Research Evaluation	160	165	190	192	193	180
35.	Reference Services Review	155	160	210	153	166	168.8
36.	Language Resources and Evaluation	106	133	115	210	225	157.8
37.	Aslib Journal of Information Management	180	163	105	145	164	151.4
38.	Health information and libraries journal	147	145	181	139	128	148
39.	Profesional de la Informacion	81	121	171	166	191	146
40.	Ethics and Information Technology	120	159	133	164	144	144
41.	New Library World	113	135	147	154	141	138
42.	Information Development	33	412	50	91	93	135.8
43.	Knowledge Management Research and Practice	135	124	131	120	147	131.4
44.	Library Management	125	116	156	130	126	130.6
45.	College and Research Libraries News	84	99	129	135	197	128.8
46.	D-Lib Magazine	112	113	135	148	102	122
47.	Library Review	126	110	121	119	90	113.2
48.	Information Research	120	31	143	137	123	110.8
49.	Library Trends	121	91	113	120	86	106.2
50.	Cataloging and Classification Quarterly	77	127	116	116	92	105.6
51.	Program	83	93	91	141	115	104.6
52.	Information Technology and People	129	15	125	115	137	104.2

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
53.	Serials Librarian	105	109	123	91	87	103
54.	World Patent Information	96	112	130	87	75	100
55.	Reference and User Services Quarterly	117	104	104	86	87	99.6
56.	Information Technology and Libraries	52	119	115	115	91	98.4
57.	International Journal of Data Mining and Bioinformatics	73	69	118	97	109	93.2
58.	VINE	93	69	99	89	94	88.8
59.	Information Resources Management Journal	60	244	50	45	37	87.2
60.	Social Science Information	95	67	83	117	74	87.2
61.	Collection Management	106	103	132	62	32	87
62.	Reference Librarian	77	131	97	58	70	86.6
63.	Medical Reference Services Quarterly	69	54	100	93	113	85.8
64.	Education and Information Technologies	56	39	63	116	134	81.6
65.	Journal of Librarianship and Information Science	89	61	68	79	108	81
66.	Library Quarterly	67	67	77	69	105	77
67.	Serials Review	94	65	69	76	65	73.8
68.	Library Resources and Technical Services	74	85	88	59	52	71.6
69.	International Information and Library Review	73	66	104	68	44	71
70.	International Journal of Metadata, Semantics and Ontologies	106	72	46	54	71	69.8
71.	Library Philosophy and Practice	75	69	85	92	28	69.8
72.	Journal of Classification	78	71	69	52	78	69.6
73.	Revista Espanola de DocumentacionCientifica	45	43	86	102	71	69.4
74.	College and Undergraduate Libraries	56	35	94	65	80	66
75.	Journal of Web Librarianship	29	81	91	57	72	66
76.	Knowledge Organization	50	42	46	89	91	63.6
77.	Accountability in Research	48	70	61	70	61	62
78.	Archival Science	30	40	67	82	85	60.8
79.	Insights	63	78	64	47	46	59.6
80.	Computers in the Schools	58	42	83	68	46	59.4
81.	Libri	72	41	65	49	70	59.4
82.	Interlending and Document Supply	72	37	57	63	63	58.4
83.	Evidence Based Library and Information Practice	--	7	42	71	109	57.25
84.	Information Services and Use	35	129	43	40	37	56.8
85.	American Archivist	55	67	53	58	30	52.6

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
86.	Library Hi Tech News	36	50	63	57	55	52.2
87.	Australian Academic and Research Libraries	34	37	74	50	51	49.2
88.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	64	52	59	49	13	47.4
89.	Malaysian Journal of Library and Information Science	39	51	45	62	40	47.4
90.	Journal of Business and Finance Librarianship	51	39	61	38	45	46.8
91.	IFLA Journal	24	38	57	58	46	44.6
92.	DESIDOC Journal of Library and Information Technology	--	--	9	46	76	43.67
93.	Performance Measurement and Metrics	62	46	39	30	40	43.4
94.	Collection Building	39	39	39	49	49	43
95.	Journal of Digital Information Management	60	33	39	38	45	43
96.	Library Journal	49	48	50	37	27	42.2
97.	Science and Technology Libraries	22	48	52	45	43	42
98.	New Review of Academic Librarianship	24	24	78	45	38	41.8
99.	Journal of Electronic Resources Librarianship	40	46	52	34	30	40.4
100.	Law Library Journal	41	42	42	46	30	40.2
101.	OCLC Systems and Services	37	40	46	41	37	40.2
102.	Library Collections, Acquisition and Technical Services	52	59	40	31	17	39.8
103.	Journal of Library and Information Services in Distance Learning	22	26	40	49	60	39.4
104.	Internet Reference Services Quarterly	55	32	29	38	38	38.4
105.	Issues in Science and Technology Librarianship	28	46	49	39	30	38.4
106.	Notes and queries	37	55	33	38	27	38
107.	Journal of Library Metadata	38	33	32	52	34	37.8
108.	Informacion, Cultura y Sociedad	--	144	1	4	2	37.75
109.	International Journal of Law and Information Technology	26	43	40	46	33	37.6
110.	Journal of Information and Knowledge Management	33	25	33	29	55	35
111.	Public Library Quarterly	33	35	30	35	41	34.8
112.	Records Management Journal	28	42	29	36	37	34.4
113.	International Journal on Digital	36	39	21	30	43	33.8

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
	Libraries						
114.	Journal of Electronic Resources in Medical Libraries	32	34	46	33	24	33.8
115.	Technical Services Quarterly	26	41	40	29	32	33.6
116.	Behavioral and Social Sciences Librarian	23	27	37	39	41	33.4
117.	Journal of Digital Information	61	65	22	17	2	33.4
118.	Australian Library Journal	14	23	34	54	40	33
119.	Communications in Information Literacy	8	25	25	62	45	33
120.	Bottom Line	32	23	44	32	31	32.4
121.	LIBER Quarterly	21	32	39	24	41	31.4
122.	Annals of Library and Information Studies	--	7	27	53	38	31.25
123.	Development and Learning in Organisations	37	29	37	24	28	31
124.	Journal of Map and Geography Libraries	13	16	34	37	47	29.4
125.	Journal of Hospital Librarianship	25	31	25	22	39	28.4
126.	Journal of Access Services	29	20	23	19	29	24
127.	Canadian Journal of Information and Library Science	14	27	36	21	20	23.6
128.	Archivaria	14	27	32	22	22	23.4
129.	Canadian Journal of Program Evaluation	5	6	20	30	52	22.6
130.	Information Design Journal	23	50	23	10	2	21.6
131.	PerspectivasemCiencia da Informacao	18	17	16	20	37	21.6
132.	Webology	23	10	13	32	27	21
133.	Terminology	16	19	23	25	17	20
134.	International Journal of Information Science and Management	12	24	22	15	26	19.8
135.	Journal of Archival Organization	19	20	15	10	13	15.4
136.	Informing Science	26	19	9	14	8	15.2
137.	Progress in Informatics	21	19	15	17	3	15
138.	Education for Information	13	10	20	12	19	14.8
139.	Library Leadership and Management	12	8	19	7	24	14
140.	Journal of Information and Organizational Sciences	9	13	20	18	8	13.6
141.	Journal of Information Ethics	8	11	16	13	13	12.2
142.	Community and Junior College Libraries	7	15	19	11	8	12
143.	Legal Reference Services Quarterly	28	9	7	6	9	11.8
144.	African Journal of Library Archives	17	13	9	8	9	11.2

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
	and Information Science						
145.	Grey Journal	6	14	12	11	10	10.6
146.	InvestigacionBibliotecologica	6	10	8	15	13	10.4
147.	School Library Media Research	5	7	14	14	12	10.4
148.	Library	12	8	8	12	8	9.6
149.	Archives and Manuscripts	--	--	--	9	10	9.5
150.	ZeitschriftfürBibliothekswesen und Bibliographie	12	2	10	11	12	9.4
151.	Music Reference Services Quarterly	9	8	7	7	14	9
152.	Documentaliste: Sciences de l'Information	2	15	10	7	10	8.8
153.	VjesnikBibliotekaraHrvatske	3	8	14	11	5	8.2
154.	Cuadernos.info	--	--	--	7	9	8
155.	Information-Wissenschaft und Praxis	11	--	10	2	9	8
156.	Journal of Information Literacy	--	--	--	--	8	8
157.	Scire	--	0	9	10	12	7.75
158.	VOEB-Mitteilungen	1	14	6	1	16	7.6
159.	Ciencia da Informacao	13	12	4	3	4	7.2
160.	Journal of Educational Media and Library Science	8	7	8	9	4	7.2
161.	Cybermetrics	5	4	5	8	13	7
162.	Libres	15	5	6	3	5	6.8
163.	Library and Information Science	2	4	6	12	7	6.2
164.	Transinformacao	1	4	3	9	14	6.2
165.	Document Numerique	5	8	5	4	8	6
166.	Libraries and the Cultural Record	16	7	1	0	--	6
167.	Revista General de Informacion y Documentacion	1	1	4	9	14	5.8
168.	International Journal of the Book	--	4	3	10	6	5.75
169.	Library and Archival Security	7	9	5	3	3	5.4
170.	Notes	8	4	4	6	5	5.4
171.	Papers of the Bibliographical Society of America	6	7	6	7	1	5.4
172.	AIB Studi	--	--	--	--	5	5
173.	Scriptorium	3	9	3	4	5	4.8
174.	BiD	--	--	3	2	7	4
175.	Preservation, Digital Technology and Culture	0	--	--	3	9	4
176.	Slavic and East European Information Resources	6	2	4	3	2	3.4
177.	Bulletin des Bibliotheques de France	--	--	4	4	2	3.33
178.	Microform and Digitization Review	--	1	2	10	0	3.25
179.	FontesArtisMusicae	1	3	3	7	1	3

SN	Title of the Journal	Cites (3 Years)					Avg. Cites
		2011	2012	2013	2014	2015	
180.	Tuna	--	1	3	6	1	2.75
181.	Pakistan Journal of Information Management and Libraries	0	2	1	8	2	2.6
182.	Quaerendo	6	1	2	2	2	2.6
183.	BilgiDunyasi	--	--	--	3	2	2.5
184.	Bulletin. John Rylands University Library of Manchester	--	--	0	3	4	2.33
185.	Ibersid	--	--	2	1	3	2
186.	Script and Print	3	0	2	3	2	2
187.	SIMILE	0	4	--	--	--	2
188.	East Asian Publishing and Society	--	1	1	2	2	1.5
189.	Prologue	1	1	1	2	1	1.2
190.	Masaryk University Journal of Law and Technology	--	--	--	1	1	1
191.	Harvard Library Bulletin	2	1	0	1	0	0.8
192.	The Book Collector	1	1	0	1	1	0.8
193.	Transactions of the Cambridge Bibliographical Society	2	0	1	0	0	0.6
194.	Archives	--	0	0	1	1	0.5
195.	Gazette des Archives	--	--	0	1	0	0.33
196.	Anales de Documentacion	--	--	--	0	0	0
197.	Biblios	--	--	--	0	0	0
198.	International Journal of Multimedia Information Retrieval	--	--	0	0	0	0
	Total	28713	30182	34626	34180	34346	32635.41

On the observation of table 4.6, it has been found that hardly any journal has uniform citation pattern. Out of 198 LIS journals, there are 3 LIS journals *Anales de Documentacion*, *Biblios*, and *International Journal of Multimedia Information Retrieval* which do not have received any citation during five years of study period. The journal *IEEE Transactions on Information Theory* has received the highest number of average citations (6375) followed by *Journal of Chemical Information and Modeling* (3688.8), *Journal of the Association for Information Science and Technology* (1994.6), *Scientometrics* (1891), *Government Information Quarterly* (961.2), *International Journal of Information Management* (855.4), *Information Systems Research* (847.4), *Journal of Health Communication* (817), *International Journal of Geographical Information Science* (810.4), and *European Journal*

of Information Systems (614.4). Table 4.7 represents the number of LIS journals and their citations range:

Table 4.7: Citations range of LIS journals

Avg. Citation Range	No. of Journals	% of Total Journals	% of Total Avg. Citations
5000 or more	1	0.5%	19.53%
4000 – 4999	--	--	--
3000 – 3999	1	0.5%	11.3%
2000 – 2999	--	--	--
1000 – 1999	2	1.01%	11.9%
0 – 999	194	97.97%	57.25%

From the observation of Table 4.7, it has been inference that journals having citation range more than 5000, shares 19.53% of total average citations. Similarly, the journals fall under the citation range of 3000 – 3999 shares 11.3% citations of total average citations whereas the journals fall under the range of 1000 – 1999 citations, shares 11.9% citations of total average citations. There are 194 LIS journals fall under the 0 – 999 citations range and shares 57.25% citations of total average citations. There are 4 LIS journals (2.02% of total LIS journals) which cumulatively shares 42.73% citations while rest of (194) LIS journals (97.97% of total LIS journals) cumulatively shares 57.25% citations. The highest number of LIS journals (194) falls under the 0 – 999 citations range and shares only 57.25% of citations which is comparatively very less than other higher categories of citations range (1000 or more).

On the calculation of average of average citations for 198 LIS journals, the figure arrives at 164.82 citations per journal for five year period. Based on this calculation, there are 35 LIS journals which have the average citations above the average of average citations while rest of the 163 LIS journals are below the average of average citations range. The 35 LIS journals which have higher average of average citations range cumulatively shares 79.21% (25852.4) citations of total average citations. Indian LIS journals *DESIDOC Journal of Library and Information Technology* (43.67), *Journal of Digital Information Management* (43), and *Annals of Library and Information Studies* (31.25) have recorded less number of citations and are below the average of average citations range during the study period.

4.2.6 Most Prolific Country for LIS Research

Table 4.8 displays the summary of different types of data of LIS journals. To find out most prolific country for the LIS research, there are many parameters that should be considered appropriately within the context. The SJR values, *h*-index, total documents, and total average citations are the key parameters to decide the most dominating country for LIS research.

Table 4.8: Most prolific country for LIS research

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
1.	IEEE Transactions on Information Theory	232	2.4738	2605	79580	6375	United States
2.	Journal of Chemical Information and Modeling	131	1.501	1477	75427	3688.8	United States
3.	Information Systems Research	128	3.4082	289	18423	847.4	United States
4.	Journal of the Association for Information Science and Technology	112	1.515	988	47297	1994.6	United Kingdom
5.	Scientometrics	86	1.2618	1500	52042	1891	Hungary
6.	International Journal of Geographical Information Science	85	1.0212	602	26094	810.4	United Kingdom
7.	European Journal of Information Systems	84	1.474	224	15414	614.4	United Kingdom
8.	Information Processing and Management	80	0.739	376	15374	495.8	United Kingdom
9.	International Journal of Information Management	77	1.088	397	19574	855.4	United Kingdom
10.	Government Information Quarterly	71	1.2428	340	17511	961.2	United Kingdom
11.	Journal of Health Communication	64	1.145	737	29407	817	United Kingdom
12.	Journal of Information Technology	61	1.232	157	8515	318.2	United Kingdom
13.	Social Science Computer Review	54	1.0216	229	8859	291.8	United States
14.	Journal of Documentation	53	0.9384	275	13540	258	United Kingdom
15.	Journal of Information Science	51	0.872	303	11932	358.8	United States
16.	Information and Organization	49	1.7808	68	5395	191.6	United Kingdom
17.	Journal of the Medical Library Association : JMLA	48	0.9466	310	4993	226.6	United States
18.	Journal of Academic Librarianship	47	1.4308	437	11713	320.6	United Kingdom
19.	Information Systems Management	47	0.4796	159	7245	298.6	United Kingdom
20.	Information Retrieval	47	0.5868	124	5365	186	Netherlands
21.	Information Communication and Society	46	1.3672	396	17968	547.4	United Kingdom
22.	Library and Information Science Research	45	1.7294	197	9066	258.4	United Kingdom
23.	Online Information Review	43	0.579	288	11613	317.2	United Kingdom
24.	Journal of Enterprise Information Management	43	0.4358	192	10815	203.8	United Kingdom
25.	D-Lib Magazine	42	0.537	253	3448	122	United States

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
26.	College and Research Libraries	41	2.7532	226	8903	242.4	United States
27.	Information Research	38	0.4738	258	11449	110.8	United Kingdom
28.	Library Trends	38	0.5202	225	8890	106.2	United States
29.	Ethics and Information Technology	37	0.5148	127	5201	144	Netherlands
30.	Information Technology and People	35	0.5516	119	7438	104.2	United Kingdom
31.	Language Resources and Evaluation	34	0.3748	183	6943	157.8	Germany
32.	Research Evaluation	33	0.8242	179	6726	180	United Kingdom
33.	Aslib Journal of Information Management	32	0.6588	186	7711	151.4	United Kingdom
34.	Health information and libraries journal	32	0.6046	205	5174	148	United Kingdom
35.	Proceedings of the ASIST Annual Meeting	31	0.2228	708	13105	200.8	United States
36.	Journal of Classification	31	0.733	101	2966	69.6	Germany
37.	Journal of Cheminformatics	30	1.0578	337	10889	499.2	United Kingdom
38.	Journal of Information Science and Engineering	30	0.2398	482	12062	224.2	Taiwan
39.	Social Science Information	30	0.3122	158	7625	87.2	United States
40.	Library Quarterly	30	0.9674	130	4160	77	United States
41.	Electronic Library	29	0.7614	296	8858	226	United Kingdom
42.	Library Hi Tech	29	0.9006	237	6770	192.2	United Kingdom
43.	Reference and User Services Quarterly	28	1.0078	212	4336	99.6	United States
44.	Information Resources Management Journal	28	0.1838	91	4108	87.2	United States
45.	International Journal on Digital Libraries	28	0.3068	75	2697	33.8	Germany
46.	Information Technology and Libraries	27	0.9804	136	2540	98.4	United States
47.	Education and Information Technologies	25	0.3744	206	6979	81.6	United Kingdom
48.	Reference Services Review	24	1.242	207	5470	168.8	United Kingdom
49.	Knowledge Management Research and Practice	24	0.4764	188	10842	131.4	United Kingdom
50.	Archival Science	24	0.5864	114	5703	60.8	Netherlands
51.	World Patent Information	23	0.3254	245	3718	100	United Kingdom
52.	Program	22	0.6354	126	4384	104.6	United Kingdom

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
53.	Journal of Librarianship and Information Science	22	0.7728	130	5258	81	United States
54.	Knowledge Organization	22	0.3376	206	6410	63.6	Germany
55.	American Archivist	22	0.6414	114	5846	52.6	United States
56.	Journal of Digital Information	22	0.36	26	501	33.4	United Kingdom
57.	Informing Science	22	0.2002	23	1114	15.2	United States
58.	Journal of Library Administration	21	1.031	256	4282	185.4	United States
59.	New Library World	21	0.7638	258	6350	138	United Kingdom
60.	Library Resources and Technical Services	21	0.8514	100	3682	71.6	United States
61.	International Information and Library Review	21	0.3014	166	4600	71	United States
62.	Accountability in Research	21	0.3464	141	4908	62	United Kingdom
63.	Archivaria	21	0.4762	75	6077	23.4	Canada
64.	Library Management	20	0.6836	238	5221	130.6	United Kingdom
65.	Library Review	20	0.4444	242	7145	113.2	United Kingdom
66.	Libri	20	0.4422	130	5259	59.4	Germany
67.	Scientific data	19	2.049	79	2845	182	United Kingdom
68.	VINE	19	0.3066	129	7393	88.8	United Kingdom
69.	Serials Review	19	0.4782	248	2650	73.8	United Kingdom
70.	Journal of Information and Computational Science	18	0.1584	3090	44909	423.4	China
71.	Library Collections, Acquisition and Technical Services	18	0.6762	64	1410	39.8	United Kingdom
72.	Terminology	18	0.2622	58	2286	20	Netherlands
73.	Profesional de la Informacion	17	0.3652	413	9024	146	Spain
74.	College and Research Libraries News	17	0.7438	482	2210	128.8	United States
75.	Library Journal	17	0.1694	940	52	42.2	United States
76.	Information Design Journal	17	0.1592	74	1362	21.6	Netherlands
77.	International Journal of Data Mining and Bioinformatics	16	0.313	265	8140	93.2	United Kingdom
78.	Reference Librarian	16	0.9468	182	2870	86.6	United States
79.	International Journal of Metadata, Semantics and	16	0.2798	134	4120	69.8	United Kingdom

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
	Ontologies						
80.	Malaysian Journal of Library and Information Science	16	0.3458	110	3492	47.4	Malaysia
81.	Performance Measurement and Metrics	16	0.5438	88	1618	43.4	United Kingdom
82.	Science and Technology Libraries	16	0.5496	128	4329	42	United States
83.	OCLC Systems and Services	16	0.295	124	1827	40.2	United Kingdom
84.	Education for Information	16	0.2476	41	1301	14.8	Netherlands
85.	Medical Reference Services Quarterly	15	0.5348	206	2529	85.8	United States
86.	Computers in the Schools	15	0.462	104	3630	59.4	United States
87.	Information Services and Use	15	0.269	156	1534	56.8	Netherlands
88.	Information Development	14	0.2912	249	7562	135.8	United States
89.	Cataloging and Classification Quarterly	14	0.6396	262	8278	105.6	United States
90.	Collection Management	14	1.1808	105	1710	87	United States
91.	College and Undergraduate Libraries	14	0.7398	147	2601	66	United States
92.	Australian Academic and Research Libraries	14	0.4192	145	2964	49.2	United Kingdom
93.	Collection Building	14	0.5352	135	1837	43	United Kingdom
94.	Internet Reference Services Quarterly	14	0.7736	71	1452	38.4	United States
95.	Canadian Journal of Information and Library Science	14	0.2662	82	2660	23.6	Canada
96.	Serials Librarian	13	0.6266	340	3132	103	United States
97.	Interlending and Document Supply	13	0.5832	156	1968	58.4	United Kingdom
98.	Journal of Information and Knowledge Management	13	0.184	177	7865	35	United States
99.	Records Management Journal	13	0.2616	80	2515	34.4	United Kingdom
100.	Cybermetrics	13	0.5698	7	181	7	Spain
101.	Library Philosophy and Practice	12	0.2548	493	10789	69.8	United States
102.	Revista Espanola de DocumentacionCientifica	12	0.3918	177	5325	69.4	Spain
103.	Journal of Web Librarianship	12	0.694	117	2028	66	United States
104.	Library Hi Tech News	12	0.3126	253	2397	52.2	United Kingdom
105.	Journal of Business and Finance Librarianship	12	0.5548	111	2143	46.8	United States

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
106.	Law Library Journal	12	0.3344	134	7241	40.2	United States
107.	Insights	11	0.4892	241	2306	59.6	United Kingdom
108.	IFLA Journal	11	0.3412	176	3436	44.6	United States
109.	Journal of Library Metadata	11	0.4508	88	2205	37.8	United Kingdom
110.	Technical Services Quarterly	11	0.3656	298	1536	33.6	United States
111.	Journal of Interlibrary Loan, Document Delivery and Electronic Reserve	10	0.7012	96	1005	47.4	United States
112.	Journal of Digital Information Management	10	0.1408	299	4565	43	India
113.	New Review of Academic Librarianship	10	0.8542	97	2453	41.8	United Kingdom
114.	Issues in Science and Technology Librarianship	10	0.3512	152	1946	38.4	United States
115.	Behavioral and Social Sciences Librarian	10	0.478	108	2124	33.4	United States
116.	Bottom Line	10	0.337	159	1161	32.4	United Kingdom
117.	LIBER Quarterly	10	0.2664	92	1613	31.4	Germany
118.	Development and Learning in Organisations	10	0.1282	427	779	31	United Kingdom
119.	Webology	10	0.2684	59	1805	21	Iran
120.	Library	10	0.1272	58	3325	9.6	United Kingdom
121.	Journal of Electronic Resources Librarianship	9	0.4804	176	2188	40.4	United States
122.	Journal of Library and Information Services in Distance Learning	9	0.4976	142	2201	39.4	United States
123.	International Journal of Law and Information Technology	9	0.2628	73	6471	37.6	United Kingdom
124.	Public Library Quarterly	9	0.4518	111	2169	34.8	United States
125.	Australian Library Journal	9	0.2702	151	3065	33	United Kingdom
126.	Journal of Map and Geography Libraries	9	0.279	108	2143	29.4	United States
127.	Canadian Journal of Program Evaluation	9	0.392	74	2057	22.6	Canada
128.	Progress in Informatics	9	0.2144	38	779	15	Japan
129.	Journal of Information Ethics	9	0.1614	74	1166	12.2	United States
130.	School Library Media Research	9	0.1826	47	2057	10.4	United States

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
131.	Evidence Based Library and Information Practice	8	0.33325	305	3304	57.25	Canada
132.	Communications in Information Literacy	8	0.542	92	1896	33	United States
133.	International Journal of Information Science and Management	8	0.1538	121	2843	19.8	Iran
134.	Journal of Archival Organization	8	0.3434	56	1481	15.4	United States
135.	Library Leadership and Management	8	0.214	159	1904	14	United States
136.	Ciencia da Informacao	8	0.1382	111	2485	7.2	Brazil
137.	Libres	8	0.2066	32	1009	6.8	Australia
138.	Notes and queries	7	0.1138	933	11746	38	United Kingdom
139.	Journal of Electronic Resources in Medical Libraries	7	0.3434	138	1408	33.8	United States
140.	Journal of Access Services	7	0.3228	95	748	24	United States
141.	Journal of Information and Organizational Sciences	7	0.1356	71	1891	13.6	Croatia
142.	African Journal of Library Archives and Information Science	7	0.1656	44	1275	11.2	Nigeria
143.	Information-Wissenschaft und Praxis	7	0.1502	236	3282	8	Germany
144.	Notes	7	0.1388	56	1690	5.4	United States
145.	Annals of Library and Information Studies	6	0.30175	139	2803	31.25	India
146.	Journal of Hospital Librarianship	6	0.2668	194	2208	28.4	United States
147.	PerspectivasemCiencia da Informacao	6	0.1978	275	6820	21.6	Brazil
148.	Legal Reference Services Quarterly	6	0.2364	77	4716	11.8	United States
149.	InvestigacionBibliotecologica	6	0.1462	148	4180	10.4	Mexico
150.	Music Reference Services Quarterly	6	0.2152	96	1315	9	United States
151.	Journal of Educational Media and Library Science	6	0.1456	108	3923	7.2	Taiwan
152.	DESIDOC Journal of Library and Information Technology	5	0.241	183	2827	43.66667	India
153.	Community and Junior College Libraries	5	0.2064	72	1305	12	United States
154.	Grey Journal	5	0.1698	99	1543	10.6	Netherlands
155.	ZeitschriftfürBibliothekswesen und Bibliographie	5	0.1672	210	2806	9.4	Germany

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
156.	Scriptorium	5	0.1068	71	4045	4.8	Belgium
157.	Harvard Library Bulletin	5	0.1006	38	418	0.8	United States
158.	Archives and Manuscripts	4	0.3	57	1503	9.5	United Kingdom
159.	Documentaliste: Sciences de l'Information	4	0.131	477	2881	8.8	France
160.	Library and Information Science	4	0.1148	106	3841	6.2	Japan
161.	Transinformacao	4	0.1226	117	2714	6.2	Brazil
162.	Document Numerique	4	0.1116	83	2269	6	France
163.	Library and Archival Security	4	0.1494	22	511	5.4	United States
164.	Papers of the Bibliographical Society of America	4	0.1246	63	2527	5.4	United States
165.	Quaerendo	4	0.107	89	2653	2.6	Netherlands
166.	The Book Collector	4	0.1	100	722	0.8	United Kingdom
167.	Journal of Information Literacy	3	0.6025	25	514	8	United Kingdom
168.	Scire	3	0.14625	92	1958	7.75	Spain
169.	VOEB-Mitteilungen	3	0.1186	261	2098	7.6	Austria
170.	Revista General de Informacion y Documentacion	3	0.1366	92	2680	5.8	Spain
171.	Preservation, Digital Technology and Culture	3	0.1665	27	502	4	Germany
172.	Slavic and East European Information Resources	3	0.1146	109	2497	3.4	United States
173.	Microform and Digitization Review	3	0.121	24	190	3.25	Germany
174.	FontesArtisMusicae	3	0.1286	147	1303	3	Switzerland
175.	Pakistan Journal of Information Management and Libraries	3	0.1236	43	776	2.6	Pakistan
176.	Bulletin. John Rylands University Library of Manchester	3	0.112	57	2715	2.333333	United Kingdom
177.	Script and Print	3	0.1008	62	3684	2	Australia
178.	Transactions of the Cambridge Bibliographical Society	3	0.1018	32	1375	0.6	United Kingdom
179.	Informacion, Cultura y Sociedad	2	0.107333	44	1209	37.75	Argentina
180.	VjesnikBibliotekaraHrvatske	2	0.1674	227	3654	8.2	Croatia
181.	Cuadernos.info	2	0.16	59	2227	8	Chile
182.	International Journal of the Book	2	0.1435	110	2582	5.75	United States

SN	Title of the Journal	*h*-index (2015)	Avg. SJR Value	Total Docs.	Total Refs.	Avg. Cites (3 years)	Country
183.	AIB Studi	2	0.172	28	889	5	Italy
184.	BiD	2	0.121333	79	1458	4	Spain
185.	Bulletin des Bibliotheques de France	2	0.104667	235	1217	3.333333	France
186.	Tuna	2	0.1	87	4064	2.75	Estonia
187.	BilgiDunyasi	2	0.1235	35	1141	2.5	Turkey
188.	East Asian Publishing and Society	2	0.102	23	1248	1.5	Netherlands
189.	Prologue	2	0.102	141	287	1.2	United States
190.	Ibersid	1	0.112667	49	899	2	Spain
191.	Masaryk University Journal of Law and Technology	1	0.101	32	864	1	Czech Republic
192.	Archives	1	0.10175	29	1018	0.5	United Kingdom
193.	Gazette des Archives	1	0.100333	212	1017	0.333333	France
194.	Anales de Documentacion	1	0.101	18	499	0	Spain
195.	Biblios	1	0.1015	52	1237	0	United States
196.	International Journal of Multimedia Information Retrieval	1	0.123	13	556	0	United Kingdom
197.	Libraries and the Cultural Record	--	0.12475	1	0	6	United States
198.	SIMILE	--	0.15	0	0	2	Canada

From the observation of Table 4.8, it has been inference that on the basis of *h*-index performance, LIS journals published from United States have the highest *h*-index values followed by journals published from United Kingdom. In the case of average SJR values journal belongs to United States have the highest average SJR values followed by journals belong to United Kingdom. Based on research productivity (total documents), journal belongs to United States have the highest number of published documents than other countries. United Kingdom is the second most research productive country for LIS research after United States. Similarly, the highest record for total references also belongs to United States journals followed by United Kingdom. Further, majority of the United States journals have higher average citation rate followed by United Kingdom.

Table 4.9: Summary of most prolific country for LIS research

SN	Particulars	United States	United Kingdom	Germany	Netherlands	Spain	India
1	No. of Journals	67	63	10	10	8	3
2	Total *h*-index (2015)	1503	1798	163	185	52	21
3	Highest *h*-index value of a journal	232	112	34	47	17	10
4	Total Avg. SJR value	39.26	41.21	3.0657	3.0048	1.944	0.6835
5	Highest Avg. SJR value of a journal	3.4082	2.049	0.733	0.5868	0.5698	0.3017
6	Total Productivity (Documents)	15448	13967	1284	905	927	621
7	Highest Productivity in a journal	2605	988	236	156	413	299
8	Total References	402233	470672	32668	28196	22024	10195
9	Highest References in a journal	79580	47297	6943	5703	9024	4565
10	Total Avg. Citations (3 years)	15203	13148	440.25	518.7	241.95	117.91
11	Highest Avg. Citations (3 years) in a journal	6375	1994.6	157.8	186	146	43.66

The Table 4.9 displays the summary of Table 4.8 in terms of most prolific country for LIS research. Thus, from the observation and analysis of Table 4.8 and 4.9, it has been found

that the United States is the most prolific country for LIS research followed by United Kingdom.

4.2.7 Continent wise Qualitative LIS Journals

There are seven continents in the world. A continent covers very large landmass of the world which includes many small countries in itself. The seven continents of the world are: Africa, Antarctica, Asia, Australia, Europe, North America, and South America. The study belongs to mapping of LIS journals based on Scopus. There are 198 LIS journals indexed in Scopus from the world countries. The study has been conducted to generate a list of qualitative LIS journals continent wise. Table 4.10 displays the continent wise list of qualitative LIS journals (top 10 LIS journals based on Avg. SJR indicator from each continent).

Table 4.10: Continent wise list of top qualitative LIS journals

SN	Continent	Country	Title of the Journal	Avg. SJR Value	Total Docs.	Avg. Cites (3 years)	*h* index (2015)
1.	Africa	Nigeria	African Journal of Library Archives and Information Science	0.1656	44	11.2	7
2.	Asia	Malaysia	Malaysian Journal of Library and Information Science	0.3458	110	47.4	16
3.	Asia	India	Annals of Library and Information Studies	0.3018	139	31.25	6
4.	Asia	Iran	Webology	0.2684	59	21	10
5.	Asia	India	DESIDOC Journal of Library and Information Technology	0.241	183	43.67	5
6.	Asia	Taiwan	Journal of Information Science and Engineering	0.2398	482	224.2	30
7.	Asia	Japan	Progress in Informatics	0.2144	38	15	9
8.	Asia	China	Journal of Information and Computational Science	0.1584	3090	423.4	18
9.	Asia	Iran	International Journal of Information Science and Management	0.1538	121	19.8	8
10.	Asia	Taiwan	Journal of Educational Media and Library Science	0.1456	108	7.2	6
11.	Asia	India	Journal of Digital Information Management	0.1408	299	43	10
12.	Australia	Australia	Libres	0.2066	32	6.8	8
13.	Australia	Australia	Script and Print	0.1008	62	2	3
14.	Europe	United Kingdom	Scientific data	2.049	79	182	19
15.	Europe	United Kingdom	Information and Organization	1.7808	68	191.6	49
16.	Europe	United Kingdom	Library and Information Science Research	1.7294	197	258.4	45
17.	Europe	United Kingdom	Journal of the Association for Information Science and Technology	1.515	988	1994.6	112
18.	Europe	United Kingdom	European Journal of Information Systems	1.474	224	614.4	84
19.	Europe	United Kingdom	Journal of Academic Librarianship	1.4308	437	320.6	47

20.	Europe	United Kingdom	Information Communication and Society	1.3672	396	547.4	46
21.	Europe	Hungary	Scientometrics	1.2618	1500	1891	86
22.	Europe	United Kingdom	Government Information Quarterly	1.2428	340	961.2	71
23.	Europe	United Kingdom	Reference Services Review	1.242	207	168.8	24
24.	North America	United States	Information Systems Research	3.4082	289	847.4	128
25.	North America	United States	College and Research Libraries	2.7532	226	242.4	41
26.	North America	United States	IEEE Transactions on Information Theory	2.4738	2605	6375	232
27.	North America	United States	Journal of Chemical Information and Modeling	1.501	1477	3688.8	131
28.	North America	United States	Collection Management	1.1808	105	87	14
29.	North America	United States	Journal of Library Administration	1.031	256	185.4	21
30.	North America	United States	Social Science Computer Review	1.0216	229	291.8	54
31.	North America	United States	Reference and User Services Quarterly	1.0078	212	99.6	28
32.	North America	United States	Information Technology and Libraries	0.9804	136	98.4	27
33.	North America	United States	Library Quarterly	0.9674	130	77	30
34.	South America	Brazil	PerspectivasemCiencia da Informacao	0.1978	275	21.6	6
35.	South America	Chile	Cuadernos.info	0.16	59	8	2
36.	South America	Brazil	Ciencia da Informacao	0.1382	111	7.2	8
37.	South America	Brazil	Transinformacao	0.1226	117	6.2	4
38.	South America	Argentina	Informacion, Cultura y Sociedad	0.1073	44	37.75	2

From the observation of Table 4.10, it has been found that there is only one LIS journal belongs to Nigeria from African continent and similarly two LIS journals from Australian continent. The South American continent has only five LIS journals which belong to Brazil (3), Chile (1) and Argentina (1). Further, Asia, Europe and North America have top 10 LIS journals based on Average SJR indicator. From the Asian continent, India contributed 3 LIS journals whereas China, Japan, and Malaysia have contributed one journal each. Iran and Taiwan have contributed two LIS journals each under top 10 LIS journals from the continent. From top 10 European LIS journals, 9 LIS journals belong to United Kingdom itself while one LIS journal belongs to Hungary. In the case of North American continent, all LIS journals belong to United States. Thus, there are total 38 qualitative LIS journals were found from all the continents.

4.3 Findings of the Study

The analysis of the data collected through online survey has revealed a number of findings on LIS journals indexed in Scopus which are as follows:

1) The SJR indicator has been declared by Scopus as a new parameter to evaluate scientific influence of scholarly journals and its values represents "average prestige per article" and not for the whole journal.
2) The journal *Information Systems Research* has the highest average SJR indicator (3.4082) which showed the highest prestige per article for the journal followed by *College and Research Libraries* (2.7532), *IEEE Transactions on Information Theory* (2.4738), *Scientific Data* (2.049), *Information and Organization* (1.7808), *Library and Information Science Research* (1.7294), and *Journal of the Association for Information Science and Technology* (1.515).
3) Indian LIS journals *Annals of Library and Information Studies* (0.30175), *DESIDOC Journal of Library and Information Technology* (0.241), and *Journal of Digital Information Management* (0.1408) have very less prestige per article compared to *Information Systems Research*.
4) There are 23 LIS journals (11.61%) which have Average SJR indicator equal to or more than 1.0 and considered as the most prestigious journals of LIS field indexed in Scopus.

5) The higher *h*-index value for the journal represents higher level of scientific research output of the journal in particular field. In this regard *IEEE Transactions on Information Theory* has the highest *h*-index value (232) amongst all LIS journals followed by *Journal of Chemical Information and Modeling* (131), *Information Systems Research* (128), and *Journal of the Association for Information Science and Technology* (112).
6) There is lack of higher *h*-indexed journals in the field. Only 4 LIS journals have *h*-index values more than 100 and 11 LIS journals were in the range of 50 - 100 *h*-index.
7) Indian LIS journals *Journal of Digital Information Management* (10), *Annals of Library and Information Studies* (6), and *DESIDOC Journal of Library and Information Technology* (5) have lesser *h*-index values.
8) The journal *Journal of Information and Computational Science* has produced the highest number of research papers (3090) during the study period and identified as the highest productive journal in the field of LIS followed by *IEEE Transactions on Information Theory* (2605), *Scientometrics* (1500), *Journal of Chemical Information and Modeling* (1477), *Journal of the Association for Information Science and Technology* (988), and *Library Journal* (940). There are 10 LIS journals which have produced more than 500 research articles during five year period.
9) Majority of LIS journals (119 journals, 60.1%) belong to 100 – 499 research production range and produced 58.31% research article of the total. Further, the least research publication range 0 – 99 covers 69 LIS journals (34.84% of total journals) and produced only 9.51% research article of the total. Rest of the 32% research articles has been produced by top 10 LIS journals (5.05% of total journals) and thus become most productive LIS journals than others.
10) Total 42203 research articles have been produced by 198 LIS journals indexed in Scopus during 5 year study period. There are 213 research articles per journal on an average. There are 55 LIS journals which have produced research articles more than the average research article per journal (213 research articles) and considered as most productive journal of the field.

11) The Indian LIS journals *DESIDOC Journal of Library and Information Technology* (183) and *Annals of Library and Information Studies* (139) have produced research articles less than average research articles per journal while another Indian LIS journal *Journal of Digital Information Management* (299) have produced more than the average research articles per journal and are in the 27th position amongst all LIS journals.
12) Majority of LIS journals (143 journals, 72%) are less productive in LIS research based on average research article per journal whereas 55 LIS journals (28% of total journals) are considered as most productive journals. Out of the total research articles, 64.64% research articles have been produced by 55 LIS journals only.
13) There are 11, 59, 494 references from 42, 203 research articles of 198 LIS journals during five year period. The average reference per article for all the journals over five year is 27.47.
14) Majority of the journals (100 journals, 50.5%) have lower average reference per article whereas 48.48% LIS journals (96 journals) have higher average reference per article. The journal *International Journal of Law and Information Technology* has the highest number of average reference per article (88.64) followed by *Archivaria* (81.03), *Information and Organization* (79.34), *European Journal of Information Systems* (68.81), and *Information Systems Research* (63.75).
15) The journal *IEEE Transactions on Information Theory* has the highest number of references (79580) followed by *Journal of Chemical Information and Modeling* (75427), *Scientometrics* (52042), *Journal of the Association for Information Science and Technology* (47297), and *Journal of Information and Computational Science* (44909).
16) There are 25 LIS journals that have more than 10, 000 references and cumulatively 5, 99, 515 references (51.7% of total references) out of total references. The journal *IEEE Transactions on Information Theory* alone covers 6.86% references of total references.
17) In the case of Indian LIS journal, *Journal of Digital Information Management* has 4565 references which is highest amongst Indian LIS journals followed by *DESIDOC Journal of Library and Information Technology* (2827), and *Annals of*

Library and Information Studies (2803). Moreover, Indian LIS journals have less number of references per article than average reference per article for all of the LIS journals.

18) There are 3 LIS journals *Anales de Documentacion*, *Biblios*, and *International Journal of Multimedia Information Retrieval* have not received any citation during five years of study period. The journal *IEEE Transactions on Information Theory* has received the highest number of average citations (6375) followed by *Journal of Chemical Information and Modeling* (3688.8), *Journal of the Association for Information Science and Technology* (1994.6), *Scientometrics* (1891), and *Government Information Quarterly* (961.2).
19) The journal having citation range more than 5000 citations, alone shares 19.53% citations of total average citations. Majority of LIS journals (194) falls under the 0 – 999 citations range and shares 57.25% citations.
20) Based on average of average citations (164.82 citations), there are 35 LIS journals which have higher average of average citations while majority of the LIS journals (163 journals, 82.32%) have lower average of average citations.
21) The 35 LIS journals which have higher average of average citations range cumulatively shares 79.21% (25852.4 citations) of total average citations.
22) Indian LIS journals *DESIDOC Journal of Library and Information Technology* (43.67), *Journal of Digital Information Management* (43), and *Annals of Library and Information Studies* (31.25) have recorded less number of citations and are below the average of average citations range.
23) LIS journals published from United States have the highest *h*-index values followed by journals published from United Kingdom.
24) Based on Average SJR indicator, journal belongs to United States have the highest Average SJR values followed by journals belong to United Kingdom.
25) Based on research productivity (total documents), journal belongs to United States have the highest number of published documents than other countries. United Kingdom is the second most research productive country for LIS research after United States.

26) The highest record for total references belongs to United States journals followed by United Kingdom. Further, the United States journals have higher average citation rates followed by United Kingdom.
27) From the analysis, the United States has been found as the most prolific country for LIS research followed by United Kingdom.
28) African continent has the least number of LIS journals (one journal) among all continents. Similarly two LIS journals were indexed in Scopus from Australian continent. The South American continent has indexed only five LIS journals which belong to Brazil (3), Chile (1) and Argentina (1).
29) The continents Asia, Europe, and North America have number of journals. From the Asian continent, India has indexed 3 LIS journals in Scopus whereas China, Japan, and Malaysia have indexed only one journal each.
30) From the top 10 European LIS journals, 9 LIS journals belong to United Kingdom while in the case of North American continent, all top ten LIS journals belong to United States only.

CHAPTER - 5

CONCLUSION AND SUGGESTIONS

5.1 Introduction

Research plays a very crucial role in development of the academic environment. There are number of research oriented organisations and academic institutions that are involved seriously in research to find out solutions for problems exist within the academic field of concern. In the field of LIS, scientometrics is one of the most prevalent techniques of research to assess the scientific activities of subject. Scientometric analysis is the application of mathematics, statistics, and bibliometrics tools and techniques. There are number of scientometric studies conducted in the field of LIS and other related disciplines by various researchers.

5.2 Conclusions

According to Tague-Sutcliffe (1992), "scientometrics is the study of the quantitative aspects of science as a discipline or economic activity". Further, scientometric measurement includes *h*-index, *g*-index, SJR indicator, citation counts, impact factor, research productivity etc. Scopus is the largest abstract and citation database of peer-reviewed research available in the form of journals, books, and conference proceedings in the fields of science, technology, medicine, social sciences, and arts & humanities. There are 198 journals indexed in Scopus from all around the world in the field of Library and Information Science. These journals produce the scholarly research output in the form of research articles. The study aims to map the contribution of Library and Information Science journals indexed in Scopus. The conclusion has been divided into following sections as raised in the form of objectives of the study:

a) SJR indicator and h-index based analysis of LIS journals

The SJR indicator is used to measure the scientific influence of scholarly journals and its values represents "average prestige per article". With regard to SJR indicator for journals, *Information Systems Research* has the highest SJR indicator and thus the highest average prestige per article also. Out of 198 LIS journals, very limited number of journals has SJR indicator values more than 1.0 and thus limited number of journals has higher average prestige per article. Indian LIS journals have shown very less average prestige per article due to lower the SJR indicator values. From the observation, it has been found that journals belong to the United States and United Kingdom has higher SJR indicator values than other countries. The *h*-index measures

the scholarly prestige of the author or journal or work as a whole by using citation data. More the citation leads to higher *h*-index values. The journal *IEEE Transactions on Information Theory* has the highest *h*-index value amongst all LIS journals. Majority of the LIS journals recorded lower *h*-index values whereas journals with higher *h*-index values are easily countable. Indian LIS journals have shown a very low *h*-index value which shows that research published in Indian LIS journals are less used and cited by the authors. The SJR indicator values and *h*-index values have shown positive correlation in majority of the cases and thus proved that higher the *h*-index leads to the higher SJR indicator. The analysis indicates that less number of LIS journals have higher SJR indicator as well as *h*-index values and higher SJR and *h*-index valued journals belongs to the United States and United Kingdom only.

b) Productive journals in the field of LIS

The LIS journals have produced more than 42000 research articles. There are 198 LIS journals indexed in Scopus. Majority ($3/4^{th}$ of total) of LIS journals have less research productivity than average research productivity whereas only $1/4^{th}$ of total LIS journals have research productivity more than the average research productivity. Out of total, top 10 LIS journals have produced $1/3^{rd}$ of total research productivity which indicates that there is a remarkable difference in research productivity of different LIS journals. Majority (60%) of LIS journals produced 58% of LIS research which also indicates the big difference in research productivity of top LIS journals and less productive journals. The *Journal of Information and Computational Science* has been considered as the most productive journal in the field of LIS followed by *IEEE Transactions on Information Theory*, *Scientometrics*, *Journal of Chemical Information and Modeling*, *Journal of the Association for Information Science and Technology*, and *Library Journal* etc. In Indian scenario, the journal *Journal of Digital Information Management* is the most productive LIS journal and produced more than the average research productivity whereas other two Indian LIS journals are below the average research productivity. The LIS journals belong to United States and United Kingdom have higher research productivity than other countries journals.

c) Research productivity analysis in terms of articles and references

Based on the average research productivity per journal, majority of LIS journals are less productive in LIS research. There are 42203 research articles have been produced by the all LIS journals in five year study period. There are a total of 55 LIS journals that produces more than 64% LIS research. In terms of references, total 11, 59, 494 references have been found for 42203 research articles published in 198 LIS journals. Majority of LIS journals have been observed for lower average reference per article. The journal *International Journal of Law and Information Technology* has been observed for the highest average reference per article followed by *Archivaria*, *Information and Organization*, *European Journal of Information Systems*, and *Information Systems Research* etc. Further, journal *IEEE Transactions on Information Theory* has been found as journal with the highest references followed by *Journal of Chemical Information and Modeling*, and *Scientometrics* etc.

The greater difference has been observed for references in the articles also. Very little number of journals (25 journals) is covering more than half references of the total references while rest of the journals cover less than half references. Indian LIS journals have less number of references per article than average which shows weaker research performance in terms of publications as well as references.

d) Citation mapping of LIS journals

Journal articles use citations to support their work and findings to make it valid. The journal *IEEE Transactions on Information Theory* has received the highest number of average citations amongst all LIS journals followed by *Journal of Chemical Information and Modeling*, *Journal of the Association for Information Science and Technology*, and *Scientometrics* etc. Major number of LIS journals bears less number of citations which leads them to below of the average of average citations range. There are 35 LIS journals above the average of average citations range and covers majority of citations (79%) out of the total citations. Higher range of citations bearing journals is few which shares more than 19% of citations. The Indian LIS journals are very low in terms of citations and thus not very much recognised journals to the world community. From the study, it has been observed that majority of LIS journals are low in terms of citation mapping and the whole field's reputation is build by some recognised and reputed LIS journals from the world. The United

States and the United Kingdom based journals have more number of citations in total than other countries.

e) Prolific country for LIS research

There are 198 LIS journals indexed in Scopus from all around the world. The highest numbers of LIS journals were published from United States followed by United Kingdom, Germany, Spain, Canada, France, Netherlands, India, and Brazil. In terms of number of journals, the United States is the most prolific country followed by United Kingdom. Based on *h*-index values, United Kingdom is the most prolific country followed by United States whereas for total number of research productivity, United States is the most prolific country followed by the United Kingdom. Total average citations also favours United States followed by United Kingdom. The countries like Germany, Netherlands, and Spain are also prolific for LIS research but less than United States and United Kingdom. Indian journals are far behind in all terms and thus India is not considered as prolific country for LIS research. Thus, United States and United Kingdom are the most prolific countries for LIS research in the world. Further, American region and European region covers more than 3/4th of total LIS journals and produces highest amount of LIS research.

f) Qualitative LIS journals by continent wise

There are seven continents in the world. The journals have been classified as per continent they belongs. From all over the African continent, there has been only one LIS journal indexed in Scopus from Nigeria. Nigeria and South Africa are the countries which are leading in LIS research in African continent. Australia is also one of the continents which do not have many LIS journals indexed in Scopus. South American continent is also very poor in terms of LIS journals indexed in Scopus. European and North American continents have higher number LIS journals indexed in Scopus followed by Asia. The average SJR indicator values of the journals have been selected as the criteria for finding out qualitative journals. Based on the SJR indicator values for the journals, top 10 LIS journals have been generated from each continent and thus found that European, North American, and Asian continents have top 10 LIS journals whereas rests of the continents lacks 10 qualitative LIS journals.

5.3 Suggestions

During the research work, many points have been observed for the improvement of mapping of LIS research. Following are some suggestions:

a) Publication cycle needs to be maintained by LIS journals.
b) Interdisciplinary research should be encouraged by the journals to become more research productive.
c) Journals review policy and article selection policy needs to be improved to raise the research level.
d) Social media applications should be adopted to increase the wider readership at national and international level and to attract to prospective researchers to the journal.

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Note: References are based on Publication Manual of American Psychological Association (6th ed.) with some modifications.

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ABSTRACT ON

MAPPING OF LIBRARY AND INFORMATION SCIENCE JOURNALS ON SCOPUS: A SCIENTOMETRIC ASSESSMENT

A dissertation submitted in partial fulfillment of the requirement for the Degree of Master of Philosophy in Library and Information Science

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2017

Introduction

The foundation of modern librarianship rests on an essential set of core values that define, inform and guide our professional practice; these values reflect the history and ongoing development of the profession. A definition of the term is offered and the main functional areas of librarianship identified, together with characteristic of activity in the fields. Advancement in Information and Communication Technology (ICT) has brought a multi-dimensional change in libraries and librarianship. Library and Information Science (LIS) professionals are very vigorous to show performance in disseminating knowledge as well as taking every problem in a collaborative way. So, day by day LIS research is going on to update the LIS professional with the current trends and build a rich collection of LIS publication. In the recent years bibliometrics has gained considerable significance because of its practical applications in the evolution of library operations and services as a statistical technique. It has extensive quantitative analysis of various aspects of literature used to identify the pattern of publication like authorship, degree of collaboration, place of publication, year-wise citations, co-citations etc. used to know the coverage to gain insight into the dynamics of growth of knowledge in the areas under considerations. This helps in developing the organization of information resources which is essential for efficient and effective use. It is the research field that studies scholarly communication, publishing, and the development of literature. Bibliometrics uses three main types of indicators: publication count; citations analysis; and co-citation, co-word analysis and bibliographic coupling. Publication count is one means of measuring and comparing the production of various aggregates such as institutions, regions and countries; and can also be used to evaluate output in individual disciplines, such as philosophy and economics, and to track trends in research fields, collaborative research and many other aspects of research output. Citation analysis uses citations in scholarly works to establish links.

Objectives of the Study

The objective of the study was to map the research publications of LIS journals indexed in Scopus at global level. The specific objectives for the study were to:

a) Examine the SJR indicator and *h*-index of LIS journals.
b) Identify most productive journals in the field of LIS.
c) Find out the total published articles and references for LIS journals.
d) Calculate the citation data for LIS journals.
e) Find out the most prolific country for LIS research.
f) Find out continent wise list of qualitative LIS journals.

Scope of the Study

The study was confined to map the research contributions of Library & Information Science (LIS) journals indexed in Scopus database during 2011-2015. There are 198 LIS journals indexed in Scopus database.

Methodology

The study was designed to investigate the global mapping of LIS research published in journals indexed in Scopus database through scientometric methods. There were 198 LIS journals indexed in Scopus database. The study has been conducted for five years starting from 2011-2015. The online survey method of research was found appropriate

for conducting the study. The data were collected from Scopus database through online survey and tabulated in MS-Excel. The primary information was observed through journals' home page and Scopus website. For the analysis of collected data, MS-Excel was entertained.

Findings of the Study

The analysis of the data collected through online survey has revealed a number of findings on LIS journals indexed in Scopus which are as follows:

- The SJR indicator has been declared by Scopus as a new parameter to evaluate scientific influence of scholarly journals and its values represents "average prestige per article" and not for the whole journal.

- The journal *Information Systems Research* has the highest average SJR indicator (3.4082) which showed the highest prestige per article for the journal followed by *College and Research Libraries* (2.7532), *IEEE Transactions on Information Theory* (2.4738), *Scientific Data* (2.049), *Information and Organization* (1.7808), *Library and Information Science Research* (1.7294), and *Journal of the Association for Information Science and Technology* (1.515).

- Indian LIS journals *Annals of Library and Information Studies* (0.30175), *DESIDOC Journal of Library and Information Technology* (0.241), and *Journal of Digital Information Management* (0.1408) have very less prestige per article compared to *Information Systems Research*.

- There are 23 LIS journals (11.61%) which have Average SJR indicator equal to or more than 1.0 and considered as the most prestigious journals of LIS field indexed in Scopus.

- The higher *h*-index value for the journal represents higher level of scientific research output of the journal in particular field. In this regard *IEEE Transactions on Information Theory* has the highest *h*-index value (232) amongst all LIS journals followed by *Journal of Chemical Information and Modeling* (131), *Information Systems Research* (128), and *Journal of the Association for Information Science and Technology* (112).

- There is lack of higher *h*-indexed journals in the field. Only 4 LIS journals have *h*-index values more than 100 and 11 LIS journals were in the range of 50 - 100 *h*-index.

- Indian LIS journals *Journal of Digital Information Management* (10), *Annals of Library and Information Studies* (6), and *DESIDOC Journal of Library and Information Technology* (5) have lesser *h*-index values.

- The journal *Journal of Information and Computational Science* has produced the highest number of research papers (3090) during the study period and identified as the highest productive journal in the field of LIS followed by *IEEE Transactions on Information Theory* (2605), *Scientometrics* (1500), *Journal of Chemical Information and Modeling* (1477), *Journal of the Association for Information Science and*

Technology (988), and *Library Journal* (940). There are 10 LIS journals which have produced more than 500 research articles during five year period.

- Majority of LIS journals (119 journals, 60.1%) belong to 100 – 499 research production range and produced 58.31% research article of the total. Further, the least research publication range 0 – 99 covers 69 LIS journals (34.84% of total journals) and produced only 9.51% research article of the total. Rest of the 32% research articles has been produced by top 10 LIS journals (5.05% of total journals) and thus become most productive LIS journals than others.

- Total 42203 research articles have been produced by 198 LIS journals indexed in Scopus during 5 year study period. There are 213 research articles per journal on an average. There are 55 LIS journals which have produced research articles more than the average research article per journal (213 research articles) and considered as most productive journal of the field.

- The Indian LIS journals *DESIDOC Journal of Library and Information Technology* (183) and *Annals of Library and Information Studies* (139) have produced research articles less than average research articles per journal while another Indian LIS journal *Journal of Digital Information Management* (299) have produced more than the average research articles per journal and are in the 27th position amongst all LIS journals.

- Majority of LIS journals (143 journals, 72%) are less productive in LIS research based on average research article per journal whereas 55 LIS journals (28% of total journals) are considered as most productive journals. Out of the total research articles, 64.64% research articles have been produced by 55 LIS journals only.

- There are 11, 59, 494 references from 42, 203 research articles of 198 LIS journals during five year period. The average reference per article for all the journals over five year is 27.47.

- Majority of the journals (100 journals, 50.5%) have lower average reference per article whereas 48.48% LIS journals (96 journals) have higher average reference per article. The journal *International Journal of Law and Information Technology* has the highest number of average reference per article (88.64) followed by *Archivaria* (81.03), *Information and Organization* (79.34), *European Journal of Information Systems* (68.81), and *Information Systems Research* (63.75).

- The journal *IEEE Transactions on Information Theory* has the highest number of references (79580) followed by *Journal of Chemical Information and Modeling* (75427), *Scientometrics* (52042), *Journal of the Association for Information Science and Technology* (47297), and *Journal of Information and Computational Science* (44909).

- There are 25 LIS journals that have more than 10, 000 references and cumulatively 5, 99, 515 references (51.7% of total references) out of total references. The journal *IEEE Transactions on Information Theory* alone covers 6.86% references of total references.

- In the case of Indian LIS journal, *Journal of Digital Information Management* has 4565 references which is highest amongst Indian LIS journals followed by *DESIDOC Journal of Library and Information Technology* (2827), and *Annals of Library and Information Studies* (2803). Moreover, Indian LIS journals have less number of references per article than average reference per article for all of the LIS journals.

- There are 3 LIS journals *Anales de Documentacion*, *Biblios*, and *International Journal of Multimedia Information Retrieval* have not received any citation during five years of study period. The journal *IEEE Transactions on Information Theory* has received the highest number of average citations (6375) followed by *Journal of Chemical Information and Modeling* (3688.8), *Journal of the Association for Information Science and Technology* (1994.6), *Scientometrics* (1891), and *Government Information Quarterly* (961.2).

- The journal having citation range more than 5000 citations, alone shares 19.53% citations of total average citations. Majority of LIS journals (194) falls under the 0 – 999 citations range and shares 57.25% citations.

- Based on average of average citations (164.82 citations), there are 35 LIS journals which have higher average of average citations while majority of the LIS journals (163 journals, 82.32%) have lower average of average citations.

- The 35 LIS journals which have higher average of average citations range cumulatively shares 79.21% (25852.4 citations) of total average citations.

- Indian LIS journals *DESIDOC Journal of Library and Information Technology* (43.67), *Journal of Digital Information Management* (43), and *Annals of Library and Information Studies* (31.25) have recorded less number of citations and are below the average of average citations range.

- LIS journals published from United States have the highest *h*-index values followed by journals published from United Kingdom.

- Based on Average SJR indicator, journal belongs to United States have the highest Average SJR values followed by journals belong to United Kingdom.

- Based on research productivity (total documents), journal belongs to United States have the highest number of published documents than other countries. United Kingdom is the second most research productive country for LIS research after United States.

- The highest record for total references belongs to United States journals followed by United Kingdom. Further, the United States journals have higher average citation rates followed by United Kingdom.

- From the analysis, the United States has been found as the most prolific country for LIS research followed by United Kingdom.

- African continent has the least number of LIS journals (one journal) among all continents. Similarly two LIS journals were indexed in Scopus from Australian continent. The South American continent has indexed only five LIS journals which belong to Brazil (3), Chile (1) and Argentina (1).

- The continents Asia, Europe, and North America have number of journals. From the Asian continent, India has indexed 3 LIS journals in Scopus whereas China, Japan, and Malaysia have indexed only one journal each.

- From the top 10 European LIS journals, 9 LIS journals belong to United Kingdom while in the case of North American continent, all top ten LIS journals belong to United States only.

Organisation of the Study

The present study has been tentatively divided into the following chapters:

Chapter 1 "Introduction" gives an introduction to the study which deals with the significance, scope of study, literature review, and research design of the study.

Chapter 2 "Scientometrics: Concepts" highlights about definition and conceptual frameworks of Bibliometrics, Scientometrics, Informetrics, and Webometrics.

Chapter 3 "Library and Information Science Journals in Scopus" deals with the basic ideas related to journals and its types, open access journals, open access journal providers in India, Scopus indexed LIS journals, countries involved in LIS research, and coverage of Scopus.

Chapter 4 "Analytical Mapping of LIS Journal's Data and Findings" highlights the tables of data and its findings from the study.

Chapter 5 "Conclusion and Suggestions" deals with the conclusion of the whole study and suggestions for improve upon the quality of journal for higher research productivity in the field.