Research Productivity Growth & Author Productivity pattern in College Librarians

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ABSTRACT

The information resources for effective and efficient use, it is necessary that characteristics of in information sources are studied. Studied has broadly in two ways productivity pattern of research Product and information generator of the authors. Square root law & 80/20 rules studies that half of the scientific paper are contributed by the Square root law & 80/20 rules of the total number of scientific. The study gives status of college librarian Research Productivity area of Dr. BAMU, Aurangabad.

Keywords : Productivity, Square root law, 80/20 Rules.

I. INTRODUCTION

1. 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 to 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 in information sources are studied. Studied 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 square root law

- Got asked what would happen to inventory when the numbers of stocking locations change. I thought for a minutes and rebred a quick estimate. The square root law states that total safely stock can be approximated by multiplying the total inventory by the square root of the number of future warehouse locations divided by the current number.

$x2=(x1)*\sqrt{(n2/n1)}$

n1=number of existing facilities.

n2= number of future facilities.

x1=existing inventory

x2= future inventory.(www.leanmath.com)

- In the Mathematical theory of games the Penrose square root law, originally formulated by Lionel Penoose, concerns the distribution of the voting power in voting body consisting of N numbers. It states that the a Priori voting power of any voter measured by the Penrose-Bbanzhaf index φ scales line $1/\sqrt{N}$.

This result was used to design the Penorse method of for allocating the voting weights of representatives in

a decision-making bodies proportional to the square root of the population represented.(Wikipedia.org)

II. PROPOSED RESEARCH

Productivity patterns needed to analysis of research performance of college Librarian in their profession. Productivity patterns to identify the role 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 of Affiliated Dr. BAMU, Aurangabad in of granted all college (arts, science, commers college, B.ed college, law college in urban & rural areas . In the study is limited to 86 college Librarian of 2000 to 2014 fifteen years research productive only.

IV. Objectives of Study

- ✓ To know the contribution of college Librarians in publication.
- ✓ To collect the information of college librarians pertaining to publication.
- ✓ To study the success and compare the Rural and Urban college librarians in relation to their publication.
- ✓ To Make available the research Productivity to corroborate the contribution of college librarian.

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

Deshmukh R.k & Taksande P.G (2018) in article " Intellectual Productivity Of College Librarians,1342 over all research productivity college librarian, 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, Aurganbad." 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. Price's Square root law of scientific Productivity

An attempt was made to analyze distribution of publication of 86 College Librarian in Affiliated by BAMU, Aurangabad University in increasing order of Productivity. The distribution of authors and their contributions are presented in Table no. 7.1

Table No.7.1

Distribution of Publications

No. of Papers	Author		Total Contribution	
	Number of Author	Parentage	Contribu tion	%
0	10	11.62%	0	0
02	02	2.32%	04	0.29%
03	03	3.48%	09	0.67%
04	06	6.97%	24	1.78%
05	06	6.97%	30	2.23%
06	06	6.97%	36	2.68%
07	02	2.32%	14	1.04%
08	04	4.65%	32	2.38%
09	04	4.65%	36	2.68%
10	03	3.48%	30	2.23%
11	01	1.16%	11	0.81%
12	01	1.16%	12	0.89%
13	03	3.48%	39	2.90%
14	03	3.48%	42	3.12%
15	03	3.48%	45	3.35%
16	04	4.65%	64	4.76%
17	04	4.65%	68	5.06%
18	02	2.32%	36	2.68%
21	02	2.32%	42	3.12%
23	02	2.32%	46	3.42%
24	01	1.16%	24	1.78%
25	01	1.16%	25	1.86%
26	01	1.16%	26	1.93%
27	02	2.32%	54	4.02%
33	01	1.16%	33	3.83%
38	01	1.16%	38	2.83%
43	01	1.16%	43	3.20%
45	01	1.16%	45	3.35%
51	01	1.16%	51	3.80%
54	01	1.16%	54	6.27%
58	01	1.16%	58	4.32%
64	01	1.16%	64	4.76%
99	01	1.16%	99	7.37%
108	01	1.16%	108	8.04%
909	86	100%	1342	100%

It can be observed for table no 7.1 that, the number of college librarians and the frequency of their publication literature has been shown. Distribution is characterized by dispersion of papers over large number of researchers with low productivity, and the concentration of contributions is in the hands of few highly productive authors. It can be observed that 1.16% of authors have published 108 heights papers, and they represent as whole 8.04% of total contribution. On the other hand 11.62% of the authors have no contribution on Publication.

7.2 combined use of rules Price Square Rood law & 80/20 rules

Sengputa (1990) has stated the Price Square Rood Law as the "Half of the scientific papers are contributed by the square root of scientific authors" **De Solla Price in the article of Gupta,et al.** (1991) states that, " half of the Published research output in any should be contributed by highly productive

subject of authors approximately equal to the square root of the total number of publishing in the area". This is called Price Square root Law. Another similar generalization has been observed and is known as 80/20 Rule. This Rule States that 80 Percent of the total research papers in any subject field is approximately accounted by 20 Percent of the most Productive authors.

an attempt has been made to test these two generalizations on the present data, which is shown in table no. 7.2 Consolidated use of College librarian's Price square root law and 80/20 rule combined use of rules on following table no.

Table No. 7.2
Price square root law and 80/20 rule

Authors Total Percentage	no of Authors	Total Productive	
		Productive	Percentage
Square root of total authors	9	522	38.89%
Ten Percent of total authors	9	560	41.72%
Twenty Percent of total authors	17	768	57.22%
Thirty Percent of total authors	26	930	69.29%
Forty Percent of total authors	34	1051	78.31%

It can be observed form Table no. 7.2 that, Square root at total authors is 9 authors, contributed productive 38.89% of the total Productive, which is much below 50% predicted by J.D. Solla Price. Similarly it is observed that 20% of the authors contributed only 57.22% of the total papers and 30% of the authors contributed only 69.29 of the productive. This is much below the 80 Percent predicted by 80/20 rules. It can be also observed that 40 percent contributed 78.31% of the total productive. Hence this indicated that the data fits into the 80/20 rules.

To get more also accurate result it is necessary to apply and try above generalizations in different subjects at various levels of their development, hence an attempt has been made to analyze the data by different subject's domains, which is shown in table no.

Based on the principle of Square root law & 80/20 rules of the four divisions under Dr BAMU, Aurangabad, the total contribution of the college

librarian to the reading material has been divided in form table no 7.3.1 to table no. 7.3.4

7.3.1 Aungabad District

Contribution of 28 college librarians in Aurangabad Zonal District research productive is shown in detail table no 7.3.1

Table No.7.3.1 A

Aurangabad Division Reading Material Extension Table

Productivity Frequency Number	Number of Author	Parentage	Contribution	Parentage
00	01	3.57%	0	00
04	03	10.71%	12	1.83%
05	02	7.14%	10	2.29%
06	01	3.57%	06	0.91%
08	01	3.57%	08	1.22%
09	02	7.14%	18	2.75%
10	02	7.14%	20	3.05%
12	01	3.57%	12	1.83%
13	01	3.57%	13	1.98%
15	01	3.57%	15	2.29%

18	01	3.57%	18	2.75%
23	02	7.14%	46	7.03%
24	01	3.57%	24	3.66%
25	01	3.57%	25	3.82%
27	02	7.14%	54	8.25%
38	01	3.57%	38	5.81%
51	01	3.57%	51	7.79%
54	01	3.57%	54	8.25%
58	01	3.57%	58	8.86%
64	01	3.57%	64	9.78%
108	01	357%	108	16.51%
572	28	100%	654	100%

In this reading material extension section, 28 college librarians have created 654 Research productivity under Aurangabad division. The total frequency of this Research productivity is 572. This is one of the largest numbers of librarians to nominate 108 readings. From the above Research productivity on following Price square root law and 80/20 rule Tables

Table No. 7.3.1 B

Aurangabad Division Reading Material on Square root law & 80/20 rules

Authors Total Percentage	no of Authors	Total Productive	
		Productive	Percentage
Square root of total authors	5	335	51.22%
Ten Percent of total authors	03	230	35.16%
Twenty Percent of total authors	06	373	57.03%
Thirty Percent of total authors	08	427	65.29%
Forty Percent of total authors	11	499	76.29%

It can be observed form Table no. 7.3.2 that, Square root at total authors in Aungabad District wise 9 authors, contributed productive 51.22 % of the total Productive, which is much below 50% predicted by J.D. Solla Price. Similarly it is observed that 20% of the authors contributed only 57.03% of the total papers and 30% of the authors contributed only 65.29% of the productive. This is much below the 80 Percent predicted by 80/20 rules. It can be also observed that 40 percent contributed 76.29 % of the total productive in Aurangabed district. Hence this indicated that the data fits into the 80/20 rules.

7.3.2 Jalna District

Contribution of 12 college librarians in Jalna Zonal district research productivy is shown in detail table no 7.3.2 A

Table No. 7.3.2A

Jalna Division Reading Material Extension Table

Productiv Frequency Number	Number of Author	ge	on	ge
00	02	16.66%	0	00%
01	01	8.33%	2	1.12%
04	01	8.33%	04	2.25%
08	01	8.33%	08	4.51%
09	01	8.33%	09	5.08%
13	01	8.33%	13	7.34%
15	01	8.33%	15	8.47%
17	01	8.33%	17	9.60%
21	01	8.33%	21	11.86%
43	01	8.33%	43	24.29%
45	01	8.33%	45	25.42%
176	12	100%	177	100%

In this reading material extension section, 12 college librarians have created 177 Research Productivity under Jalna division. The total frequency of this Research Productivity is 176. This is one of the

largest numbers of librarians to nominate 45 readings. From the above Research Productivity on following

Price square root law and 80/20 rule Tables

Table No. 7.3.2B
Jalna Division Reading Material on Square root law & 80/20 rules

Authors Total Percentage	no of Authors	Total Productive	
		Productive	Parentage
Square root of total authors	3	109	61.58%
Ten Percent of total authors	01	45	25.42%
Twenty Percent of total authors	2	88	49.71%
Thirty Percent of total authors	04	126	71.18%
Forty Percent of total authors	05	141	79.66%

It can be observed form Table no. 7.3.2.B that, Square root at total authors in Jalna District wise 3 authors, contributed productive 61.58 % of the total Productive, which is much below 50% predicted by J.D. Solla Price. Similarly it is observed that 20% of the authors contributed only 49.71% of the total papers and 30% of the authors contributed only 71.18 % of the productive. This is much below the 80 Percent predicted by 80/20 rules. It can be also observed that 40 percent contributed 79.66 % of the total productive in Jalna district. Hence this indicated that the data fits into the 80/20 rules.

7.3.3 Beed District

Contribution of 30 college librarians in Beed Zonal district research productivy is shown in detail table no 7.3.3.A

Table No. 7.3.3.A
Beed Division Reading Material Extension Table

Productivity Frequency Number	Number of Author	Parentage	Contribution	Parentage
00	04	13.33%	0	00
03	01	3.33%	03	0.94%
04	02	6.66%	08	2.51%
02	02	6.66%	10	3.14%
06	02	6.66%	12	3.17%
07	01	3.33%	07	2.20%
08	01	3.33%	08	2.51%
09	01	3.33%	09	2.83%
10	01	3.33%	10	3.14%
11	01	3.33%	11	3.45%
13	01	3.33%	13	4.08%
14	03	10.00%	42	13.20%
15	01	3.33%	15	4.71%
16	04	13.33%	64	20.12%
17	02	6.66%	34	9.77%
18	01	3.33%	18	5.66%
21	01	3.33%	21	6.60%
33	01	3.33%	33	10.37%
207	30	100%	318	100%

In this reading material extension section, 30 college librarians have created 318 Research Productivity under Beed division. The total frequency of this Research Productivity is 207. This is one of the largest numbers of librarians to nominate 33 readings. From the above Research Productivity on following Price square root law and 80/20 rule Tables

Table No. 7.3.3.B

Beed Division Reading Material on Square root law & 80/20 rules

Authors Total Percent	no of Authors	Total Productive	
		Productive	Percent
Square root of total authors	5	106	33.33%
Ten Percent of total authors	03	72	22.64%
Twenty Percent of total authors	06	122	38.36%
Thirty Percent of total authors	09	170	53.45%
Forty Percent of total authors	12	213	66.98%

It can be observed form Table no. 7.3.3.B that, Square root at total authors in Beed District wise 5 authors, contributed productive 33.33 % of the total Productive, which is much below 50% predicted by J.D. Solla Price. Similarly it is observed that 20% of the authors contributed only 38.36% of the total papers and 30% of the authors contributed only 53.45 % of the productive. This is much below the 80 Percent predicted by 80/20 rules. It can be also observed that 40 percent contributed 66.98 % of the total productive in Beed district. Hence this indicated that the data fits into the 80/20 rules.

7.3.4 Osmanabad Distract

Contribution of 16 college librarian in Osmanabad Zonal distract research productivy is shown in detail table no 7.3.4.A

Table No. 7.3.4.A

Osmanabad Division Reading Material Extension Table

Productivity Frequency Number	Number of Author	Parentage	Contribution	Parentage

00	03	18.75%	0	00
02	01	6.25%	02	1.03%
03	02	12.5%	06	3.10%
05	02	12.5%	10	5.18%
06	03	18.75%	18	9.32%
07	01	6.25%	07	3.62%
08	01	6.25%	08	4.14%
17	01	6.25%	17	8.80%
26	01	6.25%	26	13.47%
99	01	6.25%	99	51.29%
173	16	100%	193	100%

In this reading material extension section, 16 college librarians have created 193 Research Productivity under Aurangabad division. The total frequency of this Research Productivity is 173. This is one of the largest numbers of librarians to nominate 99 readings. From the above Research Productivity on following Price square root law and 80/20 rule Tables

Table No. 7.3.4.B

Osmanabad Division Reading Material on Square root law & 80/20 rules

Authors Total Percent	No. of Authors	Total Productive	
		Productive	Percent
Square root of total authors	4	150	77.72%
Ten Percent of total authors	02	125	64.76%
Twenty Percent of total authors	03	142	73.57%

Thirty Percent of total authors	05	157	81.34%
Forty Percent of total authors	06	163	84.45%

It can be observed form Table no. 7.3.4.B that, Square root at total authors in Osmanabad District wise 4 authors, contributed productive 77.72 % of the total Productive, which is much below 50% predicted by J.D. Solla Price. Similarly it is observed that 20% of the authors contributed only 73.57% of the total papers and 30% of the authors contributed only 81.34 % of the productive. This is much below the 80 Percent predicted by 80/20 rules. It can be also observed that 40 percent contributed 84.45 % of the total productive in Beed district. Hence this indicated that the data fits into the 80/20 rules.

8. Major Inferences
- Response to questionnaire no of 86 college librarians.
- 1.16% of Authors have published 108 heights research productivity.
- Square root & 80/20 rules at over all 9 Authors contributed Productive 38.89% of the total Productivity.
- In Aurngabaed Distract 5 Author contributed productive 51.22% of over all district productivity.
- Jalna distract 3 author contributed productive 61.58 % of over all district productivity.
- In Beed distract 5 author contributed productive 33.33 % of over all district productivity.
- Osmanabad distract 4 author contributed productive 77.72% of over all district productivity.

VII. CONCLUSION

In other areas of science there are a large number of changes in research in Library and Information. research performance of college Librarian in their profession. Productivity patterns to identify the role

librarian in promotion of Library & Information profession in department and to increase the productivity of library management.

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