

College Librarians Productivity in Bradford's Law: An Analysis

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Abstract- The law in the field of bibliometrics came into existence. The statistical data on this link was clarified. Libraries and information science in 1948 by Bradford subject extension theory also induces Zip's law theory of minimum of theoretical principle and the Lotka's law theory of the inverse square law theory. The principles of Bradford's law theory on the collective research productivity of the college librarian have been verified in the rendering research rule.

Keywords- Productivity Patterns, Author Productivity, Growth Rate, Bradford's law

I. INTRODUCTION

The use of Bibliometrics done by Bradford in 'Documentation' this book. Based on that, he presented the Bradford law topic extension theory utility. While applying this principle, he selected the list of two subjects, in Science Misaim Library subject of 'Applied Geophysics and Lubrication' for his analytical study and for that he compiled a list of descending articles in descending order. So that he saw that many different groups were formed.

The Journalese in which most of the articles were published was the last places. These types of tools are called rank lists in citations analysis.

An analysis of this list led Bradford to appear that most of the articles were published in very few journals of the abovementioned subjects. And then decreases below the rate register. How're there is an increase in the number of periodicals.

The basic aim of library and information science is to acknowledge the author and simultaneously to make the book readable according to its contents considering the above fact; twin concepts of subject catalogue and tabulation are used in the library and information science. With the passage of time and change, books have been developed and modernized into journal, books, leaflets, research articles, reports, seminar, printed speeches symposiums etc. This has increased the role of librarians manifold. He has not only the responsibility to

exchange books but also to abreast the latest research information. The librarians must have the writing skill in them to reach the knowledge and outcome of research to the maximum readers.

I. CONCEPTUAL ANALYSIS

1.1 Dr. Babasaheb Ambedkar Marathwada University

The state legislature passed the Marathwada University Act, 1958 to establish and incorporate a teaching and affiliating university at Aurangabad. The act received assent of the Governor on may 5 and the university was inaugurated on August 23, 1958 from May 21, 1974 the university is governed by Act no. XXV of 1994 passed by the Maharashtra legislature and assented by the president of India.

1.2 Productivity Patterns

Productivity Patterns mean the information resources for effective and efficient use, it is necessary that characteristics of information sources are studied. Studies has broadly in two ways productivity pattern of journal and information generator of the authors. The term productivity pattern reflects on author productivity, authorship pattern, co-authorship impact factor of author as well as journals etc.

1.3 Bradford's law

Black, Paul E (2004) Bradford's law is a pattern first described by Samuel C. Bradford in 1934 that estimates the exponentially diminishing returns of searching for references in science journals. One formulation is that if journals in a field are sorted by number of articles into three groups, each with about one-third of all articles, then the number of journals in each group will be proportional to $1:n:n^2$.

Gordon, (2010) Bradford's law states that articles on a subject are scattered according to a specific mathematical

function: $1:n:n^2$, meaning that Bradford's law was not only a law of scatter but also a law of concentration.

Bensman (1982) analyzed data in Bradford's study of applied geophysics and lubrication subjects and found that when all articles were divided into three zones equally, the ratio between numbers of journals in each zone approximated $1:n:n^2$.

II. PROPOSED RESEARCH

Productivity patterns needed to analysis of research performance of college Librarian in their profession. Productivity patterns to identify the role of librarian in promotion of Library & Information profession in department and to increase the productivity of library management.

III. SCOPE AND LIMITATION OF THE STUDY

The study consists with granted colleges affiliated to Dr. BAMU, Aurangabad (arts, science, commerce college, B.ed college, law), colleges in urban & rural areas. This study is limited for 86 college Librarian of 2000 to 2014 fifteen years period research productivity only.

IV. OBJECTIVES OF STUDY

1. To know the contribution of college Librarians in publication.
2. To collect the information of college librarians pertaining to publication.
3. To study the success and compare the Rural and Urban college librarians in relation with their publication.
4. To know the gender based area wise and chronologically contribution of literature in publication.
5. To suggest the suitable improvements in contribution of publication of affiliated college librarians of Dr. Babasahed Ambedkar Marathwada University, Aurangabad.

V. METHODS AND MATERIALS

In the research presented, there is need to use survey methods. The research material is filled by the college librarians through the questionnaire method.

In this we have taken the information of the college librarian's combined reading material.

VI. REVIEW OF RELATED LITERATURE

Solanke, D. S.,Deshmukh Rahul K.,(2018), Analyses on the "Six Sigma" Methodological Approaches Tram in

Web of Science database during 2007- 2018, Deshmukh,Rahul K., Ghumre, Shivshankar , Bibliometrics Analysis on the Six Sigma Methodological Approaches to Scopus Database During 2007-2015.Term "six sigma" comes from statistics and is used in statistical quality control, The result indicates that there were total 4027 (3 March 2018) documents on "Six Sigma" in Scopus during the period. Deshmukh Rahul K., Taksande Pratibha G.,(2015) Impact of Correlation on Research Productivity, It has 86 college librarian's contributions related to the Karl Pearson's correlation has been shown to have correlation created through MATRIX, in which total productivity, Khiste G.P., Maske D.B.& Deshmukh R.K. (2018) discusses the "Knowledge Management" as reflected in Scopus for the period from 2007–2016. The result indicates that there were total 7996 documents on Knowledge Management during 2007 to 2016. At the international front, India's contribution to Knowledge Management is 298 documents during 2007 to 2016, which is rank on tenth. Khiste G.P., Maske Dnyaneshwar B. & Deshmukh R.K.(2018) analyzed big data output in J-gate during 2013 to 2017. Khiste G.P., Awate Avinash & Deshmukh R.K.(2018) discussed Literature audit of 'digital library' by J-Gate database. Maske, D. B, Deshmukh R. K & Khiste Gajanan P.(2018) analysed the items on "Information Literacy" as reflected in J-Gate for the period from 2007 to 2016. Khiste Gajanan P & Awate Avinash P & Deshmukh Rahul (2018) Mapping of the literature on 'Information Literacy' by Using Science Direct during 2008-2017. Veer D.K., Khiste G. P. & Deshmukh R., (2018) explained the term Information Literacy as reflected in SCOPUS during the period during 2007 to 2016. Deshmukh R.k & Taksande P.G (2017) "An Analytical Study of College Librarians' in Contribution of Publication & Extra- Curricular Activities in College Affiliated by Dr. B.A.M.U, Aurangabad." Ph.D Theses submitted by RSTMUN, Nagpur. Khiste G.P., Deshmukh R.K.& Kale V.A. (2017) discusses the "Bibliometric" as reflected in J-Gate for the period from 2005 to 2016. This study investigates the highly productive authors, Document Type, Geographical distribution by country, etc.

7.1 Response of Questioner DR.BAMU affiliated college Librarian

Publication Stat us of College Librarians Affiliated to DR.BAMU, Aurangabad the collected data is analyzed in Table 7.1

Table No. 7.1 Status of Respondents

Sr No.	Area	No. of colleges	Response	%
01	Aurangabad	30	28	23.93%
02	Jalna	13	12	10.25%
03	Beed	31	30	25.64%
04	Osmanabad	19	16	13.67%
	Total	93	86	73.50%

Shows information pertaining to the colleges having no of librarians. It was apparent that total 93 college librarians Affiliated to Dr.BAMU University. Response to questionnaire no of 86 college librarians.

7.2 Productivity growth Rate

Detailed reading material through excel sit for growth rate estimation from the available following information for measuring the growth of research Productivity.

Table No. 7.2 Productivity growth Rate

Year	Productivity growth	Growth Rate	
		percentage	Average
2000	3	3%	
2001	3	4.030%	
2002	6	8.060%	
2003	5	6.716%	
2004	14	18.80%	
2005	16	21.493%	
2006	30	40.300%	
2007	47	63.138%	
2008	82	110.156%	
2009	104	139.710%	
2010	199	267.329%	
2011	217	291.510%	
2012	237	318.377%	
2013	202	271.359%	
2014	177	251.209%	0.343% At Per Article
Total	1342		

Affiliated Dr BAMU, Aurangabad the college librarian’s research Productivity growth rate quality of future values has been made. It was predicted to increase the cost using X value and Y values. Year and Productivity rate per article on following formula growth rate = growth (known_y’s, known_x’s,new) This formula use for growth rate on per article was 0.343%.

7.3 Bradford’s law

In 1934 Samuel Clement Bradford has formulated the law of scattering to describe the distribution of articles on particular subject in different periodicals. His articles on a particular subject in different periodicals. His article, “Sources of information on specific” was the first publication on observation on scattering. He explained his empirical law as:

“If scientific Journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus and succeeding Zones will be 1:n:n²”

Samuel Clement Bradford was a very determine and dedicated person is very evident in this writing. His thinking was undoubtedly influence by Paul Otlet and Lafontaine, who organized first international conference on bibliography held in Brussels in 1895. This idea was standby supported by Bradford.

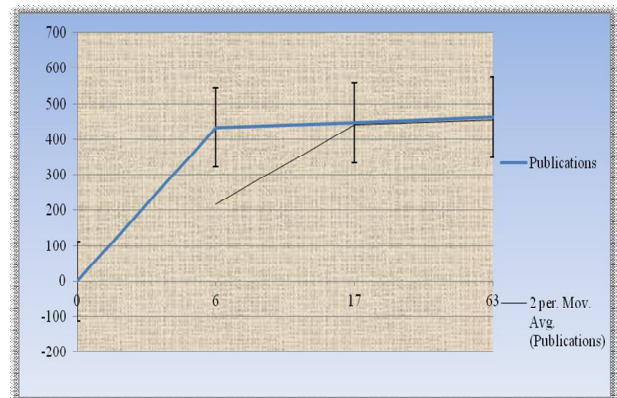
In the present set of data numbers of authors have been arranged in a nucleus of 3 equal zones. Numbers of article in each zone were more or less equal which is shown in Table No.7.3

Table No. 7.3 Law of Scattering

Zone	Publications	No. of Authors	DC
1	434	6	0.013
2	446	17	0.038
3	462	63	0.136
Total	1342	86	0.064

Degree of Collaboration (DC)

Fig. No. 01 Bradford’s Law of Scattering



Bradford’s law of scattering as shown Table No 7.3 and Fig. No. 1 that the total numbers of 1342 publication of 86 College Librarian were divided in to 3 equal zones. College Librarian published any types of document while number or authors writing similar number of paper in each zone is in the ratio 6:17:63 which indicates that the data fits into the Bradford’s law of scattering.

Bradford’s Law has been found to be the 0.163 most Degree of Collaboration (DC) in the third zone. So the total reading materials is DC 0.064.

7.4 In Journals Bradford’s Law of Scattering

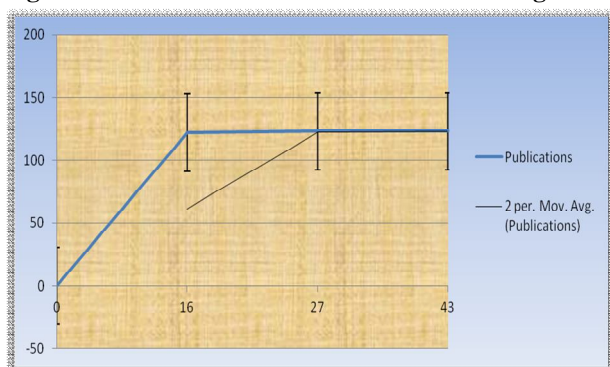
Journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus and succeeding Zones will in the present set of data number of authors have been arranged in a nucleus of 3 equal zones. Number of articles in each zone were more or less equal which is shown in Table No.7.4

Table No. 7.4 Law of Scattering

Zone	Publications	No. of Authors	DC
1	122	16	0.131
2	123	27	0.219
3	123	43	0.349
Total	368	86	0.23

Degree of Collaboration (DC)

Fig. No. 2 Journals Bradford’s Law of Scattering



Bradford’s law of scattering as shown Table No 7.4 and Fig. No. 2 that the total numbers of 368 publication of 86 College Librarian were divided in to 3 equal zones. College Librarian published any of journals while number or authors writing similar number of paper in each zone is in the ratio 16:27:43 which indicates that the data fits into the Bradford’s law of scattering.

7.5 Lotka’s law

Alfred Lotka investigated author productivity and modeled it mathematically during the last century. Lotka’s law described the frequency of publication by authors in given field. Its states that the number of authors making n contribution is about 1/n² those making 1: and the proportion of all contributors that make a single contribution is in the region of 60 percent.

An attempt was made to apply the Lotka’s Law to The data was collected from all the College Librarian domains which is represented in the Table No.7.5

Table No. 7.5 Lotka’s Law

x	y	X=log x	Y=log y	X ²	XY	y/Σy	Y/ΣY
0	10	00	1	0	1	0.11	0.10
02	02	0.301	0.301	0.091	0.602	0.02	0.03
03	03	0.477	0.477	0.227	1.602	0.03	0.04
04	06	0.602	0.778	0.362	1.38	0.11	0.07
05	06	0.699	0.778	0.488	1.477	0.11	0.07
06	06	0.778	0.778	0.605	2.857	0.11	0.07
07	02	0.845	0.301	0.714	1.146	0.02	0.03
08	04	0.903	0.602	0.815	1.505	0.04	0.06
09	04	0.954	0.602	0.910	2.651	0.04	0.06
10	03	1	0.477	1	1.477	0.03	0.04
11	01	1.414	0	1.999	1.414	0.01	0
12	01	1.079	0	1.164	2.891	0.01	0
13	03	1.113	0.477	1.238	1.59	0.03	0.04
14	03	1.146	0.477	1.313	1.623	0.03	0.04
15	03	1.176	0.477	1.626	3.213	0.03	0.04
16	04	1.204	0.602	1.449	1.806	0.04	0.06
17	04	1.230	0.602	1.512	1.832	0.04	0.06
18	02	1.255	0.301	1.575	3.638	0.02	0.03
21	02	1.322	0.301	1.852	1.623	0.02	0.03
23	02	1.361	0.301	1.852	1.662	0.02	0.03
24	01	1.380	0	1.904	3.285	0.01	0
25	01	1.397	0	1.951	1.397	0.01	0
26	01	1.415	0	2.002	1.415	0.01	0
27	02	1.431	0.301	2.047	2.812	0.02	0.03
33	01	1.518	0	2.304	1.518	0.01	0
38	01	1.579	0	2.493	1.579	0.01	0
43	01	1.633	0	2.666	1.633	0.01	0
45	01	1.653	0	2.73	1.653	0.01	0
51	01	1.707	0	2.913	1.707	0.01	0
54	01	1.732	0	2.999	1.732	0.01	0
58	01	1.763	0	3.108	1.763	0.01	0
64	01	1.806	0	3.261	1.806	0.01	0
99	01	1.995	0	3.980	1.995	0.01	0
108	01	2.033	0	4.133	2.033	0.01	0
Total	86	41.901	9.933	59.283	63.317		

$$X = \text{Publications}; Y = \text{Authors}$$

The application of Lotka’s Law was tested on the data but it was found that the data not fit into that Lotka’s Law even though the researcher has attempted to apply it with mathematical method. Because if they know the number of authors who write the same articles as their accomplishment if so 1/n² (factor) with the help of the number of writer who write two or three or more articles, only 60% of the authors write a single article. In this N element ¼factor½ is Y=log y Natural Log or y the value of 9.933 is based on total factors. As well as X=log x Natural Log or y the value of 41.9.1 is

based on total factors the law does not apply to this table due to both incompatibility.

VIII. MAJOR INFERENCES

- Response to questionnaire no of 86 college librarians.
- Affiliated Dr BAMU, Aurangabad the college librarian's research Productivity growth rate was 0.343%.
- College Librarian published any types of document while number or authors writing similar number of paper in each zone is in the ratio 6:17:63 which indicates that the data fits into the Bradford's law of scattering.
- Journal wise number or authors writing similar number of papers in each zone is in the ratio 16:27:43 which indicates that the data fits into the Bradford's law of scattering.

CONCLUSION

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