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Application of Lotka's Law in Current Science Journal

M. Thamaraiselvi[1]*, S. Lakshmi[2] and M. Manthiramoorthi[3]

[1]Part-Time Research Scholar (LIS), [2]Librarian & Head (DLIS), Srimad Andavan Arts and Science College (A), Bharathidasan University, Tiruchirappalli, Tamil Nadu, India
[3]Part-Time Research Scholar (LIS), Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India
*Corresponding author email id: thamaraimanthira.acl@gmail.com

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ABSTRACT

Purpose: The purpose of the study is to examine the application of Lotka's law in current science journals. **Aim:** To investigate the scientific productivity of authorship patterns in current science journals. To verify the Lotka's law using general power method (n≠2) and inverse square method (n=2) and to analyse the frequency distribution of author's productivity by applying non parametric Kolmogorov-Smirnov and Chi-square goodness-of-fit test. **Methodology:** Data for the present study retrieved and downloaded from Web of Science (WoS) bibliographical database [accessed on 20.12.2019] using the term "current science" in the publication field. Total of 4298 papers published by 777 authors during 2014 to 2018. Egghe suggested four methods to count author distribution from that straight counting method used in this study to calculate author distribution of the dataset. **Findings:** Lotka's law didn't fit the current science publication using general power method as well as inverse square method and the calculated value of 'n', 'c' and critical value are 0.41, 0.058 and 0.0585. The maximum deviation and observed frequency of the author's productivity is greater than that of the critical value by applying Kolmogorov-Smirnov test and Chi-square goodness-of-fit test. **Conclusion:** The study concluded that current science journal publication during the study doesn't confirm the applicability of Lotka's law.

Keywords: Bibliometrics, Current science, Journal, Lotka's law, Scientometrics

INTRODUCTION

Bibliometrics study uses different parameters to measure the research productivity of an individual, organization and country research publication from time to time. There are three classical laws for bibliometrics and scientometrics studies to know different types of information about the research publication. Lotka's law of scientific productivity defined as author's productivity in a subject, Bradford's law of scattering denoted as scattering of publication and Zipf's law of word's occurrence explained about the ranking of the word's frequency in a literature. In 1926, Alfred J. Lotka conducted a study to examine the frequency distribution of scientific productivity of authors in chemical abstract for the period of ten years from 1907 to 1916. It stated that the proportion of all contributions that makes a single contribution is about only one article publishes 60%, two articles publish 15%, and three articles publish 7% and so on. Lotka's law has an inverse relationship between the number of publications and number of authors of research publications.

Lotka's law equation as

$$xn*y = c \quad \ldots (1)$$

'x' denote number of articles (1, 2, 3, 4….) 'y' represents the number of authors 'n' as an exponent value and c as constant.

Commonly n=2 used as the exponent value for the data set with c= 0.6079 are known as inverse square law of scientific productivity. Pao (1985) defined linear least square method to calculate the value of n in his present study and the equation is given below as

$$n = \frac{N \Sigma xy - \Sigma x \Sigma y}{N \Sigma x^2 - (\Sigma x)^2} \quad \ldots (2)$$

X (number of publications) is the logarithm value of "x"; Y (number of authors) is the logarithm value of "y" and N denoted as total count of dataset.

The below equation used to calculate the "c" value

$$c = \frac{1}{\Sigma x^n} \quad \ldots (3)$$

Pao (1986) applied nonparametric Kolmolgorov- Smirnov (K-S) goodness-of-fit test to examine the pattern of author productivity from the highest deviation between the observed and expected cumulative frequencies. The highest deviation value compared with the critical value (C.V.) which calculated by the equation determined by Nicholls (1986, 1989) as follows

$$\text{Critical Value (C.V.)} = \frac{1.63}{[\Sigma y_x + (\Sigma y_x/10)^{1/2}]^{1/2}} \quad \ldots (4)$$

The present study deals with the application of Lotka's law in current science journals during the study period of 2014 to 2018. Aim of the study to verify the fitness of Lotka's law using generalized power method and inverse square method with Kolmolgorov- Smirnov (K-S) and Chi-square goodness-of-fit test. Data downloaded from Web of Science (WoS) database.

CURRENT SCIENCE JOURNAL

Current science journal (2020) is one of the leading interdisciplinary science journals published fortnight in India from Indian Academy of Science. It was started in 1932 by the Indian Scientists such as CV Raman, Birbal Sahni, Meghnad Saha, Martin Foster and S.S. Bhatnagar. It published one hundred volumes in 2011. It mainly focussed on science and scientific activities. The renowned acknowledged and highlighted themes in the journal are remote sensing, waves, nanomaterials, AIDS, Cancer, Monsoon etc. It is indexed by Web of Science, Scopus, Geobase, Chemical Abstract, IndMed and Current Contents. 0.756 is the impact factor for the year 2018.

REVIEW OF LITERATURE

Many bibliometrics studies have been carried out to verify the frequency distribution of scientific productivity of authors in several disciplines of a country through applying Lotka's law. Some of the studies reviewed below.

Manthiramoorthi *et al.* (2019) carried out a bibliometrics study to find the authorship pattern and verify the frequency distribution of scientific productivity using Lotka's law of information literacy research output. Data downloaded from Web of Science (WoS) from 2008 to 2017. The goodness-of-fit of Lotka's law analyse by Kolmogorov-Smirnov goodness-of-fit test. Result of the study shows that the dataset does not fit for the Lotka's law. Nattar (2019) examined the frequency distribution of the author's productivity of Lotka's law in Indian journal of physics. The data collected from the issues of the journal for a period of 2008 to 2017. In this study, 3500 personal author names identified as full productivity of authorship. Using the least square method, the value of n = 2.9409, c = 0.825 and c.v = 0.0275 calculated. Maximum difference (0.058) of the research productivity is greater than the critical value. Hence, it concluded that the frequency distribution of the author's productivity in the dataset does not fit to

Lotka's law. Satishkumar and Senthilkumar (2019) studied the scientific productivity and author pattern in the field of astronomy and astrophysics research in India. The aim of the study is to verify Lotka's law in research publication of astronomy and astrophysics. Data downloaded from Web of Science (WoS) database from 2013 to 2017. Total of 6363 papers published by 2719 authors. Straight counting method used to test the frequency distribution of Lotka's law. General power method and inverse square method used to calculate c value. Kolmogorov- Smirnov and Chi-square test applied to know the goodness-of-fit. Findings of the study revealed that Lotka's law does not fit to the dataset. Maz-Machado and others (2017) conducted a bibliometrics study on information science and library science. Data downloaded from social science citation index of journal citation report from 1956 to 2014. Lotka's law model parameters such as n, c and α calculate using linear least square method. Kolmogorov-Smirnov test applied to estimate the maximum deviation of author scientific productivity distribution. Results of the study concluded that the pattern of publications of the LIS category articles fit to the Lotka's law. Sureshkumar (2017) verified Lotka's law using Kolmogorov-Smirnov test. Total of 2106 publication references collected from the journal of documentation during 2003 to 2015. Findings of the study indicated that Lotka's law fit the dataset of LIS literature. Tamilselvan and Sivakumar (2013) examined Lotka's law in the literature produced by NIT faculties. Findings of the study revealed that values of n, c and c.v are 1.89, 0.59 and 0.24 respectively. Difference value 0.015 is less than that of critical value. Hence it stated that Lotka's law fit the dataset of literature produced by NIT faculties. Kumar (2010) compared two datasets of research publications of CSIR India. Total of 6076 and 17681 publications collected from 1988 to 1992 and 2004 to 2008. Kolmogorov-Smirnov goodness-of-fit test used to verify Lotka's law using the inverse square method. Result shows that Lotka's law didn't fit the two datasets of research publications of CSIR India. Ahmed and Rahman (2009) tested Lotka's law using generalized inverse square form and linear least square form to the publication of nutrition research in Bangladesh during 1972 to 2006. Kolmogorov-Smirnov goodness-of-fit test used to verify the frequency distribution of author productivity. Findings show that linear least square form of calculation fits Lotka's law.

OBJECTIVES

The aims of the study given below;

1. To investigate the scientific productivity of authorship patterns in current science journals.
2. To verify Lotka's law using general power method ($n \neq 2$) and inverse square method ($n=2$).
3. To analyse the frequency distribution of author's productivity by applying non parametric Kolmogorov-Smirnov and Chi-square goodness-of-fit test.

HYPOTHESIS

Ho: Lotka's law fits the dataset using general power method and inverse square method.

METHODOLOGY

Data for the present study retrieved and downloaded from Web of Science (WoS) bibliographical database [accessed on 20.12.2019] using the term "current science" in the publication field. Total of 4298 papers published by 777 authors during 2014 to 2018. Egghe (2000) suggested four methods to count author distribution from that straight counting method used in this study to calculate author distribution of the dataset. Lotka's law verifies using general power method and inverse square method. Non parametric test such as Kolmogorov- Smirnov and Chi-square used to analyse the goodness-of-fit test.

DATA ANALYSIS AND INTERPRETATION

Lotka's law reveals the frequency distribution of

scientific productivity of the author in the dataset.The value of 'n' (0.41), 'C' (0.058) and 'Critical value' (0.0585) derived from the above equation and the calculation shown in Table 1.

GENERAL POWER METHOD (n≠2)

Table 2 shows the goodness-of-fit test to verify Lotka's law using Kolmolgorov-Smirnov test with the 'n' value

Table 1: Determination of 'n', 'C' and 'Critical Value'

S.No	No. of Publications (x)	No. of Authors (y)	X (Log x)	Y (Log y)	X^2	X*Y	x^n	$1/x^n$
1	1	87	0.0000	4.4659	0.0000	0.0000	1.0000	1.0000
2	1	86	0.0000	4.4543	0.0000	0.0000	1.0000	1.0000
3	1	85	0.0000	4.4427	0.0000	0.0000	1.0000	1.0000
4	1	84	0.0000	4.4308	0.0000	0.0000	1.0000	1.0000
5	1	48	0.0000	3.8712	0.0000	0.0000	1.0000	1.0000
6	1	39	0.0000	3.6636	0.0000	0.0000	1.0000	1.0000
7	1	31	0.0000	3.4340	0.0000	0.0000	1.0000	1.0000
8	1	28	0.0000	3.3322	0.0000	0.0000	1.0000	1.0000
9	1	27	0.0000	3.2958	0.0000	0.0000	1.0000	1.0000
10	1	24	0.0000	3.1781	0.0000	0.0000	1.0000	1.0000
11	1	23	0.0000	3.1355	0.0000	0.0000	1.0000	1.0000
12	2	22	0.6931	3.0910	0.4805	2.1425	1.3287	0.7526
13	3	21	1.0986	3.0445	1.2069	3.3447	1.5690	0.6374
14	3	19	1.0986	2.9444	1.2069	3.2348	1.5690	0.6374
15	4	17	1.3863	2.8332	1.9218	3.9277	1.7654	0.5664
16	4	16	1.3863	2.7726	1.9218	3.8436	1.7654	0.5664
17	7	15	1.9459	2.7081	3.7866	5.2696	2.2207	0.4503
18	8	14	2.0794	2.6391	4.3241	5.4878	2.3457	0.4263
19	15	13	2.7081	2.5649	7.3335	6.9460	3.0353	0.3295
20	23	12	3.1355	2.4849	9.8313	7.7914	3.6167	0.2765
21	33	11	3.4965	2.3979	12.2256	8.3843	4.1936	0.2385
22	35	10	3.5553	2.3026	12.6405	8.1865	4.2960	0.2328
23	60	9	4.0943	2.1972	16.7637	8.9962	5.3585	0.1866
24	79	8	4.3694	2.0794	19.0921	9.0860	5.9983	0.1667
25	121	7	4.7958	1.9459	22.9996	9.3322	7.1440	0.1400
26	178	6	5.1818	1.7918	26.8509	9.2845	8.3690	0.1195
27	291	5	5.6733	1.6094	32.1866	9.1309	10.2376	0.0977
28	481	4	6.1759	1.3863	38.1413	8.5616	12.5800	0.0795
29	652	3	6.4800	1.0986	41.9910	7.1191	14.2509	0.0702
30	848	2	6.7429	0.6931	45.4664	4.6738	15.8724	0.0630
31	1440	1	7.2724	0.0000	52.8878	0.0000	19.7210	0.0507
Total		**777**	**73.3696**	**84.2891**	**353.2589**	**124.7431**	**138.2370**	**17.0879**

n = 0.41; C = 0.058; Critical value = 0.0585

of 0.41. The maximum deviation between the observed frequency and expected frequency of author's productivity show in the eight columns of the below table with the value of Dmax (0.209331) which is greater than that of critical value (0.0585). Hence the goodness-of-fit test using Kolmolgorov-Smirnov test concluded

Table 2: Kolmolgorov-Smirnov (K-S) Test (n=0.41)

S.No	No. of Publications (x)	No. of Authors (y)	Observed Authors (Fo)		Expected Authors (Fe)		Deviation (Fo-Fe)
			Percentage	Cumulative (%)	Percentage	Cumulative (%)	
1	1	87	0.111969	0.111969	0.05852	0.05852	0.053449
2	1	86	0.110682	0.222651	0.05852	0.11704	0.105611
3	1	85	0.109395	0.332046	0.05852	0.17556	0.156486
4	1	84	0.108108	0.440154	0.05852	0.23408	0.206074
5	1	48	0.061776	0.501931	0.05852	0.2926	**0.209331**
6	1	39	0.050193	0.552124	0.05852	0.35112	0.201004
7	1	31	0.039897	0.592021	0.05852	0.40964	0.182381
8	1	28	0.036036	0.628057	0.05852	0.46816	0.159897
9	1	27	0.034749	0.662806	0.05852	0.52668	0.136126
10	1	24	0.030888	0.693694	0.05852	0.5852	0.108494
11	1	23	0.029601	0.723295	0.05852	0.64372	0.079575
12	2	22	0.028314	0.751609	0.044044	0.70224	0.049369
13	3	21	0.027027	0.778636	0.037298	0.746284	0.032352
14	3	19	0.024453	0.803089	0.037298	0.783581	0.019507
15	4	17	0.021879	0.824968	0.033148	0.820879	0.004088
16	4	16	0.020592	0.84556	0.033148	0.854028	-0.00847
17	7	15	0.019305	0.864865	0.026352	0.887176	-0.02231
18	8	14	0.018018	0.882883	0.024948	0.913528	-0.03064
19	15	13	0.016731	0.899614	0.01928	0.938476	-0.03886
20	23	12	0.015444	0.915058	0.016181	0.957756	-0.0427
21	33	11	0.014157	0.929215	0.013954	0.973936	-0.04472
22	35	10	0.01287	0.942085	0.013622	0.987891	-0.04581
23	60	9	0.011583	0.953668	0.010921	1.001513	-0.04784
24	79	8	0.010296	0.963964	0.009756	1.012434	-0.04847
25	121	7	0.009009	0.972973	0.008191	1.02219	-0.04922
26	178	6	0.007722	0.980695	0.006992	1.030381	-0.04969
27	291	5	0.006435	0.98713	0.005716	1.037374	-0.05024
28	481	4	0.005148	0.992278	0.004652	1.04309	-0.05081
29	652	3	0.003861	0.996139	0.004106	1.047742	-0.0516
30	848	2	0.002574	0.998713	0.003687	1.051848	-0.05314
31	1440	1	0.001287	1	0.002967	1.055535	-0.05554
Total		**777**			**0.999983**		

Chi-square Test (n = 0.41)

that present dataset doesn't fit Lotka's law. Table 3 shows the goodness-of-fit test using χ^2 value with the 'n' value (0.41) to verify the fitness of Lotka's law of authors' productivity to the dataset revealed. The calculated value 206.872 and at 0.05 level of significance the χ^2 table value 44.99. The obtained value is greater than that of table value. Hence it concluded that Lotka's law doesn't fit the dataset using general power methods.

Table 3: Chi-square Test (n = 0.41)

S.No	No. of Publications (x)	Observed Frequency of Authors (Fi)	Expected Frequency of Authors (Pi)	Fi-Pi	$(Fi-Pi)^2$	$(Fi-Pi)^2/Pi$
1	1	87	45	42	1764	39.200
2	1	86	45	41	1681	37.356
3	1	85	45	40	1600	35.556
4	1	84	45	39	1521	33.800
5	1	48	45	3	9	0.200
6	1	39	45	-6	36	0.800
7	1	31	45	-14	196	4.356
8	1	28	45	-17	289	6.422
9	1	27	45	-18	324	7.200
10	1	24	45	-21	441	9.800
11	1	23	45	-22	484	10.756
12	2	22	34	-12	144	4.235
13	3	21	29	-8	64	2.207
14	3	19	29	-10	100	3.448
15	4	17	26	-9	81	3.115
16	4	16	26	-10	100	3.846
17	7	15	20	-5	25	1.250
18	8	14	19	-5	25	1.316
19	15	13	15	-2	4	0.267
20	23	12	13	-1	1	0.077
21	33	11	11	0	0	0.000
22	35	10	11	-1	1	0.091
23	60	9	8	1	1	0.125
24	79	8	8	0	0	0.000
25	121	7	6	1	1	0.167
26	178	6	5	1	1	0.200
27	291	5	4	1	1	0.250
28	481	4	4	0	0	0.000
29	652	3	3	0	0	0.000
30	848	2	3	-1	1	0.333
31	1440	1	2	-1	1	0.500

Chi-square value = 206.872

INVERSE SQUARE METHOD (n=2)

Lotka's law inverse square method of scientific productivity tested by Alfred J. Lotka in his study with the value of exponent n=2 and the value of constant has been given as 0.6079. Inverse square method attempted to verify Lotka's law for the present dataset by applying Kolmolgorov-Smirnov and Chi-square goodness-of-fit test in Table 4.

Table 4: Kolmolgorov-Smirnov (K-S) Test (n=2)

S.No.	No. of Publications (x)	Observed			Expected			Deviation (Fo-Fe)
		Frequency of Authors	Cumulative Frequency of Authors	Cumulative (%)	Frequency of Authors	Cumulative Frequency of Authors	Cumulative (%)	
1	1	87	87	0.11197	472	472	0.08591	0.02606
2	1	86	173	0.22265	472	944	0.17182	0.05083
3	1	85	258	0.33205	472	1416	0.25774	0.07431
4	1	84	342	0.44015	472	1888	0.34365	**0.09651**
5	1	48	390	0.50193	472	2360	0.42956	0.07237
6	1	39	429	0.55212	472	2832	0.51547	0.03665
7	1	31	460	0.59202	472	3304	0.60138	-0.00936
8	1	28	488	0.62806	472	3776	0.68730	-0.05924
9	1	27	515	0.66281	472	4248	0.77321	-0.11040
10	1	24	539	0.69369	472	4720	0.85912	-0.16543
11	1	23	562	0.72329	472	5192	0.94503	-0.22174
12	2	22	584	0.75161	118	5310	0.96651	-0.21490
13	3	21	605	0.77864	52	5362	0.97597	-0.19734
14	3	19	624	0.80309	52	5414	0.98544	-0.18235
15	4	17	641	0.82497	30	5444	0.99090	-0.16593
16	4	16	657	0.84556	30	5474	0.99636	-0.15080
17	7	15	672	0.86486	10	5484	0.99818	-0.13331
18	8	14	686	0.88288	7	5491	0.99945	-0.11657
19	15	13	699	0.89961	2	5493	0.99982	-0.10020
20	23	12	711	0.91506	1	5494	1.00000	-0.08494
21	33	11	722	0.92921	0	5494	1.00000	-0.07079
22	35	10	732	0.94208	0	5494	1.00000	-0.05792
23	60	9	741	0.95367	0	5494	1.00000	-0.04633
24	79	8	749	0.96396	0	5494	1.00000	-0.03604
25	121	7	756	0.97297	0	5494	1.00000	-0.02703
26	178	6	762	0.98069	0	5494	1.00000	-0.01931
27	291	5	767	0.98713	0	5494	1.00000	-0.01287
28	481	4	771	0.99228	0	5494	1.00000	-0.00772
29	652	3	774	0.99614	0	5494	1.00000	-0.00386
30	848	2	776	0.99871	0	5494	1.00000	-0.00129
31	1440	1	777	1.00000	0	5494	1.00000	0.00000
Total	**777**			**5494**				

Table 4 shows the Kolmolgorov-Smirnov goodness-of-fit test using inverse square method (n=2) with the constant (c = 0.6709) to verify Lotka's law in the present dataset. The maximum deviation between the observed and expected frequency distribution of the author's productivity is 0.09651 and the critical value is 0.0585. Maximum deviation value is greater than that of critical value. Hence it stated that Lotka's law doesn't fit the dataset.

Table 5: Chi-square Test (n = 2)

S.No	No. of Publications (x)	Observed Frequency of Authors (Fi)	Expected Frequency of Authors (Pi)	Fi-Pi	$(Fi-Pi)^2$	$(Fi-Pi)^2/Pi$
1	1	87	472	-385	148225	314.036
2	1	86	472	-386	148996	315.669
3	1	85	472	-387	149769	317.307
4	1	84	472	-388	150544	318.949
5	1	48	472	-424	179776	380.881
6	1	39	472	-433	187489	397.222
7	1	31	472	-441	194481	412.036
8	1	28	472	-444	197136	417.661
9	1	27	472	-445	198025	419.544
10	1	24	472	-448	200704	425.220
11	1	23	472	-449	201601	427.121
12	2	22	118	-96	9216	78.102
13	3	21	52	-31	961	18.481
14	3	19	52	-33	1089	20.942
15	4	17	30	-13	169	5.633
16	4	16	30	-14	196	6.533
17	7	15	10	5	25	2.500
18	8	14	7	7	49	7.000
19	15	13	2	11	121	60.500
20	23	12	1	11	121	121.000
21	33	11	0	11	121	0.000
22	35	10	0	10	100	0.000
23	60	9	0	9	81	0.000
24	79	8	0	8	64	0.000
25	121	7	0	7	49	0.000
26	178	6	0	6	36	0.000
27	291	5	0	5	25	0.000
28	481	4	0	4	16	0.000
29	652	3	0	3	9	0.000
30	848	2	0	2	4	0.000
31	1440	1	0	1	1	0.000

Chi-square value = 4466.340

Chi-square Test (n = 2)

Table 5 indicates the frequency distribution of author's productivity by applying Chi-square goodness-of-fit test using inverse square method to verify the fitness of Lotka's law in the present dataset. It observed that calculated value (4466.30) greater than that of Chi-square table value (44.99) at 0.05 level of significance. Hence it concluded that the frequency distribution of the author's productivity of Lotka's law didn't confirmed in the dataset.

HYPOTHESIS

Ho: Lotka's law fits the dataset using general power method and inverse square method. The calculated value of the dataset using general power method and inverse square method are 206.872 and 4466.340 which is greater than that of 0.05 level of significance of Chi-square table value (44.99). Hence, it concluded that the null hypothesis was rejected.

CONCLUSION

From the above findings of the study, it concluded that the value of "n", "c" and critical value calculated by the equation and the values are 0.41, 0.058, and 0.0585. The goodness-of-fit test applied to analyses the frequency distribution of the author's productivity by using Kolmolgorov-Smirnov and Chi-square test. The Lotka's law of frequency distribution of author's productivity doesn't fit to the dataset of current science journal publication during 2014 to 2018 in both general power method and inverse square method. It also concluded that the hypothesis statement rejected the null hypothesis. Hence Lotka's law doesn't fit the dataset.

REFERENCES

Ahmed SM and Rahman A, 2009. Lotka's law and authorship distribution in nutrition research in Bangladesh. *Annals of Library and Information Studies,* Vol. 56, No. 1, pp. 95–102.

Current Science, 2020. https://www.currentscience.ac.in/php/about.php.

Egghe L, 2000. *A review of ranking problems in scientometrics and informetrics.* (A. Neelameghan, Ed.) Bangalore: SRELS.

Kirtania DK and Chakrabarti B, 2018. Authorship pattern of open access social science journals published in India. *Journal of Information Management,* Vol. 5, No. 1, pp. 1–6.

Kumar N, 2010. Applicability to Lotka's law to research productivity of CSIR, India. *Annals of Library Information and Studies,* Vol. 57, No. 1, pp. 7–11.

Kumar S, Tewari S and Shah K, 2018. Publication productivity of Kumaun university: A scientometric study of zoology subjects. *Journal of Information Management,* Vol. 5, No. 2, pp. 89–95.

Lotka A, 1926. The frequency distribution of scientific productivity. *Journal of the Washington Academy of Science,* Vol. 16, No. 2, pp. 317–323.

Manthiramoorthi M, Saravanakumar R and Thirumagal A, 2019. *Lotka's law and pattern of author productivity of information literacy research output*. Retrieved 03 20, 2020, from http://digitalcommons.unl.edu/libphilprac/2509.

Maz-Machado *et al.* 2017. Empirical examination of Lotka's law for Information Science and Library Science. *Pakistan Journal of Information Management & Libraries,* Vol. 19, No. 2, pp. 37–51.

Nattar S, 2019. Application of Lotka's law to the scientific production of Indian Journal of Physics. *International Journal of Library and Information Studies,* Vol. 9, No. 1, pp. 36–42.

Nicholls PT, 1986. Empirical validation of Lotka's law. *Information Processing and Management,* Vol. 22, No. 5, pp. 417–419.

Nicholls PT, 1989. Bibliometric modeling process and the empirical validity of Lotka's law. *Journal of the American Society for Information Science,* Vol. 40, No. 6, pp. 379–385.

Pao ML, 1985. Lotka's law: A testing procedure. *Information Processing and Management,* Vol. 21, No. 4, pp. 305-320.

Pao ML, 1986. An Empirical examination of Lotka's law. *Journal of American Society of Information Science,* Vol. 37, No. 1, pp. 26–33.

Satishkumar and Senthilkumar R, 2019. *Applicability of Lotka's law in Astronomy & Astrophysics research of*

India. Retrieved 03 20, 2020, from http://digitalcommons.unl.edu/libphilprac/2129.

Sureshkumar PK, 2017. Author productivity and the application of Lotka's law in LIS publications. *Annals of Library and Information Studies*, Vol. 64, No. 2, pp. 234–241.

Tamilselvan N and Sivakumar N, 2013. Lotka's law: A study with reference to the literature by faculties of National Institute of Technology, India. *International Journal of Library and Information Science*, Vol. 2, No. 1, pp. 19–34.

Web of Science, 2020. http://apps. webofknowledge.com.

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