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## DESIDOC Journal of Library and Information Technology (DJLIT): A Bibliometric Study (2003-12)

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## **DESIDOC Journal of Library and Information Technology (DJLIT): A Bibliometric Study (2003-12)**

**Abstract:** - DESIDOC Journal of Library and Information Technology (DJLIT) is more than three decades old journal, published in the field of library and information Sciences, on bimonthly basis, by Defense Science Documentation Centre, New Delhi, India. The journal is enjoying wide readership both at national and international level. The present Bibliometric study was carried on 366 scholarly research articles published in 'DESIDOC Journal of Library and Information Technology, during the period 2003-2012. Present analysis is mostly confined to examine article distribution pattern of the journal articles, authorship pattern, geographical distribution of authors and citation analysis. A maximum of 147 articles contributed in the journal are on two author pattern, followed by 139 articles as single author. New Delhi since being the host state of the journal emerged the single largest contributing state with 199 out of 627 contributors from India. On average 6.20 articles were published by the journal in each issue during the period of investigation with total references 5063, thereby making average 13.83 references each article.

**Key Words:** - **Bibliometrics, DRDO, DESIDOC, DJLIT, Distribution Pattern, Citation Analysis, References,**

**Introduction:** - **The** Present study is confined to DESIDOC Journal of Library and Information Technology (DJLIT), one of the leading Library Science journals in India, being published by Defense Science Documentation Centre (DESIDOC), DRDO, GOI, New Delhi since 1981 on bimonthly basis, each volume having six issues. DJLIT is one of the leading journals in the field of Library and information Science in India, over three decades old. Researchers of the given science all over the world equally prefer to publish their research results in said journal. Primarily DESIDOC used to be known as Scientific Information Bureau (SIB) and it started functioned in the year 1958 as constituent of Defense Science Laboratory (DSL), presently known as Defense Science Centre <sup>[1]</sup>. In the year 1967, scope of SIB got expanded and accordingly got renamed as DESIDOC and is presently housed in five storied building in the Metcalfe house complex, New Delhi, India.

In order to understand the latest trend and pattern of publication distribution in the field of Library and Information Sciences in India, it was conceived to undertake the bibliometric study on one of the leading and consistent journals of LIS in India and accordingly DJLIT was chosen for the purpose and the present study remains confined to last decade viz. for the period 2003-2012. Apart from assessing research output of the journal during the last decade the aim was also to analyze the authorship pattern, publication pattern, geographical distribution of authors, and reference analysis. During the period of analysis the journal has covered most of the professional areas and aspects of LIS, with a good number of issues dedicated to topics like,

Measurement of Indian Science and Technology, Library Consortia, Library and Information Education in India, Intellectual Property Rights, Open Access, Information Literacy, Online Exhibitions, Knowledge Sharing, e-Learning, Social Science Gateways, Open Source Software's, Agriculture, Scientometrics, Semantic-Web, E-books and many more. Publishing guest editorial in almost each issue of the journal has been the regular feature of the journal.

Undertaking a study on bibliometrics and not to make mention of Alan Pritchard would be doing more like a sin. Pritchard is considered as the founding father of bibliometrics. Term bibliometrics was coined by Pritchard in (1969) <sup>[2]</sup> in his publication entitled "Statistical Bibliography of Bibliometrics". Though there is no denial in the fact that terms like Librametrics, Econometrics, Psychometrics, Scientometrics, Biometrics, etc were already in vogue but that should not lessen the credit which Pritchard deserves for conceiving the concept of bibliometrics to which most of his contemporaries argue about. Pritchard defined the term as "the application of mathematics and statistical methods to books and other media of communication". To be more precise and appropriate we can say bibliometrics is more about the mathematical applications to a given field to study its literary or research output. It won't be inappropriate to say that bibliometrics is more about application of tools and techniques to understand the research productivity quantitatively of any given subject of study or for that matter we can also define it as quantitative evaluation of literature by mathematical and statistical applications.

Journals since being the primary sources of information, publishing research results of a given discipline at regular intervals of time, as such employing quantitative techniques to these sources of information to have first hand assessment of research productivity in a given discipline helps to understand the research growth and output of a particular discipline or subject. Bibliometric studies are also undertaken on the similar pattern to assess the research output, growth and trend in organizations and institutions. It is always advisable to analyze journals of repute to assess the research growth by using quantitative techniques. On the similar lines, present study has been undertaken with the sole motto to assess and understand the research output published in DESIDOC Journal of Library and Information Technology (DJLIT) during the last decade spanning 2003-2012 by employing bibliometric techniques. DJLIT is a peer reviewed journal, indexed in Library and Information Science Abstract (LISA), Library and information Science Technology Abstracts (LISTA), Indian Citation Index (ICI), Indian Science Abstracts (ISA) etc.

**Related Literature:** - Assessment and quantitative evaluation of research output of scholarly content at regular intervals of times is equally an important activity as the research carried out in a discipline itself. For the fact, these kind of studies help to develop better understanding about the growth, trend and future prospects of science at global level. Already a good number of bibliometric studies have been carried out on DESIDOC Journal of Library and Information Technology, some of the studies include Bansal, et al. (2005) <sup>[3]</sup> and Tigga et al (2005) <sup>[4]</sup> these studies were confined to content analysis of DESIDOC Bulletin of Information Technology now

(DJLIT), Kumar and Moorthy (2011) <sup>[5]</sup> spanning over the period (2001-2010) Thavamani, K. (2013) <sup>[6]</sup> spanning over the period (2007-2011) etc are just a few studies to name which have exclusively been undertaken on DJLIT. In view of the last two studies there may appear no need to undertake any further study on same journal in near future, while as upon reviewing the above two studies it became imperative to undertake the study to cover other important areas which were not covered in these studies. Besides, study of Thavamani spans over just five years as such may not have presented in-depth picture of publication distribution of the said journal. The additional areas absent in earlier two studies but explored in the present study include, geographical affiliation of authors, author wise distribution and pattern of references, in-depth presentation of other facts and figures which is missing in earlier studies, reference distribution pattern is not clear as no average references have been calculated. There were some other areas which were not explored in these studies as such the study was undertaken.

Verma et al. (2007)<sup>[7]</sup> in their bibliometric analysis analyzed 131 articles published in ALIS journal during the period 1999-2005 and observed that there are more single author contributions in journal than joint author. The researchers further observed that, that the source journal is the most cited. Mittal et al. (2006) <sup>[8]</sup> in their study, Periodical Literature in Library and Information Science Education observed that 72.8% articles were contributed by single authors, 20.69% by two authors

Mahaparta & Jena (2006) <sup>[9]</sup> in their bibliometric study, the growth of scientific literature in Orissa studied the aspects like, article distribution, citation distribution pattern, length of articles, geographical distribution, figures and tables, etc. Pillai & Sudhir (2007) <sup>[10]</sup> studied the authorship pattern of journals and books cited in the doctoral thesis of Indian Institute of Sciences, awarded during 1999-2003 in Physics and found that average authors per journal was 3 and books 1.69. Williams (2006) <sup>[11]</sup> studied biomedical research literature of Nigeria from 295 Journals spanning over the period 1967-2002. Madasamy & Alwarammal (2009) <sup>[12]</sup> studied doctoral degrees awarded in the field of library and information science during the period 2003-2008. Patra et al (2006) <sup>[13]</sup> studied bibliometric study of literature on bibliometrics, Shri Ram (2010) <sup>[14]</sup> analyzed 15 years data of PubMed on Artemisia (*Artemisia Annu*). Nosheen et al. (2011) <sup>[15]</sup> studied Pakistani Journal of Library and Information Sciences.

Rattan & Gupta (2012) <sup>[16]</sup>, Barkri & Willett (2008) <sup>[17]</sup> Tiew, et al. (2002) <sup>[18]</sup> undertook their bibliometric study of Malaysian journal of Library and information Science. Rattan & Gupta in their study undertaken on Malaysian Journal of Library and Information Science, observed that 27% articles were single authored and 73% joint authored publications with maximum contribution from host country, viz Malaysia. Other related studies conducted include, Ghana Library Journal by Sam (2008) <sup>[19]</sup>. Tiew, W.S (1998) <sup>[20]</sup> studied journal of natural rubber research, Vij and Bedi (1999) <sup>[21]</sup> studied Defense Science Journal.

Dixit & Katore, (2007) <sup>[22]</sup> in their study undertaken on the Journal of Indian society for Cotton Improvement studied 327 articles published during the period 1995-2004 and observed that 71.93% citations are from source journals. Deshmukh (2011) <sup>[23]</sup> studied 'Citations in Annals of Library and Information Studies' Journal of the articles published between 1997-2010 and observed that source journal is the most cited one. Mete and Deshmukh (1994) <sup>[24]</sup> analyzed 202 articles of Annals of Library and Information Studies (ALIS), published during the period 1984-1993 and observed that source journal is the most cited. The study also confirmed that half life period of the books is 8 years and journals 12 years. Deshmukh (2011) <sup>[25]</sup> in a similar study carried on ALIS articles published between 1997-2010 put forth that half life period of journals is 14 years and for books it is 9 years an increase of one year for books and 2 years for Journals when compared to earlier study of same author. Kumar and Kumar (2005) <sup>[26]</sup> studied the journal of Oil Seed and Research with articles published between 1993-2004, and analyzed 8093 citations of articles

Most of the aforementioned studies have been undertaken just to understand the publication distribution pattern of articles published in a particular journal, covering areas like authorship pattern, geographical distribution, reference and citation pattern, average articles etc.

**Objectives of the Study:** - The present study has been undertaken with the following objectives

- To analyze the articles published during last decade in the 'DESIDOC Journal of Library and Information Technology (DJLIT)' spanning over the period 2003-2012
- To assess the authorship pattern and geographical affiliation of authors with number of contributions
- Global distribution of articles and ranking thereof of countries according to number of articles, authors and contributors
- To quantify average articles published per volume and issue and reference distribution pattern with average references per article, both volume and issue wise as a whole.

**Source and Methodology:** - The present study is more or less a case of data mining; the data required for analysis, keeping in view the aforementioned objectives was retrieved from the host website of journal, accessible at <http://publications.drdo.gov.in/ojs/index.php/djlit/issue/archive>. Accordingly a fair amount of related literature was reviewed so as to have a better idea and understanding of various bibliometric studies already undertaken in different subject fields. Articles published in DJLIT journal during the last decade viz. during the period 2003-2012 were extracted, reviewed & put to analysis as per the objectives of the study. DJLIT since being a bimonthly journal, as such in all 366 articles were scanned from 59 issues of 10 (Ten) volumes of the journal from Volume number 23 to 32, as issue no 5 of Vol No. 25 was not published, and accordingly average articles were calculated by undertaking into consideration only 59 issues. The data retrieved was put to excel format so as to achieve the set objectives. Cumulative title

and author index articles, published in Vol. No 30 (6) and abstract of Bhaskar Mukherjee, published in vol. No. 31(4) has been excluded. Also all the guest editorials published in journal during the period were excluded.

**Limitations of the Study:** - Since the journal is being regularly published in six volumes, however in the year 2005, issue no 5 of Vol No. 25 was not published. Paper of Sexana et al., Ramesha & K.P Singh et al. published in Vol. No. 27(4), Vol. No. 28 (2) and Vol. No. 29 (6) respectively were not available on its website for access, despite being published in their respective issues. Articles of Chen et al. Vol. No. 28(4) was not accessible, upon accessing the said article the preceding article used to get displayed instead of the actual one. The publisher concerned upon contacting for provision of said articles showed inability in their delivery owing to different reasons, including not being a member of DRDO family. There were a few papers where author's affiliation was not indicated, since these articles were mostly from host country as such verifying their affiliation on the basis of other contributions made to same journal by the same authors became easy, hence was overcome. On the whole the entire calculation and observation was undertaken with utmost care, where ever required repeated cross checking was carried out so as to avoid even minor errors.

**Analysis of Data:** - Keeping in view the nature of data and the type of analysis to be carried out, there was no need to hire the expert services. In the present study the data was simply put to excel format for executing simple operations like, addition, subtraction, drawing percentage etc. at all the places percentage has been drawn up to two maximum decimal places and has also been rounded off at some places to next higher percentile value.

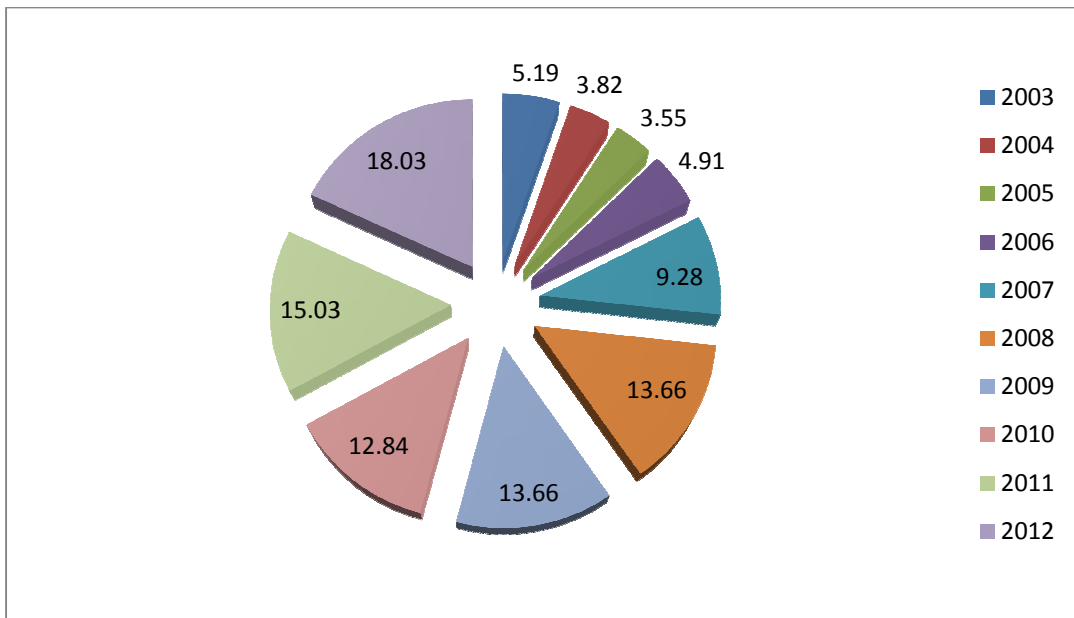
**Table-I Volume wise distribution of articles**

| Year | Vol. no | Issues | Distribution of articles Issue wise |               |               |               |               |               | Total publications & (%) | Average Articles per issue |
|------|---------|--------|-------------------------------------|---------------|---------------|---------------|---------------|---------------|--------------------------|----------------------------|
|      |         |        | Issue No 1                          | Issue No 2    | Issue No 3    | Issue No 4    | Issue No 5    | Issue No 6    |                          |                            |
| 2003 | 23      | 6      | 6                                   | 4             | 2             | 2             | 2             | 3             | 19 (5.19)                | 3.16                       |
| 2004 | 24      | 6      | 2                                   | 3             | 2             | 3             | 2             | 2             | 14 (3.82)                | 2.33                       |
| 2005 | 25      | 5      | 3                                   | 3             | 2             | 3             | NP*           | 2             | 13 (3.55)                | 2.60                       |
| 2006 | 26      | 6      | 3                                   | 5             | 2             | 2             | 4             | 2             | 18 (4.91)                | 3.00                       |
| 2007 | 27      | 6      | 7                                   | 4             | 4             | 7             | 5             | 7             | 34 (9.28)                | 5.66                       |
| 2008 | 28      | 6      | 9                                   | 10            | 7             | 10            | 8             | 6             | 50 (13.66)               | 8.33                       |
| 2009 | 29      | 6      | 11                                  | 10            | 9             | 6             | 9             | 5             | 50 (13.66)               | 8.33                       |
| 2010 | 30      | 6      | 7                                   | 8             | 7             | 8             | 11            | 6             | 47 (12.84)               | 7.83                       |
| 2011 | 31      | 6      | 8                                   | 8             | 7             | 13            | 9             | 10            | 55 (15.03)               | 9.16                       |
| 2012 | 32      | 6      | 10                                  | 11            | 12            | 12            | 11            | 10            | 66 (18.03)               | 11.00                      |
|      |         | 59     | 66<br>(18.03)                       | 66<br>(18.03) | 54<br>(14.75) | 66<br>(18.03) | 61<br>(16.66) | 53<br>(14.48) | 366 (100)                | 6.20                       |

(Figures in the parenthesis is percentage)

\*NP-Not Published

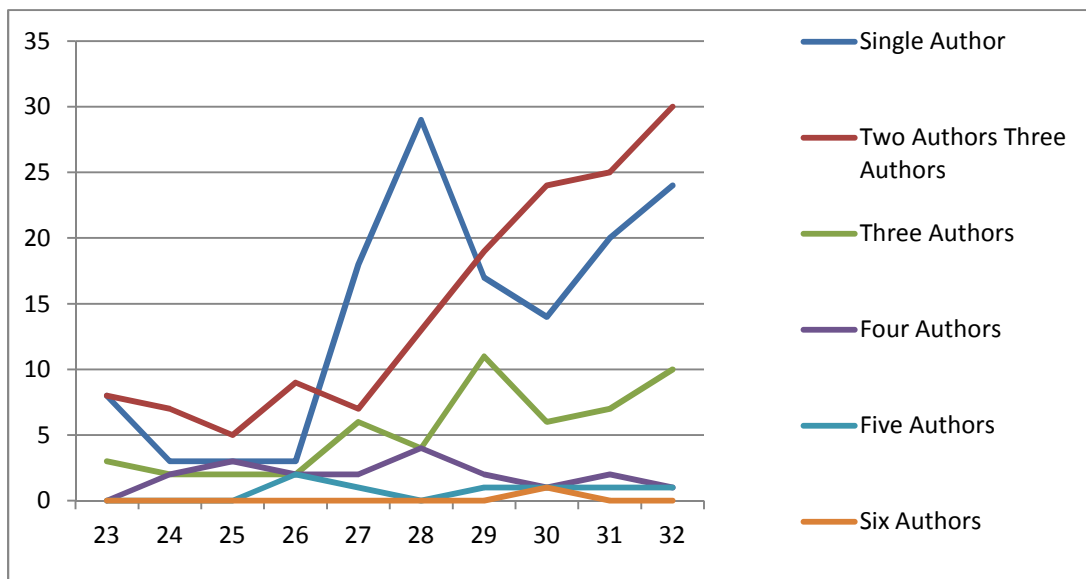
The sole purpose of presenting scattered tabulated distribution is to give a broader and much clearer picture of the articles published in DJLIT during the last decade running from volume 23-32. On average 6.20 articles were published in each issue of the journal. Since the journal is being published on bimonthly basis. From the above tabulation we can see there is a slight decrease in the number of articles published in each volume of the journal as we move from the year 2003 to 2005, but from the year 2006 to 2012 there is almost steady increase in the number of articles published in each volume. A minimum number of articles 13 were published in volume 25 and a maximum number of articles 66 were published in volume 32, constituting alone 18.03% share. The overall distribution of publication %age is depicted in below mentioned pie diagram.



**Table-II Volume wise authorship pattern of articles**

| S.No  | Vol. No. | Single author | Two authors | Three authors | Four authors | Five authors | Six authors | total |
|-------|----------|---------------|-------------|---------------|--------------|--------------|-------------|-------|
| 2003  | 23       | 8             | 8           | 3             | -            | -            | -           | 19    |
| 2004  | 24       | 3             | 7           | 2             | 2            | -            | -           | 14    |
| 2005  | 25       | 3             | 5           | 2             | 3            | -            | -           | 13    |
| 2006  | 26       | 3             | 9           | 2             | 2            | 2            | -           | 18    |
| 2007  | 27       | 18            | 7           | 6             | 2            | 1            | -           | 34    |
| 2008  | 28       | 29            | 13          | 4             | 4            | -            | -           | 50    |
| 2009  | 29       | 17            | 19          | 11            | 2            | 1            | -           | 50    |
| 2010  | 30       | 14            | 24          | 6             | 1            | 1            | 1           | 47    |
| 2011  | 31       | 20            | 25          | 7             | 2            | 1            | -           | 55    |
| 2012  | 32       | 24            | 30          | 10            | 1            | 1            | -           | 66    |
| Total |          | 139           | 147         | 53            | 19           | 7            | 1           | 366   |

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**Figure 1**

Table-II has been crafted with the view to give a better understanding of the authorship pattern of 366 articles published/ distributed over 10 volumes of the journal. On the whole we can see there are 139 single author articles, 147 two author articles, 53 three author articles, 19 as four author articles, 7 as five author articles and 01 as six author article. Table-III give below gives a better and clearer picture of the authorship distribution pattern. Out of 366 articles 227 are joint author publications this in itself confirms that more than 62.02% articles published in the DJLIT during the period of study were published on co-authorship pattern.

**Table-III Issue wise article distribution pattern of authors**

| S.No | Author Type | Distribution Issue wise |            |            |            |            |            | Total articles & (%) | Cumulative Articles & (%) | No of authors & (%) | Total contributors & (%) |
|------|-------------|-------------------------|------------|------------|------------|------------|------------|----------------------|---------------------------|---------------------|--------------------------|
|      |             | Issue No 1              | Issue No 2 | Issue No 3 | Issue No 4 | Issue No 5 | Issue No 6 |                      |                           |                     |                          |
| 01   | Single      | 31                      | 30         | 13         | 23         | 25         | 17         | 139<br>(37.97)       | 139<br>(37.97)            | 120<br>(20.86)      | 139<br>(19.60)           |
| 02   | Two         | 25                      | 24         | 25         | 30         | 21         | 22         | 147<br>(40.16)       | 286<br>(78.14)            | 231<br>(40.17)      | 294<br>(41.46)           |
| 03   | Three       | 6                       | 6          | 10         | 7          | 12         | 12         | 53<br>(14.48)        | 339<br>(92.62)            | 131<br>(22.78)      | 159<br>(22.42)           |
| 04   | Four        | 3                       | 3          | 4          | 6          | 3          | -          | 19<br>(5.19)         | 358<br>(97.81)            | 58<br>(10.08)       | 76<br>(10.71)            |
| 05   | Five        | 1                       | 2          | 2          | -          | -          | 2          | 7<br>(1.91)          | 365<br>(99.72)            | 29<br>(5.04)        | 35<br>(4.93)             |
| 06   | Six         | -                       | 1          | -          | -          | -          | -          | 1<br>(0.27)          | 366<br>(100)              | 06<br>(1.04)        | 06<br>(0.84)             |
|      |             | 66                      | 66         | 54         | 66         | 61         | 53         | 366                  |                           | 575                 | 709                      |



This tabulation is more or less a continuation of table-II, here the only difference is, that in Table-II simply the attempt was made to give an overview of the authorship pattern of article distribution. Taking the same forward, in Table-III the authorship distribution has been reflected more clearly and more widely. On the whole 37.97% articles published in the journal during the last decade were single author, 40.16% were two author contributions, 14.48% articles were three author contributions, 5.19% were four author articles, 1.91% articles are five author articles and a meager 0.27% are six author contribution. Interesting aspect in the above tabulation is under the column, number of authors and number of contributors, incorporated just to give the clear idea about the authorship pattern which emerged over the period. In all 498 authors have contributed 366 papers making it author share of 0.73 articles by each author. A good number of authors have contributed more than one article in more than one authorship pattern and without eliminating their repetition the gross tally of total number of contributors is 709 persons. In all 120 authors have contributed as single author articles, 231 authors as two author articles, 131 authors as three author articles, 58 authors as four author articles, 29 authors as five author articles, and six authors have contributed one six author article.

**Table-IV Geographical Distribution of Contributions, Contributors, & Authors**

| S.No | Name of the country | Total No. of contributions & (%) | Total No. of contributors & (%) | Total No. of Authors & (%) | Average %age | Rank |
|------|---------------------|----------------------------------|---------------------------------|----------------------------|--------------|------|
| 01   | India               | 318 (85.71)                      | 627 (88.43)                     | 421 (84.53)                | 86.22        | 1    |
| 02   | Singapore           | 8 (2.15)                         | 12 (1.69)                       | 12 (2.40)                  | 2.08         | 2    |
| 03   | U.K                 | 8 (2.15)                         | 9 (1.26)                        | 7 (1.40)                   | 1.60         | 3    |
| 04   | USA                 | 8 (2.15)                         | 8 (1.12)                        | 6 (1.20)                   | 1.49         | 4    |
| 05   | UAE                 | 4 (1.07)                         | 7 (0.98)                        | 7 (1.40)                   | 1.15         | 5    |
| 06   | Greece              | 2 (0.53)                         | 8 (1.12)                        | 8 (1.60)                   | 1.08         | 6    |
| 07   | Nigeria             | 2 (0.53)                         | 7 (0.98)                        | 7 (1.40)                   | 0.97         | 7    |
| 08   | Kenya               | 2 (0.53)                         | 5 (0.70)                        | 5 (1.00)                   | 0.74         | 8    |
| 09   | South Africa        | 2 (0.53)                         | 3 (0.42)                        | 3 (0.60)                   | 0.51         | 9    |
| 10   | Iran                | 1 (0.26)                         | 3 (0.42)                        | 3 (0.60)                   | 0.42         | 10   |
| 11   | Unknown             | 1 (0.26)                         | 3 (0.42)                        | 3 (0.60)                   | 0.42         | 10   |
| 12   | Germany             | 2 (0.53)                         | 2 (0.28)                        | 2 (0.40)                   | 0.40         | 12   |
| 13   | Bangladesh          | 2 (0.53)                         | 2 (0.28)                        | 2 (0.40)                   | 0.40         | 12   |
| 14   | Sri Lanka           | 2 (0.53)                         | 2 (0.28)                        | 1 (0.20)                   | 0.33         | 14   |
| 15   | Argentina           | 1 (0.26)                         | 2 (0.28)                        | 2 (0.40)                   | 0.31         | 15   |
| 16   | Canada              | 1 (0.26)                         | 2 (0.28)                        | 2 (0.40)                   | 0.31         | 15   |
| 17   | Australia           | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |
| 18   | Belgium             | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |
| 19   | Egypt               | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |
| 20   | Japan               | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |
| 21   | Spain               | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |
| 22   | Thailand            | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |
| 23   | China               | 1 (0.26)                         | 1 (0.14)                        | 1 (0.20)                   | 0.20         | 17   |

|  |  |     |     |     |  |  |
|--|--|-----|-----|-----|--|--|
|  |  | 371 | 709 | 498 |  |  |
|--|--|-----|-----|-----|--|--|

The purpose of having Table-IV was only to assess the geographical affiliation of authors with countries and have contributed to DJLIT during the period of study, and accordingly the ranking of countries was done based on the contributions and the number of contributors from a particular country. During the compilation of data of column-V for authors in this particular table every care was taken to eliminate the repetitive authors in all kind and category of publications, unlike to column-IV of total contributors of this very table where the total number of contributors outnumbers the total number of authors. A total of 498 authors have contributed articles to DJLIT during the period of study from 22 different countries, except for one article, affiliation of which could not be ascertained, as such was put under unknown country at S. No. 11. Five articles have been contributed jointly by authors from two different countries as such we can see the total number of articles is 371 instead of 366, which otherwise is the actual number of articles published during the period. In terms of ranking India emerged at number one spot for having contributed maximum 318 articles, constituting 85.71% contribution, 627 contributors, constituting 88.43% and 421 authors, constituting 84.53%, with aggregate percentage of 86.22% and the reason obviously can be owed to the fact that India being the host country. In terms of ranking India is followed by Singapore at number two spot and U.K at number three spot, though both having contributed 8 articles each, but for more contributors and authors, Singapore has been placed at number 02 spot as such having overall aggregate percentage of 2.08% and 1.60% respectively.

**Table-V State wise contribution of articles from India along with authorship pattern**

| Name of the State     | Population in millions (2011 census) | Universities in India | Single Author | Two Author | Three Authors | Four Authors | Five Authors | Six Authors | Total contribution & (%) | Average contribution by per million population | Average contribution by each university |
|-----------------------|--------------------------------------|-----------------------|---------------|------------|---------------|--------------|--------------|-------------|--------------------------|--|---|
| <i>New Delhi</i>      | 16.75                                | 20                    | 25            | 82         | 53            | 30           | 9            | -           | 199 (31.73)              | 11.88  | 9.95                                    |
| <i>Maharashtra</i>    | 112.37                               | 41                    | 13            | 36         | 15            | 11           | 15           | 6           | 96 (15.31)               | 0.85   | 2.34                                    |
| <i>Karnataka</i>      | 61.13                                | 40                    | 15            | 31         | 20            | 10           | -            | -           | 76 (12.12)               | 1.24   | 1.90                                    |
| <i>Andhra Pradesh</i> | 84.66                                | 43                    | 16            | 22         | 10            | 1            | -            | -           | 49 (7.81)                | 0.57   | 1.13                                    |
| <i>Tamil Nadu</i>     | 72.13                                | 55                    | 7             | 12         | 12            | -            | 5            | -           | 36 (5.74)                | 0.49   | 0.65                                    |
| <i>Uttar Pradesh</i>  | 199.58                               | 53                    | 7             | 12         | 3             | -            | -            | -           | 22 (3.50)                | 0.11   | 0.41                                    |
| <i>Chandigarh</i>     | 1.05                                 | 2                     | 2             | 10         | 5             | 4            | -            | -           | 21 (3.34)                | 20.00  | 10.50                                   |
| <i>Haryana</i>        | 25.35                                | 22                    | 2             | 7          | 4             | 4            | -            | -           | 17 (2.71)                | 0.67   | 0.77                                    |
| <i>Gujarat</i>        | 60.38                                | 32                    | 2             | 12         | 2             | -            | -            | -           | 16 (2.55)                | 0.26   | 0.50                                    |
| <i>Madhya Pradesh</i> | 72.59                                | 27                    | 1             | 7          | 3             | 4            | -            | -           | 15 (2.39)                | 0.20   | 0.55                                    |
| <i>Kerala</i>         | 33.38                                | 14                    | 3             | 11         | -             | -            | -            | -           | 14 (2.23)                | 0.41   | 1.00                                    |
| <i>Orissa</i>         | 41.94                                | 18                    | 2             | 10         | 1             | -            | -            | -           | 13 (2.07)                | 0.30   | 0.72                                    |
| <i>Punjab</i>         | 27.70                                | 13                    | 3             | 7          | 2             | -            | -            | -           | 12 (1.91)                | 0.43   | 0.92                                    |
| <i>West Bengal</i>    | 91.34                                | 23                    | 4             | 3          | 1             | -            | 1            | -           | 9 (1.74)                 | 0.09   | 0.39                                    |

|                            |         |     |     |     |     |    |    |   |           |      |      |
|----------------------------|---------|-----|-----|-----|-----|----|----|---|-----------|------|------|
| <i>Uttarakhand</i>         | 10.11   | 17  | 2   | 1   | 2   | -  | -  | - | 5 (0.79)  | 0.49 | 0.29 |
| <i>Jharkhand</i>           | 32.96   | 11  | -   | -   | 4   | -  | -  | - | 4 (0.63)  | 0.12 | 0.36 |
| <i>Pondicherry</i>         | 1.24    | 2   | 3   | 1   | -   | -  | -  | - | 4 (0.63)  | 3.22 | 2.00 |
| <i>Rajasthan</i>           | 68.62   | 48  | -   | 3   | 1   | -  | -  | - | 4 (0.63)  | 0.05 | 0.08 |
| <i>Manipur</i>             | 2.72    | 2   | 1   | -   | 2   | -  | -  | - | 3 (0.47)  | 1.12 | 1.50 |
| <i>Goa</i>                 | 1.45    | 1   | -   | 1   | 1   | -  | -  | - | 2 (0.31)  | 1.37 | 2.00 |
| <i>Jammu &amp; Kashmir</i> | 12.54   | 8   | 2   | -   | -   | -  | -  | - | 2 (0.31)  | 0.15 | 0.25 |
| <i>Sikkim</i>              | 0.60    | 5   | -   | 2   | -   | -  | -  | - | 2 (0.31)  | 3.33 | 0.40 |
| <i>Himachal Pradesh</i>    | 6.85    | 17  | 1   | -   | -   | -  | -  | - | 1 (0.15)  | 0.14 | 0.05 |
| <i>Meghalaya</i>           | 2.96    | 10  | -   | -   | 1   | -  | -  | - | 1 (0.15)  | 0.33 | 0.10 |
| <i>Chhattisgarh</i>        | 25.54   | 15  | -   | 1   | -   | -  | -  | - | 1 (0.15)  | 0.03 | 0.06 |
| <i>others</i>              | 144.25  | 36  | -   | -   | 3   | -  | -  | - | 3 (0.47)  | 0.02 | 0.08 |
| <i>Total</i>               | 1210.19 | 575 | 111 | 271 | 145 | 64 | 30 | 6 | 627 (100) | 0.51 | 1.09 |

Since India being the host country as such, maximum contributions made to the journal during the period of study are from host country and to assess the distribution of articles at federal level above tabulation has been compiled. As most of the articles contributed to journal are joint author publications as such weight-age of every single joint author publication has been given to each contributing author and state and accordingly by considering articles at individual level raised the number to articles to 627. A total of 25 states and union territories of India have contributed articles to journal, with New Delhi emerging at top with maximum of 199 contributors, constituting 31.73% of total contributors from India, followed by Maharashtra and Karnataka, having 96 and 76 contributors respectively. One article has been put under unknown category as the whereabouts of the article contributors could not be ascertained. Per million population of Delhi has contributed 11.88 articles to this particular journal which is far ahead of the gross national contribution of 0.51 articles to the journal by per million population. Accordingly in all 575 universities are spread across the length and breadth of India, these include, 42 central universities, 286 state universities, 129 deemed universities, 115 private universities and the average articles contributed to this particular journal by each university of the country during the period of study is 1.09 articles. Chandigarh topped the list with 10.50 articles by each university, followed by Delhi with 9.95 articles. Among other universities include, Arunachal Pradesh 3, Assam 8, Bihar 18, Mizoram 2, Nagaland 3, and Tripura 2.

**Table-VI Major contributors and pattern of article distribution**

| <b>Author contributions<br/>Author Name</b> | <b>Single<br/>Author</b> | <b>Two<br/>Author</b> | <b>Three<br/>Authors</b> | <b>Four<br/>Authors</b> | <b>Five<br/>Authors</b> | <b>Six<br/>Authors</b> | <b>Total<br/>contribution<br/>&amp; (%)</b> |
|---|--------------------------|-----------------------|--------------------------|-------------------------|-------------------------|------------------------|---|
| <i>B M Gupta,</i>                           |                          | 12                    | 11                       | 1                       |                         |                        | 24 (3.83)                                   |
| <i>Mohinder Singh</i>                       |                          | 1                     | 1                        | 6                       | 1                       |                        | 9 (1.43)                                    |
| <i>S.M. Dhawan</i>                          |                          | 6                     | 2                        |                         |                         |                        | 8 (1.27)                                    |
| <i>B.S. Kademani,</i>                       |                          | 1                     | 1                        | 2                       | 3                       | 1                      | 8 (1.27)                                    |
| <i>Ashok Kumar,</i>                         |                          |                       | 1                        | 6                       | 1                       |                        | 8 (1.27)                                    |
| <i>K.P. Singh</i>                           | 1                        | 5                     | 1                        |                         |                         |                        | 7 (1.11)                                    |

|                                |     |     |     |    |    |   |             |
|--------------------------------|-----|-----|-----|----|----|---|-------------|
| <i>Adarsh Bala,</i>            |     | 3   | 3   | 1  |    |   | 7 (1.11)    |
| <i>B. Ramesh Babu</i>          | 1   | 2   | 3   |    |    |   | 6 (0.95)    |
| <i>K. Nageswara Rao,</i>       |     | 5   | 1   |    |    |   | 6 (0.95)    |
| <i>Vijai Kumar,</i>            |     |     | 1   | 2  | 2  | 1 | 6 (0.95)    |
| <i>Rajendra Kumbhar</i>        | 3   | 2   |     |    |    |   | 5 (0.79)    |
| <i>M P Satija</i>              | 2   | 2   | 1   |    |    |   | 5 (0.79)    |
| <i>Pratibha A. Gokhale,</i>    | 1   | 3   | 1   |    |    |   | 5 (0.79)    |
| <i>V.G. Talwar</i>             |     | 3   | 2   |    |    |   | 5 (0.79)    |
| <i>Ganesh Surwase</i>          |     |     | 1   | 1  | 2  | 1 | 5 (0.79)    |
| <i>Four Papers 11 authors</i>  | 8   | 15  | 8   | 10 | 3  |   | 44 (6.20)   |
| <i>Three Papers 18 authors</i> | 13  | 27  | 11  | 1  | 1  | 1 | 54 (7.61)   |
| <i>Two papers 43 authors</i>   | 18  | 38  | 20  | 5  | 4  | 1 | 86 (20.70)  |
| <i>One Paper 411 authors</i>   | 92  | 169 | 90  | 41 | 18 | 1 | 411 (48.74) |
|                                | 139 | 294 | 159 | 76 | 35 | 6 | 709         |

Formulation of Table-VI is intended to reflect the major contributors of the journal during the period of study. For better understanding of article distribution, attempt has been made to craft the table exactly on the pattern of articles contributed by each individual author. Gupta, B.M has contributed maximum number of 24 articles to journal during the period of study, constituting 3.83% of total contribution. Mohinder Singh has contributed second highest 09 articles followed by Ashok Kumar, B.S. Kademani and S.M. Dhawan at number 03 spot for having contributed 08 articles each. Apart from this two authors have contributed 07 articles each, three authors 06 articles each, five authors 05 articles each, eleven authors 04 articles each, eighteen authors 03 articles each, forty three authors 02 articles each and 411 authors have contributed 01 article each.

**Table-VII Reference Distribution Pattern**

| Year | Vol No. | No of Articles | No. of references (issue wise) |              |             |             |             |             | Total references & (%) | Cumulative references & (%) | Avg. Ref per Article |
|------|---------|----------------|--------------------------------|--------------|-------------|-------------|-------------|-------------|------------------------|-----------------------------|----------------------|
|      |         |                | Issue No 1                     | Issue No 2   | Issue No 3  | Issue No 4  | Issue No 5  | Issue No 6  |                        |                             |                      |
| 2003 | 23      | 19             | 49                             | 33           | 29          | 24          | 34          | 29          | 198 (3.91)             | 198 (3.91)                  | 10.42                |
| 2004 | 24      | 14             | 43                             | 28           | 23          | 28          | 33          | 13          | 168 (3.32)             | 366 (7.22)                  | 12.00                |
| 2005 | 25      | 13             | 43                             | 57           | 11          | 47          | N.P         | 19          | 177 (3.50)             | 543 (10.72)                 | 13.61                |
| 2006 | 26      | 18             | 23                             | 103          | 39          | 48          | 32          | 50          | 295(5.83)              | 838(16.55)                  | 16.38                |
| 2007 | 27      | 34             | 56                             | 57           | 32          | 47          | 77          | 80          | 349(6.89)              | 1187 (23.44)                | 10.26                |
| 2008 | 28      | 50             | 82                             | 135          | 210         | 136         | 69          | 61          | 693 (13.69)            | 1880 (37.13)                | 13.86                |
| 2009 | 29      | 50             | 90                             | 104          | 109         | 94          | 45          | 54          | 496(9.80)              | 2376 (46.92)                | 9.92                 |
| 2010 | 30      | 47             | 55                             | 144          | 99          | 96          | 225         | 71          | 690 (13.63)            | 3066 (60.55)                | 14.68                |
| 2011 | 31      | 55             | 97                             | 206          | 138         | 240         | 164         | 165         | 1010(19.95)            | 4076 (80.50)                | 18.36                |
| 2012 | 32      | 66             | 97                             | 163          | 236         | 166         | 156         | 169         | 987 (19.49)            | 5063(100)                   | 14.95                |
|      |         | 366            | 635 (12.54)                    | 1030 (20.34) | 926 (18.29) | 926 (18.29) | 835 (16.49) | 711 (14.04) | 5063 (100)             |                             | 13.83                |

(Figures in the parenthesis is percentage)

To present the in-depth picture of the reference pattern of articles and to understand the reference distribution pattern of the articles published in the DJLIT during the period of study, the above tabulation has been crafted. Excluding the reference of articles mentioned in limitations part a total of 5063 references were cited in 362 articles, but the average references have been drawn by dividing aforesaid references in all 366 articles, which as result makes it an average 13.83 references per article. Though we could have added average reference for four article to the total references and could have easily drawn the average reference per article, but for the fact that out of 362 accessed articles 18 articles have zero references as such the four inaccessible articles have been put under the same category by taking it to 22 articles with zero references. Volume no 29 has recorded 9.90 references each article, the lowest in table and the volume no 31 has recorded 18.36 references each article, the highest in table. Taking the reference distribution on issue wise pattern, issue no 2 has recorded 20.34 references in each article of the issue, followed by issue no 3 & 4, who have recorded jointly the highest 18.29 references in each articles of the issue. Issue no 5 has recorded average 16.49 references in its each article. While as volume no 01 has recorded the lowest 12.54 average references in each article.

**Table-VIII Authorship pattern of References**

| S.No | Author Type | Distribution of references Issue wise |      |      |      |      |      | Total References & (%) | Cumulative References & (%) | No of articles & (%) | Percent age |
|------|-------------|---------------------------------------|------|------|------|------|------|------------------------|-----------------------------|----------------------|-------------|
|      |             | No 1                                  | No 2 | No 3 | No 4 | No 5 | No 6 |                        |                             |                      |             |
| 01   | Single      | 285                                   | 404  | 173  | 312  | 381  | 200  | 1755<br>(34.66)        | 1755<br>(34.66)             | 139<br>(37.97)       | 12.62       |
| 02   | Two         | 262                                   | 429  | 556  | 445  | 275  | 357  | 2324<br>(45.90)        | 4079<br>(80.56)             | 147<br>(40.16)       | 15.85       |
| 03   | Three       | 53                                    | 96   | 130  | 80   | 152  | 114  | 625<br>(12.34)         | 4704<br>(92.90)             | 53<br>(14.48)        | 11.79       |
| 04   | Four        | 24                                    | 39   | 32   | 89   | 27   | -    | 211<br>(4.16)          | 4915<br>(97.07)             | 19<br>(5.19)         | 10.73       |
| 05   | Five        | 11                                    | 42   | 35   | -    | -    | 40   | 128<br>(2.53)          | 5043<br>(99.60)             | 7<br>(1.91)          | 18.28       |
| 06   | Six         | -                                     | 20   | -    | -    | -    | -    | 20<br>(0.39)           | 5063<br>(100)               | 1<br>(0.27)          | 20.00       |
|      |             | 635                                   | 1030 | 926  | 926  | 835  | 711  | 5063<br>(100)          |                             | 366<br>(100)         | 13.83       |

(Figures in the parenthesis is percentage)

Authorship pattern of citations is equally an interesting aspect of reference analysis; by analyzing this kind of tabulation we are able to draw a clear picture about the pattern of references followed by researcher as single author and joint author. From the Table-IX above we can see 1755 references have been cited by single authors with an average 12.62 reference in each single author article. Accordingly average 15.85 references have been assigned to each two author article, 11.79 average references have been assigned to each three author article. Average of 10.73 references have been assigned to each four author article, 18.28 references to each five author article and the highest 20.00 references to each six author article. These mixed figures do

not reflect any specific trend towards citing references and perhaps rightly so when more than 18 articles during the study showed zero reference.

**Conclusion:** - In the concluding remarks it can be emphatically put into words that publishing research results is no more confined to a particular area or region, we can see as many as researchers from 22 foreign countries have published their research results in this particular journal during the last decade or the period of investigation. Visibility and accessibility of journals has enhanced the scope of publications. Undertaking collaborative research is also an equally growing phenomenon, during the course of investigation it emerged that 5 articles have been published by researchers from different countries on collaborative basis. Joint authorship is the most preferred authorship pattern among researchers mostly for two to three authors and beyond that there is sharp decline in the joint authorship pattern of publication. In the present study we came across just one article contributed by a maximum of six authors.

From volume 23 to 26 there was almost a steady rate of publication which ranged from 2 to 4 articles per issue, which is far below the gross average articles published by the journal during the period of study viz 6.20 articles per issue. From issue number 27 onwards there is abrupt increase in the number of articles published by journal in its each issue. Here the reasons can be owed to the fact that a good number of journals during the second half of 1<sup>st</sup> decade of the present century switched over to open access publishing and DJLIT being one of them. Technological applications like use of OJS software for publishing journals revolutionized the publication of research results in time. All this has actually somewhere also equally encouraged the researchers to conduct more and more research for the fact there work started getting acknowledged and more cited and OJS softwares helped to increase the visibility of articles. Increase in the publication of research results in the journal over a period of time unarguably corroborates the growth in research activities undertaken in the field of Library and Information Science at global level in general and India in particular.

As discussed in our review part and has once again emerged that it is the host country which mostly enjoys the maximum contribution in many ways. The present investigation again proved that since India being the host country of the journal as such more than 85% published by the journal during the period of investigation is from India, and New Delhi being the host state of the journal emerged the largest state among 25 federally contributing states of the host country. All the top 15 contributors mentioned above in Table-V are from host country. Nearly 6% articles published in the journal have no references at all.

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