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# **Citation Analysis of Doctoral Theses Submitted to the Department of Library and Information Science, Gauhati University (2011-2017)**

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## **Abstract**

The present study is done by collecting and analyzing the references from the thirty theses submitted to the Department of Library and Information Science, Gauhati University in between 2011 to 2017. Year wise distribution of theses is tabulated. From the 30 theses 3684 citations has been retrieved where journals are found to be the most preferable source material followed by books and conference proceedings. Among the top 40 highly cited journals, 18 journals are from UK followed by 14 from India. DESIDOC Journal of Library & Information Technology is on top rank with 72 citations. The citation half-life of literature is found approximately as 12 years.

## **Keywords**

Bibliometrics, Citation, Half-life, Bradford's Law

## **Introduction**

Any discipline becomes strong with good number of quality research works. The researchers cannot do a research without understanding the earlier research works in their field. Researchers get new ideas from the previous works. Ethically the researchers need to give credit to the previous researchers from which they get new ideas to do research. That is they need to mention the bibliographical reference of the earlier researchers' work in their own one. In this case the previous work is called as cited document and the current one is called as citing document. There is a relationship between cited and citing document; and the bond between them can be called as citation.

Citation analysis is the largest subpart of infometrics. Citation analysis deals with study of the relationship between cite document and citing document. Citation analysis plays a very important role in various bibliometric studies. With the help of citation analysis obsolescence of literature, bibliographic coupling, co citation coupling , author related studies can be carried out easily.

Doctoral theses are generally the product of someone's research activity. These form an important source of information. Apart from giving experimental evidences it also records a thorough review of works that have already been done in a particular field. Researchers generally cite a large number of references in their theses. Studies of these references will be useful in various decision making process of the library particularly towards drafting collection development policies. It will help to know what kind of documents is mostly used by the scholars. This may also be used as an important source of information for selecting materials for acquisition. Citation analysis of the doctoral theses could provide an insight on emerging and obsolescence research areas.

A university library generally has a huge number of collections. It includes books, scholarly journals, magazine, newspapers, reference books etc. Apart from these physical documents libraries also have digital documents, etc. Libraries spend a huge amount of money to acquire various documents annually which could help the users. In selecting these information sources libraries faces many problems. It also happens at the time of weeding out. These kinds of problems somehow can be solve using different bibliometric studies. Therefore to contribute some sort of solutions to these problems it is tried to analyse PhD theses from 2011-2017 submitted to Gauhati university by the department of library & information science.

## **Previous Studies**

Deo, V.N and Mohal,S.M (1995) has done a bibliometric study of doctoral dissertations on English literature. They analysed 4066 citations collected from the doctoral dissertations on English language accepted by Dr. Babasaheb Ambedkar Marathwada University to determine the use pattern of literature by researchers in English and found that non serial publications i.e. books, published from U.K and periodicals from U.S.A are mostly cited. Deshpande (1997) made a citation study of dissertations in Library and Information Science submitted to Nagpur University during the period 1990-1994. The study reported that majority of citations were journals (68.74%) followed by 16.47% books. Kherde (2003) analysed the citations appended to articles that appeared in popular Indian journals in Library and Information Science during the period 1996 and 2001. The study revealed that 37.25% of references were taken from periodicals which is highest amongst the other types of references like book, reports etc. Again as per the geographical distribution among 47 top cited journals there were only 12 Indian journals referred 502 times whereas 35 foreign journals referred to 848 times. The Annals of Library and Information Studies was found to be the most popular Indian journal among researchers whereas College and Research Libraries was the most cited foreign journal, which is being published from USA. Tonta and Al (2004) analysed different bibliometrics features of 100 theses and dissertations completed at the Department of Librarianship of Hacettepe University in the window period of 1974-2002. They observed from the study that monographs received more citations than that of journal article and no correlation was found between the frequency of citations of the most frequently cited journals and their impact factors. The mean half-life of all cited sources was found as 9 years. Hazarika, Sarma and Gohain (2010) studied the citation appended to the PhD dissertations in four subjects clubbed under the School of Science & Technology. They also studied the Category wise distribution of the cited items viz. journals, books & monographs, conference proceedings, electronic sources, web citations and their availability in the parent institutions library. From the calculation they found that an average 77% of the all citations were from 'Journals' within a range of 41-79 in the four subjects studied while citations in the category of 'Books and monographs' constitute 16% of the total citations. The overall obsolescence age was found in the range 9-35 years which was shortest in MBBT (9-10) and longest in Mathematics (35-35 years). Sangam and Mogali(2013) revealed from their study that the citation frequency followed a negative exponential pattern. They collected the data from three journals of social science and retrieved 11271 citations from 283 articles. It was observed that the half life of literature as 9.04, Annual Aging Factor 0.9262, the mean life 13.048, the utility factor 13.5544 and the corrected obsolescence as 0.9482. Mishra, A.K , Gawde and Solanki (2014) took cited references of 55 thesis submitted by Vikram University as source. They studied the year, length and chapter wise distribution of thesis. Authorship pattern was also analysed in this paper. This study reveals that books are most preferred research materials by research scholars of Vikram University in English. Takei, Yoshikane and Itsumura(2015) analysed the correlation between the obsolescence of citations and access concerning a broad range of subjects. They investigated approximately 1,200 journals that were randomly sampled from 11 subject fields in Springer Link and 20

subject fields in ScienceDirect. Metrics such as cited half-life and download half-life were employed to examine the relationship between the rate of obsolescence of citations and access. They found that there is no strong correlation between citations and access is observed in most fields with regard to the short-term obsolescence.

## Objectives

In order to have an in-depth and exhaustive insight into the context of the study the following objectives have been lined up

- i. To find out the type of documents cited.
- ii. To identify the highest cited journals.
- iii. To ascertain whether the distribution of citations among the periodicals conform to the Bradford's law of distribution.
- iv. To find out rate of obsolescence hence half life of literature.
- v. To find out the mean life of literature.

## Methodology

Fifty nine theses were submitted by Department of Library and Information Science researchers during 1972-2017. The present study is done by considering the 30 theses which was submitted during 2011-2017. The references of these theses have been downloaded from Sodhganga except those which were not digitized and the references were collected from those theses physically. The total population of the study is 3684 references appended in 30 doctoral theses submitted to the Department of Library and Information Science, Gauhati University during 2011-2017

## Analysis and Results

### 1. Year wise distribution of the theses

Table 1 represents the year wise distribution of Library and Information science theses submitted during 2011-2017. 30 numbers of theses have been submitted during this time interval. Highest number (8) of theses has been submitted in 2016 and the lowest number of theses has been submitted in the year 2012.

**Table 1: Year wise distribution of theses**

Year	No. of Thesis	Percentage
2011	3	10.00
2012	1	3.33
2013	5	16.67
2014	5	16.67
2015	3	10.00
2016	8	26.67
2017	5	16.67

## 2. Distribution of citations by type of source materials

Researchers use different type of source material for research work. The source materials can be categorised in different groups like journals, books, conference proceedings, manuscripts, newspaper clip etc. The study reveals that the researchers of DLIS, G.U prefer journal article more than that of other source material. Out of 3684 citations 51.6% is covered by journal articles. Books are in second position with 22.09% citations.

Source	No. of citations	Percentage (%)	Cumulative percentage
Journals	1901	51.6	51.6
Books	814	22.09	73.69
Conference Proceedings	310	8.4	82.09
Others	659	17.88	99.97

## 3. Highly cited Journals

The study reveals that the total 1901 number of journal citations comes from 539 sources. Out of 539 journals, top 40 highly cited journals are listed in Table 3(which has minimum 8 citations). The first three ranks are hold by three Indian journals namely DESIDOC Journal of Library & Information Technology published by DRDO with 72 citations, Annals of Library and Information Studies NISCAIR with 57 citations and IASLIC Bulletin published by IASLIC with 56 citations respectively. Out of 40 journals 18 journals are from UK, 14 from India.

**Table 3: Highly cited Journals**

Name of the journal	Citations	Origin of publication	Publisher
DESIDOC Journal of Library & Information Technology	72	India	DRDO
Annals of Library and Information Studies	57	India	NISCAIR
IASLIC Bulletin	56	India	IASLIC
Journal of education for library and information science	47	USA	Association for Library and Information Science Education
The Electronic Library	44	UK	Emerald Group Publishing Ltd
The Journal of Academic Librarianship	42	UK	Elsevier Limited
ILA Bulletin	39	India	ILA
Library Philosophy and Practice	37	USA	University of Idaho Library
Collection Building	34	UK	Emerald Group Publishing Ltd
Library Herald	33	India	Delhi Library Association
Library Review	32	UK	Emerald Group Publishing Ltd
Journal of Documentation	31	UK	Emerald Group Publishing Ltd
College & Research Libraries	28	USA	Association of College and Research Libraries
SRELS Journal of Information Management	26	India	Informatics Publishing Limited

Library Trends	25	USA	Johns Hopkins University Press
Library Progress	23	India	BPAS
Herald of Library Science	22	India	Herald of Library Science
New Library World	21	UK	Emerald group publishing ltd
DESIDOC Bulletin of Information Technology	20	India	DRDO
Serials Review	19	UK	Taylor & Francis
ASLIB Proceedings	17	UK	Emerald group publishing ltd
Information Processing and Management	17	UK	Elsevier limited
Library Hi Tech Program	16	UK	Emerald group publishing ltd
Annals of Library Science and Documentation	15	UK	Emerald group publishing ltd
Annals of Library Science and Documentation	14	India	NISCAIR
Library Collections, Acquisitions, & Technical Services	13	UK	Taylor & Francis
Kurukhetra	13	India	Govt of India
Journal of Academic Librarianship	12	UK	Elsevier limited
Library Management	12	UK	Emerald group publishing ltd
Online Information Review	11	UK	Emerald group publishing ltd
Library & Information Science Research	11	UK	Elsevier limited
Journal of Library Administration	10	USA	Haworth Press Inc
Library Science with a Slant to Documentation	10	India	SaradaRanganthan Endowment for Library Science
Issues in Science and Technology Librarianship	10	USA	Association of College and Research Libraries
Journal of American Society for Information Science	10	UK	John Wiley and Sons Ltd
Program: electronic library and information systems	9	UK	Emerald group publishing ltd
International Library Movement	9	India	ILM Foundation
International Journal of Library and Information Science	9	India	IAEME Publication
Scientometrics	9	Netherlands	Springer Netherlands
Libri	8	Germany	Walter de Gruyter GmbH

#### 4. Bradford's law of journals

With the help of Bradford's law the core journals group can be selected. In Table 4 the journals are arranged in the decreasing order of their productivity.

**Table 4 Bradford's distribution of journals**

<b>No. of journals producing the citation of column B</b>	<b>No. of citations of each journal</b>	<b>Journal rank in descending order of productivity</b>	<b>Cumulative total of B</b>
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
72	1	1	72
57	2	3	186
47	1	4	233
44	1	5	277
42	1	6	319
39	1	7	358
37	1	8	395
34	1	9	429
33	1	10	462
32	1	11	494
31	1	12	525
28	1	13	553
26	1	14	579
25	1	15	604
<b>23</b>	<b>1</b>	<b>16</b>	<b>627</b>
22	1	17	649
21	1	18	670
20	1	19	690
19	1	20	709
17	2	22	743
16	1	23	759
15	1	24	774
14	1	25	788
13	2	27	814
12	2	29	838
11	2	31	860
10	3	34	890
9	4	38	926
8	6	44	974
7	10	54	1044
6	11	65	1110
5	14	79	1180
<b>4</b>	<b>20</b>	<b>99</b>	<b>1260</b>
3	49	148	1407

2	103	251	1613
1	288	539	1901

The total journals are divided in to three zones in such a way that they share equal number of citation. (Table 5)

Zone	No. of Journals	No. of Citations	Ratio
1	16	627	1
2	83	633	5.2
3	440	641	27.5
Total	539	1901	

Here the distribution of journals in three zones is in the ratio of 1:5.2:27.5  $\approx$  1: n: n<sup>2</sup> which mean that Bradford's criterion of citation distribution is fulfilled.

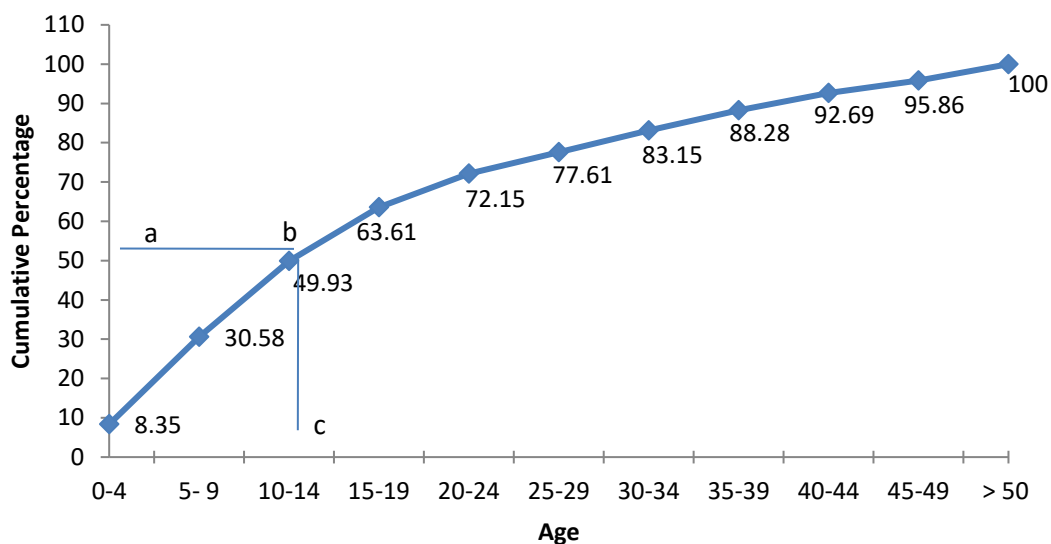
## 5. Citation Half-Life of Literature

Burton and Kebler define the half-life of scientific literature as, "the time during which one-half of all the currently active (i.e. cited) literature is published." The citations are arranged against their age in Table 6.

Age	Citation	Cumulative Citation	Cumulative Percentage
0-4	303	303	8.35
5-9	806	1109	30.58
10-14	702	1811	49.93
15-19	496	2307	63.61
20-24	310	2617	72.15
25-29	198	2815	77.61
30-34	201	3016	83.15
35-39	186	3202	88.28
40-44	160	3362	92.69
45-49	115	3477	95.86
> 50	150	3627	100.00



**Fig 1: Half-life Graph**



The fig 1 represents the citation half-life of literature in Library and Information Science. The X-axis in the graph indicates the cumulative citation (%) and Y-axis indicates the age in a range of 5 years. To find out the half-life a line parallel to X-axis is drawn from the point 'a' (which indicate 50% of the cumulative citation) to the line graph which intersecting at point 'b'. From point 'b' a line parallel to Y-axis is drawn to X-axis which intersects at point 'c'. The value of the intersecting point at 'c' is counted as half-life of this literature. Therefore the calculated half-life of is approximately 12 years.

## Conclusion

Department of library and information science is one of the oldest departments of Gauhati University. Over the years various research works has been done by the faculty members and research scholars of the department. For this study thirty doctoral thesis submitted between 2011 to 2017 were considered and references were studied thoroughly. Journals are used mostly by the researchers as 51.6% of the citations came from journals only. Most of these journals were accessed from the university library itself. Half life of literature was found to be 12 years, so it is advisable to keep those literatures easily accessible to library patrons.

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