

## Citation Pattern Analysis on Vidyasagar University Journal of Library and Information Science

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### Abstract

*This study based on 872 references appended to 76 articles of the year 1987-2010 of Vidyasagar University Journal of library and Information science. A retrospective descriptive study was conducted using bibliometric indicator, such as type of cited document, age of cited source, authorship pattern, rank list of most frequently cited journal & author, yearly trend on printed and cyber document. This study has shown that 76 article given in this time span. and use 872 references. Among these references journal article is 30.97%, books are 30.39% and reference document are 14.22%. Authorship pattern shown that 86.31%are single author, 10.42% are double author. Among these references volume 7-9 used highest references.*

**Keywords:** Citation Analysis, Bradford's law, Lolka's law, Vidyasagar University's journal, Author citation, Journal citation, Cited age

### Introduction

Analysis of citation is common in the sociology of science. Approaches to citation- citation pattern or citation behaviour -allows to derive maps of the structure of the scientific specialities or disciplines and helps to construct typologies of different varieties of reference and citations by context analysis.

Garfield et.al. (1978) described "Citation analysis as an analytical tool which use as reference citation of scientific paper". Citation analysis on simple counting methods:

1. Authorship study
2. Type of Document used
3. Language of the cited Documents
4. Ranking of Journal and Books
  - Ranking impact factor
  - Ranking by counting the number of citations
  - Raking of immediacy index
5. Subsect Dispersion.
6. obsolescence and citation half- life
  - Age of document

- Utilization of the document
- Citation to the document in the subsequent literature

#### 7. Self-citation

### **Objectives of the study**

The present study had been carried out to achieved the following objectives-

- To study Age of cited reference.
- To study Using references per article.
- To study forms of documents cited
- To study uses trend of printed and cyber documents
- To study authorship pattern of cited reference.
- To study distribution of cited journal and verification of Bradford's law
- To study distribution of cited author and verification of lotkas's law

### **Scope and Coverage**

This study is based on the Vidyasagar University Journal of Library and information science. Over the period of 1987 to 2010. The total no. Of articles and cited references contained by overall volume of this journal is 76 and 872 which means per article 11.47% references cited. The no. of cited authors and cited journals are 582 and 211.

### **Literature review**

V. D. Madkey & D. Rajyalakshmi (1994) performed a study about citation analysis of PhD thesis by NEERI scientists in the field of environmental science and engineering during 1977-1991 has been carried out. the rate of submission, subject wise distribution of thesis, ranking of sources materials, authorship pattern, chronological distribution of journal and book citations and geographical distribution of most cited journals have been determined. Based on the analysed data half-life and obsolescence of literature have been calculated. W.S. Tiew and K. Kaur (2000) analysis was carried out document type wise reference distribution, trend of authorship pattern, list of most cited journal. A K Das (2001) stated authorship pattern that his study is based on 781 citations appended to 43 research articles pertaining to January to June 2000 issues of volume 109 of Indian Journal of Medical Research. D. The study discussion about authorship pattern of cited references, distribution pattern of cited references according to documentary form, percentage of Indian cited references, author affiliation of citing articles, percentage of author self-citation, and percentage of journal self-citation shown by A. K. Das & B. K. Sen (2001). B Dutta, A K Das & B K Sen (2002) investigate A comparative study of citation patterns among eight

scholarly journal and find out authorship pattern, type of distribution of publication etc. S Kolay & B K Sen (2003) performed a study on Indian journal of physiology and allied sciences: an analysis of citation pattern. This study shows authorship pattern of citations, forms of documents cited, ratio of Indian citation to foreign citations, ratio of author self-citations to total citations, ratio of journal self-citations to total citations, author self-citation journal self-citations, and authorship and affiliation pattern of citing articles. "Indian Journal of plant psychology: a citation analysis" in this article A Shokeen & S K Kaushik (2004) find out the authorship pattern and citation pattern of article that appeared in Indian journal of plant psychology. Citation analysis of all the journal articles published in the Journal of Library and Information Science (JOLIS) from 2004-2009 by Ahmed Olakunle Simisaye and A. B. Osinaike (2010). Neeraj Kumar Singh, Jyoti Sharma & Navneet Kaur (2011) reveals that Citation analysis of all the journal articles published in the Journal of Documentation from 1996-2010 is carried out. 487 articles are published in the journal during 15 years. This study analysis year wise distribution, authorship pattern, list of cited journals. Md. Enamul Haque (2012) reports the results of the citation analysis of "The Journal of Poultry Science (JPS)." The major objectives of the study from the year 2001 to 2010 are to find out the authorship and citation patterns of articles appeared in the JPS. K. P. Singh and Bebi, M. (2013) said on Citation analysis of PhD theses submitted to the University of Delhi in social sciences during 1995- 2010. The study identifies how the pattern of submissions has changed during 1995-2010 in different disciplines of social sciences, besides studying distribution of citations by document types, pattern of authorship of cited documents, cited Indian and foreign authors and chronological distribution of citations, country wise scattering of citations. S Biradar & Mallinath Kumber (2014) performed on the analysis of determined the average number of references per articles, forms of documents, authorship pattern, length of article and the obsolence of literature. Ifeanyi J. Ezema and Brendan E. Asogwa (2014), said that sources cited in articles published in two linguistics journals, Applied Linguistics and Journal of Linguistics, from 2001 to 2010. A retrospective descriptive study was conducted using bibliometric indicators, such as types of cited sources, timeliness of cited sources, authorship patterns, rank lists of the most frequently cited journals and authors, degree of research collaboration, and yearly distribution of articles in the journals.

### **Methodology**

References from each article of each volume of the journal were collected for the period of 1987 to 2010. Which accounted 872 references. The data records are arranged by document type. These are book, journal article, reference document (Dictionaries, Encyclopaedia, and

Manual). Proceeding includes seminar paper, Conference, Organizational publication, Thesis, Cyber-yes, cyber-no.

### Analysis

After arrangement of data all data to all the references appended to the article during the period were collected and tabulated. Information was recorded in M.S Excel Sheet. For every volume create separate excel sheet. The analysis shows that-

**Author:** overall 582 authors

**Authorship pattern:** In overall volume collected references most of references contributed by single author.

**Age:** age of references has been recorded.

**Document type:** In all 872 references have been categorised in 11 type of document type.

### Volume wise distribution of references

Volume no.	Year	No. of article	No. of reference	Average reference per article
1	1987	11	63	5.8
2	1997	9	100	11
3	1998	6	59	9.8
4	1999	6	79	13
5	2000	8	48	6
6	2001	6	79	9.8
7-9	2002-2004	12	176	14.6
10-14	2005-2009	8	155	19.3
15	2010	10	113	11.3
<b>Total</b>		<b>76</b>	<b>872</b>	<b>11.4</b>

**Table-1** Volume wise distribution of references

**Table-1** shows the picture of volume wise distribution of reference. After analysing, this table states that volume 10-14 use highest references per article (19.3), volume 1 use lowest references per article (5.8) and overall volume use references per article is 11.4.

### Distribution of reference according to type of document on Overall volume

Rank	Type of document	No. of article	%
1	Journal article	270	30.9
2	Book	265	30.4
3	Reference Document	124	14.2
4	Cyber-yes	80	9
5	Proceedings	69	7.9
6	Cyber-no	44	5
7	Organizational Publication	16	1.8
8	Thesis	4	0.4
<b>Total</b>		<b>872</b>	<b>100</b>

**Table-2** Distribution of reference according to type of document on Overall volume

**Table-2** shows that majority of references used to the journal articles 270 (30.9%) and 265 (30.4%) references are used from books. From this study it is clear that the most of the authors used journals articles. Journal articles can play vital roles for research purposes

**List of citation age all references on overall volume**

Year	Frequency	Year	Frequency
1825	1	1974	1
1866	1	1975	14
1894	1	1976	13
1903	2	1977	17
1911	1	1978	16
1913	1	1979	26
1916	1	1980	13
1922	1	1981	11
1927	1	1982	16
1931	1	1983	13
1933	2	1984	26
1934	1	1985	14
1937	4	1986	26
1938	1	1987	17
1940	1	1988	12
1944	1	1989	24
1947	1	1990	17
1949	1	1991	23
1951	4	1992	17
1953	1	1993	14
1954	2	1994	19
1955	2	1995	13
1956	2	1996	33
1957	3	1997	26
1958	4	1998	30
1960	3	1999	18
1961	1	2000	17
1962	6	2001	31
1963	3	2002	17
1964	9	2003	16
1965	7	2004	6
1966	8	2005	8
1967	14	2006	10
1968	8	2007	5
1969	8	2008	12
1970	10	2009	9
1971	10	2010	27
1972	7	2011	10
1973	1	2012	6

**Table-3** List of citation age all references on overall volume

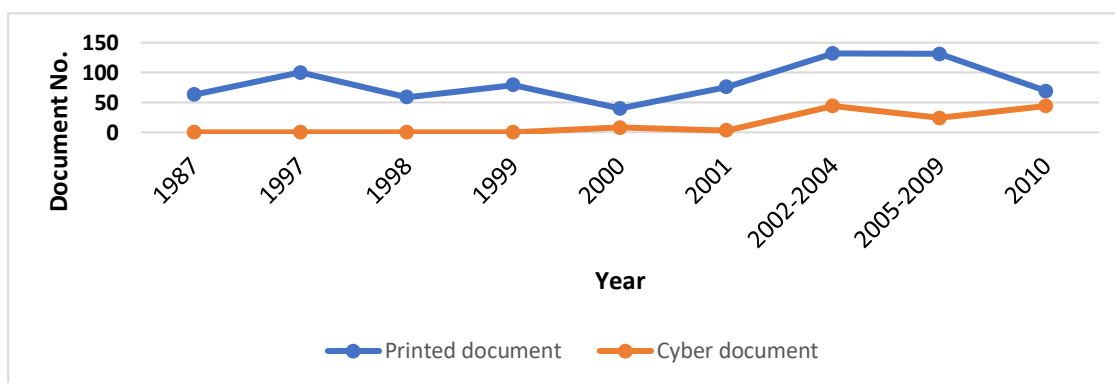
**Table-3** states that the analysing of citation age for the overall volume states that the frequency of the year 1996 is highest (33) followed by the year 2001(31).

#### Year wise trend of Printed and Cyber document

Year	Volume	Printed document	Cyber document
1987	1	63	0
1997	2	100	0
1998	3	59	0
1999	4	79	0
2000	5	40	8
2001	6	76	3
2002-2004	07-9	132	44
2005-2009	10-14	131	24
2010	15	69	44

**Table-4** Year wise trend of Printed and Cyber document

**Table-4** shows the picture of volume wise distribution of printed and cyber document. After studying this table states that every volume takes research material from printed document but only volume 5 to volume 15 are used cyber document. From this study it is clear that most of the cyber document used from volume 7-9.



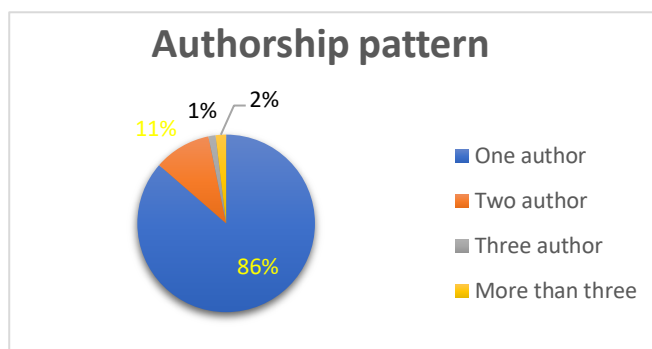
**Fig. 1** Year wise trend of Printed and Cyber document

#### Authorship Pattern on overall volume

Volume	Year	One author	Two authors	Three authors	More than three	Total
1	1987	44	8	0	0	52
2	1997	70	12	0	1	83
3	1998	47	6	0	0	53
4	1999	64	4	1	0	69
5	2000	27	4	2	0	33
6	2001	50	7	0	2	59
7-9	2002-2004	59	8	0	1	68
10-14	2005-2009	126	3	0	5	134
15	2010	43	12	5	3	63
Total		530	64	8	12	614
Percentage		86.3%	10.4%	1.3%	1.9%	

**Table-5** Authorship Pattern on overall volume

The analysis of **table-5** of authorship pattern for overall volume reveals that the percentage of single author citation is highest (86.3%) followed by two authored citations (10.4%) and three authors citations (1.3 %). Hence solo research is maximum here.



**Fig. 2** Authorship Pattern on overall volume

### Rank list of cited journals on all volume & verification of Bradford's law

Sl no	Rank	Cited journal	Frequency (no. of times cited)
1	1	Library Science with a Slant to Documentation and information studies	13
2	2	Journal of Documentation	8
3	3	IASLIC Bulletin	6
4	3	Indexer	6
5	4	University News	5
6	4	Journal of Librarianship	5
7	4	Library Trends	5
8	4	Information Technology and Libraries	5
9	4	Information Storage and Retrieval	5
10	4	DESIDOC Bulletin of Information Technology	5
11	5	Libri.	4
12	5	Searcher	4
13	5	Journal of Library Automation	4
14	5	Computers in Libraries	4
15	5	Journal of the American Society for Information Science	4
16	5	Library Quarterly	4
17	5	Lib Sc.	4
18	6	8 journals cited 3 times each	3
19	7	17 journals cited 2 times each	2
20	8	62 journals cited 1 time each	1

**Table-6** Rank list of cited journals on all volume

**Table-6** reveals that most cited journal is Library science with a slant documentation and information studies (rank 1) its cited frequency is 81. Second position of journal is journal of documentation its cited frequency is 8 (rank 2). Third position of journal is IASLIC bulletin & INDEXER, their cited frequency are & 6 (rank 3).

### Overall volume -Bradford's Law

Total frequency of citation: 211

Total no. of cited journal: 104

Reference distribution pattern over all journals

Zone	Core	Allied	Alien
Frequency of citation	71	78	62
Cited journal	12	30	62

Bradford's distribution:  $12*(1: 2.5: 5.1) \sim 12*\{1: 2.5: (2.5)^2\}$

$k=12$

$n=2.5$

The distribution of cited journal almost nearly obeys Bradford's law. But not exact satisfied Bradford's law. The value of Bradford's multiplier (k) is 12 and journal no. (n) is 2.5. Although here multiplier sample size is comparatively low so here Bradford multiplier is little big.

#### List of cited authors on overall Volume & verification of Lotka'slaw

Sl.no.	Rank	Cited author	Frequency (no. of Times cited)
1	1	Ranganathan S R	15
2	2	Neelameghan A	11
3	2	Bhattacharyya G	11
4	3	Austin Dereck	10
5	4	Weitz Charles A	9
6	5	Satija M P	6
7	5	Seetharama S	6
8	5	Rowley J	6
9	6	Gopinath M A	5
10	7	Bivins K T	4
11	7	Chatterjee Amitabha	4
12	7	Svenonius Elaine	4
13	7	Prasad A R D	4
14	8	12 authors cited 3 times each	3
15	9	37 authors cited 2 times each	2
16	10	520 authors cited 1 time each	1

**Table-7** List of cited authors on overall Volume

**Table-7** reveals that analysing overall volume rank 1 cited author is Ranganathan S R and his citation frequency is 15, rank 2 authors are Neelameghan A & Bhattacharyya G and their citation frequency is 11, rank 3 author is Austin Dereck and his citation frequency is 10. and 520 authors cited 1 time each.

#### Distribution of number of authors and frequency of citation overall volume

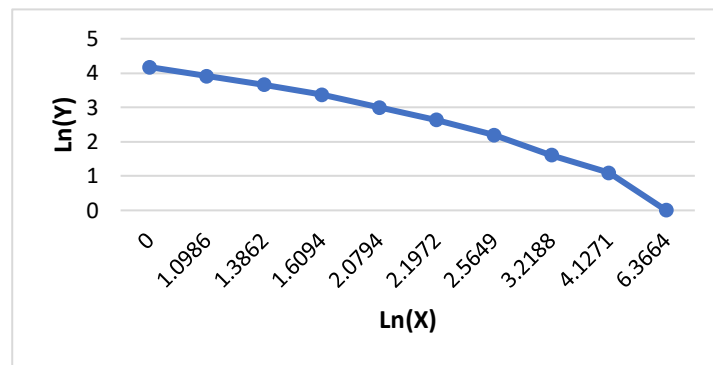
No. of cited author	Frequency of citation	Cum. No of author (X)	Cum. No of citation (Y)	Ln X	Ln Y
1	15	1	65	0	4.1743
2	11	3	50	1.0986	3.912



1	10	4	39	1.3862	3.6635
1	9	5	29	1.6094	3.3672
3	6	8	20	2.0794	2.9957
1	5	9	14	2.1972	2.639
4	4	13	9	2.5649	2.1972
12	3	25	5	3.2188	1.6094
37	2	62	3	4.1271	1.0986
520	1	582	1	6.3664	0

**Table-8** Distribution of number of authors and frequency of citation overall volume

According to Lotka’s law, a single contribution is about 60%, which mean 60% author will have one publication ,15% author will have two publications ( $1/2^2$  time of 60),7% authors will have three publications ( $1/3^2$  time of 60) and so on.



**Fig. 3** Cumulative No. of author vs Cumulative No. of citation

In this study 582 authors contributed 725 articles, approximately 0.80 author per article. The no of authors per article is small here Among 582 author,520 author 89.3% contributed only one article: 37 author (6.3%) contributed 2 articles, 12 author (2%) contributed 3 articles ,4 author (0.68%) contributed 4 articles; 1 author 17% contributed 5 articles

This author productivity did not satisfy lotka’s law, because in general, single-authored article amounts nearly 60% and two-authored article is 15% but here single author article amounts nearly 89%, i.e., 29 % more than usual value, which was appended to two author articles to make 6% i.e., 11% less than usual value. Usually, 7% author will have three publications but here 2% have found.

Therefore, here author productivity did not follow lotka’s law and the graph of Ln(x) vs/ Ln(Y) is not linear its parabolic graph.

**Findings**

Analysis the overall collected data some findings are obtained for satisfying the objectives which are given below-----

- All total 872 no. of reference used in the Vidyasagar University Journal of Library and information science

- 1996, in this year used highest document for references
- Used references per article 11.4736
- Highest references used in vol 7-vol 9 a merged volume
- Type of 11 document used in this journal among this documents journal article is the highest position and thesis is the lowest position.
- In the merged vol 7- vol 9(2002-2004) used highest printed document 131.
- The merged vol 7- vol 9 and vol 15 used highest cyber document.
- Overall volume authorship pattern highest contribution is single author 86.32% and lowest contribution is three authors.
- Overall, 211 journal are cited in this journal. Among this journal only “Library science with a slant documentation and Information studies” cited many times, then “Journal of documentation” and 62 journal cited 1 time each
- In this journal cited author are 582 among this author only 1 author cited 13 times each (S R RANGANATHAN) and 520 authors cited 1 time each.

### Conclusion

The journal “Vidyasagar University Journal of Library and information science” is a departmental Journal. Here the study is citation analysis report of all references used by this journal (1987-2010).

In this report emphasise that here 872 references used by 76 articles so sample size is low for calculate Bradford’s law and Lotka’s law, but here Bradford’s law is accidentally almost satisfied with the big multiplier, but in author productivity Lotka’s law is not satisfied.

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