

# Measuring Quality and Quantity of Indian Library and Information Science Research Output

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## Abstract

This paper is based on a bibliometric analysis of Library and Information Science (LIS) research publications in India. The data for the period 1951-2010 was extracted from the Science Citation Index (SCI) and grouped into six blocks each covering a period of ten years. Apart from papers, the present study also touched upon production of Ph.Ds in library and information science in India. The average annual growth of Ph.Ds is 31.05% in the total span of sixty years, whereas average annual growth was found to be 26.07% in the same period. Information centres contributed 6% of total LIS research output whereas highest contribution (34%) was made by LIS professionals working in technical institutions. Over 50% papers were of single authorship. The low productivity and quality of research output in library and information science is also discussed.

**Keywords:** Citation Analysis, Library and Information Science Education, Research Output

## 1. Historical Background of Library Science in India

The importance of developing quality library and information science professionals has become critical with the tremendous growth and transformation in the nature and volume of information being published. The Library and Information Science (LIS) education can play an important role in developing quality professionals. LIS education can broadly be defined as production of competent and dedicated professionals in the management of acquisition, organization and information dissemination in libraries<sup>8</sup>. Although, history of libraries is as old as history of education, till 19th century professional library education was not available. Librarians were seen as care takers of books or other documents and had learnt the art of librarianship by practicing under experienced library caretakers. Higher education in India started getting some momentum during the British rule. The British rule established a few colleges such as Calcutta College (1781), Benaras Sanskrit College (1792) and Calcutta Fort William College in 1800. All these colleges were having their own libraries<sup>1</sup> with proper development plan. In 1857, three universities, Calcutta,

Madras and Bombay (now Mumbai) were established by the British, which have been playing an important role in higher education of India even today. Even at this time librarianship was not treated as a profession and no training or professional courses were offered in colleges or universities. This was probably true not only of India but also in most other countries. Those appointed to take care of libraries developed their own methods to manage libraries and no standardized methods were developed or used in these libraries. However, first attempt in this regard was made by Melville Dewey who founded a School of Library Economy in 1887, in which librarians were trained.

Students trained by Dewey also started conducting short-term courses to train librarians throughout the world. According to Dutta and Das<sup>4</sup> formal library education in India started in March 1911 when Sayajirao Gaekwad III invited W.A. Borden, a student of Dewey, for initiating a training programme to train librarians to setup public libraries in Baroda state. In 1915, AD Dickinson started a three-month LIS apprentice training program at Punjab University, the second library school in the world. After that, LIS education gained momentum and many short-term training programmes were

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organized in various institutions. Dr. S R Ranganathan started first certificate course in library science under the aegis of Madras Library Association in 1929, which was later converted into a PG Diploma programme in Library Science by the University of Madras in 1937<sup>5,6</sup>. The first Ph.D in LIS was awarded to Dr. D B Krishna Rao by University of Delhi in 1957<sup>3</sup> and gradually, in course of time many other universities started imparting LIS education. India has a large system of LIS education with more than 85 universities offering Master's Degree and over 50 universities offering Ph.D programmes in LIS. Even though, it makes Indian LIS education a huge one still serious efforts are needed to make an impact at the International level. Indian LIS profession has still a long way to go as various issues like course contents, academic status for librarians, quality of Indian research output, etc need to be addressed. As stated by Satija<sup>11</sup> Library science courses are never the first option for a majority of students. Most of the students turn to library science after having failed to secure admission to other prestigious courses of study. This is probably a major factor for low LIS research output in India.

## 2. Research in Library and Information Science (LIS)

In many countries librarians are expected by authorities to contribute actively to enhance the knowledge base of their professional discipline; librarians are expected to conduct research and publish their research results in scholarly journals. It is also very important to engage them in research for adding value to librarianship<sup>13</sup>. Patra and Chand<sup>10</sup> in their study found that Indian library science professionals published 3396 articles. They extracted data from online version of Library and Information Science Abstracts (LISA). They identified 13 major journals of library science accommodating over 50% of Indian LIS research; Science Citation Index covered only two of them. They concluded that Indian LIS research output is mostly published in Indian journals and most of them are not part of international databases. Therefore, Indian professionals need to target International quality journals for publishing their research output and Indian publishers need to make efforts to get space in International databases as well. Satija<sup>11</sup> has stated that Indian LIS research scholars lack perception to visualize, identify, and formulate valid problems for research. The mandate from University Grants Commission (UGC) about requirement of PhD for faculty positions and promotions prompted many LIS professionals to acquire PhD degrees even if many of them did not have the skills and ability to

do research. In his study Osman<sup>9</sup> pointed out that library profession has not been fully accepted as profession in many countries. LIS profession in Asian countries is still struggling to be known as part of academic profession. In opinion of Ocholla, Ocholla and Onyancha<sup>7</sup> there is a frequent demand by librarians to be accorded academic status within universities and quality research output in reputed international journals could be a big support for justifying their demand.

## 3. Purpose of the Study

Recently, India has completed 100 years of library education. Hence, through this study an effort is being made to assess the research and publication patterns of librarians working in India. It also helps to understand the impact and quantity of LIS literature being published by Indian LIS professionals. Although, there are various studies, which assessed the production or research output in scholarly publications in various other disciplines only a few studies have been published to know the trend in publications by the librarians. The study employs bibliometric analysis and has the following objectives:

- Measuring LIS research output and its growth;
- Trends in authorship patterns;
- Papers produced vis-à-vis types of Institutions; and
- Most dominant areas of research.

## 4. Methodology

The data for the study were extracted from Science Citation Index (SCI) through web of knowledge interface. The study confined its scope to publications produced during 1951-2010. Proper care was taken while searching the SCI to extract needed data. Further, for easy interpretation the period of study, i.e. 1951-2010, is divided into six blocks of ten years each.

The data for production of PhDs in LIS was collected from 'University News' published by the Association of Indian Universities and other published literature.

## 5. Findings and Discussions

The findings of the study are represented in the following sections.

### 5.1 Measuring LIS Research Output

A total of 931 PhDs were awarded in LIS by Indian universities during 1951-2010. Table 1 shows the growth of PhD production in Indian universities in LIS. In the

same period Indian library professionals published 934 of scholarly papers, indexed by SCI, which received 3414 citations in the same time span. The last couple of blocks were the more productive in which Indian universities awarded maximum number of PhDs in LIS. Whereas publications of articles in international journals are concerned, a significant increase was observed during 1971-80 and also in 2001-10. The citations received by published articles were higher in the block period of 1991-2000.

**Table 1.** Indian LIS research output

Block (10 Years)	PhDs*	Articles	Article Citations
1951 - 1960	1	1	0
1961 - 1970	2	11	18
1971 - 1980	16	142	239
1981 - 1990	131	206	485
1991 - 2000	337	220	1233
2001 - 2010	444	354	1439
<b>Total</b>	<b>931</b>	<b>934</b>	<b>3414</b>

\*Source: Chandrashekara and Ramasesh<sup>2</sup>

## 5.2 Growth Rate of LIS Research Output

The Annual Growth Rate was calculated to show the growth rate of research output in terms of PhDs, scholarly papers and citations. With respect to PhDs the number doubled during 1961-70 (compared to PhDs awarded in 1951-60). The highest growth was seen in the decade 1981-90 in which more PhDs were awarded over the previous decade and least growth was seen during the decade 2001-10. In so far as scholarly publications are concerned the decade 1971-80 saw highest growth (i.e. 119.09%) and 1991-2000 the lowest growth. Table 2 presents the statistics of growth of LIS productivity with respect to PhD, papers and citations to the published articles.

## 5.3 Articles per PhD and Citations per Article

In the study average number of articles against the production of PhDs in different blocks of years was also calculated. Interestingly, the articles published in scholarly journals were found almost equal to the number

of PhDs produced by Indian universities in the last sixty years. Recently many universities have mandated that every research scholar should publish at least one research paper in a peer-reviewed national/International journal in the area of his/her research before the submission thesis to the university<sup>12</sup>. Hence, it is expected to see higher growth in article production in the coming years.

It was found that during 1951-60 only one PhD was awarded and one Indian LIS article was indexed in the SCI. During 1961-70, 11 articles were published whereas only 2 PhDs were awarded, which on an average provided 5.50 articles per Ph.D. Similarly on an average 8.88 articles per PhD were recorded in the period of 1971-80. The next decade, i.e. 1981-90 recorded on average 1.57 articles per PhD, 1991-2000 received merely 0.65 articles per PhD and 2001-10 recorded 0.80 articles per PhD. This suggests that the growth in PhDs awarded is higher compared to papers published in the last couple of decades. It may also be seen that LIS professionals did not make any efforts to publish their findings in international peer-reviewed journals after completion of PhDs. This was also highlighted by Satija<sup>11</sup>; in his study he stated that as per UGC guidelines, getting a teaching job in universities/colleges National Eligibility Test (NET) is mandatory but first cut-off date in December 1992 for obtaining the PhD degree to get an exemption from NET has done a serious damage to research standards. This further indicates that the quality of PhDs awarded during the last couple of decades was not up to the mark. Quality of some of the theses was so poor that researcher could not produce any research article/paper. This raises a serious question over the quality of LIS PhDs produced by the country.

Figure 1 shows the number of citations per published paper. 1961-70 on an average 1.64 citations were received by every published article, which slightly increased in the next couple of decades (i.e., 1971-80 and 1981-90). In 1991-2000 number of citations per article was higher (5.60) which decreased to 4.06 in 2001-10. This suggests that papers published by LIS professionals in India were largely on local issues based on their experiences and were mostly relevant to libraries in India with similar issues. Hence, most of the best practices and researches were published in regional journals and moreover, these

**Table 2.** Growth rate of LIS research output in India

Research Output Categories	Production						AAGR
	1951-60	1961-70	1971-80	1981-90	1991-2000	2001-10	
PhDs	1	2	16	131	337	444	31.05
Articles	1	11	142	206	220	354	26.07
Citations	0	18	239	485	1233	1439	30.03

\*AAGR = Average Annual Growth Rate

journals were more accessible in terms of accepting papers than International journals.

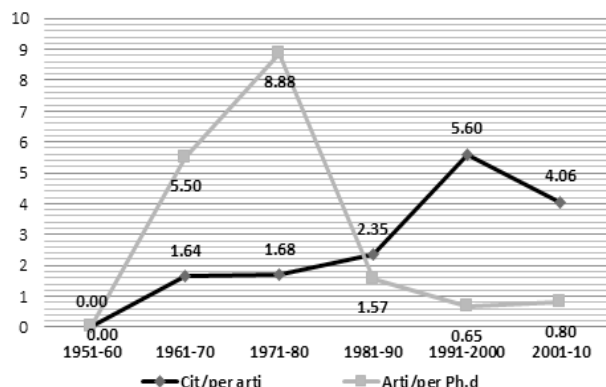


Figure 1. Articles per Ph.D and citations per article.

### 5.4 Authorship Trends

From 1951-2010, 946 authors have published 934 papers on average of 1.86% author per article. As shown in Figure 2, it was found that over half (i.e. 51.65%) of the publications were of single authorship and 49.35% publications were of multiple authorship; 31.03% papers were written by two authors and 12.94% by three authors. Only a few papers had four or more authors. This indicates that single authorship trend is common in library science publications in India, which generally reflects lower rate of collaboration among librarians.

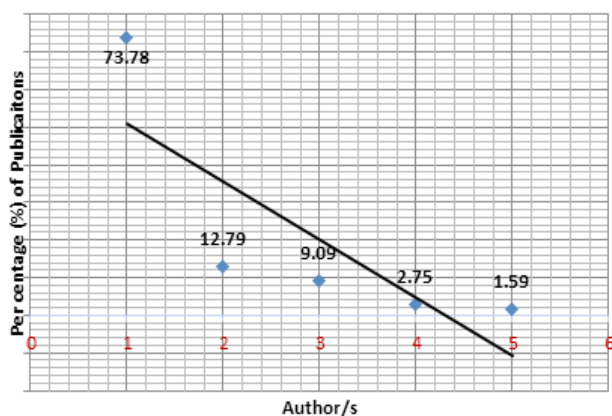


Figure 2. Authorship trends.

The study also revealed that 73.78 % authors have contributed only one paper, 12.79% author's published two papers; followed by 9.09% author's published 3-5 papers. 6-10 papers were published by 2.75% of the authors and 1.59% authors published 10 or more papers. This depicts that not many library professionals are engaged in paper writing and a majority of them do not write frequently.

### 5.5 Most Active LIS Professionals

Since, it has been established that many of the Indian LIS professionals have been writing in Indian journals and a very few of them have been exploring international journals as a medium for publishing their research output. However, as revealed by Table 3, as per SCI, Prof. M.P. Satija is among the most active LIS professional who has written 78 papers, followed by Dr. K C Garg and Dr. B.M. Gupta with 31 publications each.

Table 3. Active LIS professionals (Authors published 10 or more papers in international journals)

Name of the Author	Papers Published	Name of the Author	Papers Published
1. Satija, M P	78	10. Kumar	14
2. Garg, K C	31	11. Rao	14
3. Gupta	31	12. Nagpaul	12
4. Arunachalam	23	13. Basu	11
5. Rao	22	14. Bhattacharya	11
6. Kumar	21	15. Gopinath	11
7. Sengupta	20	16. Kademani	10
8. Neelameghan	19	17. Karisiddappa	10
9. Prathap	19		

### 5.6 Paper Produced by Type of Institutions

The study also revealed that 34% of the papers were contributed by library professionals working in IITs (Indian Institute of Technology) and other technical institutions. As given in Figure 3, the LIS professionals (and academicians) working in universities contributed 28% of the total papers published in the last sixty years. LIS professionals working in CSIR Laboratories contributed 16% of the total output. Information institutions such as INFLIBNET, DELNET and DRTC etc. contributed only 6% of the total LIS publications, followed by 4% publications of library professionals working in medical libraries, B-Schools and corporate houses.

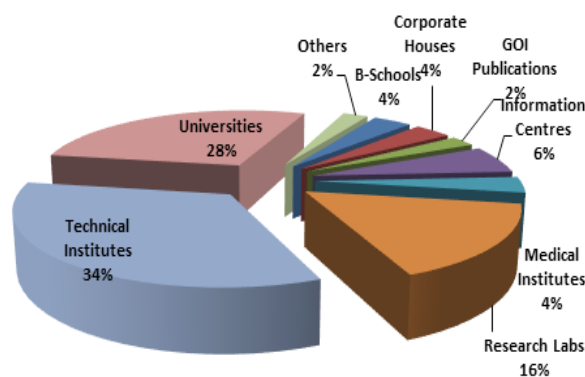


Figure 3. Paper produced by type of institutions.

## 5.7 Most Productive LIS Research Areas

About 24.71% of the total articles were bibliometric/scientometric/webometric studies whereas in the last two decades about 52% of the total publications were bibliometric studies only. Library automation, applications ICTs in libraries were the other productive areas of LIS on which 14.40% articles were published. Other areas such as collection development, library education, cataloguing and classification, indexing and abstracting and user needs or awareness were not explored much.

## 6. Conclusion

In India LIS research is facing many challenges. We need to enhance the quality of PhD programmes and encourage publishing quality content in peer-reviewed international journals. The LIS educational course curriculum across the country needs serious update by accommodating application of cutting edge technologies and its applications. The study revealed that growth in PhD production does not necessarily result in growth in article publications in international journals. Study also revealed that most of the research is on bibliometrics analysis which indicates that many of other key areas of LIS have been ignored.

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