

ATINER CONFERENCE PRESENTATION SERIES No: LIB2019-0170

ATINER's Conference Paper Proceedings Series

LIB2019-0170

Athens, 18 December 2019

**A Scientometric Evaluation Based on Scopus Database: Geese
Research Publication Growth Pattern in India**

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ATINER's Conference Paper Proceedings Series

LIB2019-0170

Athens, 18 December 2019

ISSN: 2529-167X

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**A Scientometric Evaluation Based on Scopus Database:
Geese Research Publication Growth Pattern in India**

ABSTRACT

This study analyzes the publication growth of Geese Research publications of India based on data indexed in the Scopus database from 2008 to 2017. Data relevant for this assessment were extracted from the Scopus database. In “source title tag” the keyword, “Geese” was used to search and search has been restricted for the period 2008-2017 by selecting “date range tag.” The search again restricted by choosing the country ‘India’ only. All data were downloaded and tabulated in the Microsoft Excel, and relevant statistical formulas and methods were applied for analyzing the downloaded data. The assessment explores that there is a total of 94 publications during the study period. Most numbers of publications are found in the years 2015 and 2017 with 14 papers. RGR is highest in the year 2009(1.099) and doubling time is most significant in the year 2017 (4.297 years). Publication growth analysis indicates that the exponential model of growth is found in this field of publications, and the highest exponential growth found in the year 2010(1.012). Out of 94, Sixty-four publications are in the form of articles. Batbayar N. is the most prolific author, and Indian Veterinary Journal is the leading journal of this field. Four authorship patterns are dominating other authorship patterns with 19.05% of total authorship pattern and by donating 20.21% of the whole literature. Average Citations Per Paper and Publication Efficiency Index are found to be top in the year 2009 with the values 14.75 and 2.80. Application of Price Square Root law, as well as 80/20 rule, revealed that this law is not fit to the Geese Research publications of India.

Keywords: Scientometric, Bibliometric, Citation, Geese, Indexing, Price Square Root Law, Pareto Principle, 80/20 Rule

Abbreviations: - RGR- Relative Growth Rate, Dt.-Doubling time, EGR- Exponential Growth Rate, ACP- Average Citations Per Publication, PEI-Publication Efficiency Index

Introduction

Geese are birds from the family Anatidae. There are around 30 different varieties of geese can be found all over the world. Some of them are Toulouse geese, Twente geese, Pilgrim geese, North American geese, African geese, Brecon Buff geese, Sebastopol geese, Tula Fighting geese, Twente geese, Emden geese, etc.. Geese are used for weed control over various crops. Its eggs and meat are very delicious, and so they used both for egg and meat productions. These birds are also used for guarding animals since they make very noisy piercing honks whenever they perceive anything out of the ordinary. Its feathers are used for stuffing pillows, creating decorative items and also used for making handmade jewelry. These birds are also useful for entertainment and exhibition purposes. This paper examines the publication growth of Geese literature in India.

Review of Literature

In the article Mapping of research publications on the Himalayas: a scientometrics exploration, Sivasekaran, K., and Srinivasaragavan, S. S. (2013) has been measured relative growth rate and doubling time-based on the data retrieved from the web of science database during the period 2000 to 2011. They also analyzed the productivity of top ten authors, top ten journals, etc. Kaliyaperumal, K. (2015) has been examined relative growth rate, doubling time, authorship pattern, most preferred journals, top authors in his article on Ascietometric analysis of mobile technology publications. This study was based on a total of 10,638 papers retrieved from the Web of Science database from 2000 to 2013. In the article Scientometric analysis of rabies research literature in India: 1950–2014, Sachithanantham, S., and Raja, S. (2015) analyzed relative growth rate and doubling time, top ten journals, authorship pattern based on 495 records retrieved from PubMed database. Review of literature revealed that no publication growth study had been done to date on Indian Geese Research Publications.

Objectives of the Study

In general, the study target to measures the growth of publications of Geese research in India from 2008 to 2017 as indexed in the Scopus database. In specific, the study aims:

1. To measure Relative growth rate and Doubling time of publications.
2. To examine the different types of publications.
3. To identify the most productive Journal of publications.
4. To measure Average citations per paper and Publication efficiency Index of publications.
5. To apply Price Square Root Law in Geese publications of India.
6. To apply the Pareto principle (80/20) rule

Methodology

Data relevant for this assessment were extracted from the Scopus database. In “source title tag” the keyword, “Geese” was used to search and search has been restricted for the period 2008-2017 by selecting “date range tag.” The search again restricted by choosing the country ‘India’ only. All data were downloaded and tabulated in the Microsoft Excel, and relevant statistical formulas and methods were applied for analyzing the downloaded data.

Analysis and Result

Relative Growth Rate and Doubling Time

The relative growth rate is the growth rate relative to the size, and it can be calculated from the formula suggested by Mahapatra (1985).

$$R = \frac{W2 - W1}{T2 - T1}$$

Where, R = Mean relative growth rate of the specific period of the interval; W1 = ln w2 (Natural logarithm of the initial number of publications); W2 = ln w1 (Natural logarithm of the final number of publications); T1 = Initial time; T2 = Final time

Doubling time is the time required to double the quantity of publication, and it can be calculated from the formula,

$$\text{Doubling time (Dt)} = \frac{0.693}{R}$$

Where R is the Relative growth rate per unit of publications per unit of time.

YEAR	Quantum of documents	Cumulative No. of Documents	W1	W2	RGR	Dt.
2008	2	2	0.000	0.693	----	----
2009	4	6	0.693	1.792	1.099	0.631
2010	11	17	1.792	2.833	1.041	0.665
2011	8	25	2.833	3.219	0.386	1.797
2012	11	36	3.219	3.584	0.365	1.900
2013	8	44	3.584	3.784	0.201	3.453
2014	10	54	3.784	3.989	0.205	3.384
2015	14	68	3.989	4.220	0.231	3.006
2016	12	80	4.220	4.382	0.163	4.264
2017	14	94	4.382	4.543	0.161	4.297
Total	94	-	-	Mean=	0.428	2.600

Most number of articles published in the years 2015 and 2017 with 14 publications and lowest number of articles published in the year 2008 with only two publications. RGR is highest in the year 2009(1.099) and lowest in 2017 (0.161). The mean RGR during the study period is 0.428. Vice versa Doubling time is highest in the year 2017(4.297) and lowest in the year 2009 (0.631). The mean doubling time of Geese literature publications is found to be 2.6 years.

Document Type

Majority of Indian Geese publications are in the form of Articles (68.09%) followed by Conference papers (15.96%), and other types of publications are listed in the table below.

Types of Documents	No.of Documents	Percentage
Article	64	68.09
Conference Paper	15	15.96
Book Chapter	4	4.26
Note	4	4.26
Review	4	4.26
Letter	2	2.13
Book	1	1.06
Total	94	100.00

Most Productive Journals (Top 10)

A most leading journal of Geese literature during the study period is ‘Indian Veterinary Journal’ with seven publications and other most productive journals and its number of publications is listed in the following table.

Sl.No.	Journals	No.of publications
1	Indian Veterinary Journal	7
2	Indian Journal of Animal Sciences	5
3	Water and Energy International	4
4	Journal of The Bombay Natural History Society	3
5	Annals of Pediatric Cardiology	2
6	Current Science	2
7	Journal of Advanced Zoology	2
8	Plos One	2
9	Veterinary Practitioner	2
10	Virology Journal	2

Authorship Pattern

Four authorship patterns are leading in the Geese literature with 19.05% of total authorship pattern by donating 20.21% of the whole literature. Three authorship pattern holds the second position with 15.04%, and they contributed 21.28% of the entire article. About the article output, two and three authorship pattern dominates by providing 21.28% of the whole article with 10.03 % and 15.04% of overall authorship participation consecutively.

Sl.No.	Number of authors	No. of Articles	Total No. of Authors in authorship patterns	Percentage of articles	Percentage of authors in authorship patterns
1	Single	6	6	6.38	1.50
2	Two	20	40	21.28	10.03
3	Three	20	60	21.28	15.04
4	Four	19	76	20.21	19.05
5	Five	6	30	6.38	7.52
6	Six	7	42	7.45	10.53
7	Seven	4	28	4.26	7.02
8	Eight	2	16	2.13	4.01
9	Nine	4	36	4.26	9.02
10	Ten	1	10	1.06	2.51
11	Eleven & +	5	55	5.32	13.78
	Total	94	399	100	100

Publication Efficiency Index

The relative research effort is calculated using Publication efficiency index (PEI). It is based on the citations received to the research publications by the authors. PEI is measured by the following equation (Guan, J. & Ma, M. 2007).

$$PEI = \frac{TNC_i/TNC_t}{TNP_i/TNP_t}$$

Where, TNC_i=Total number of Citations in a particular year ‘i’; TNC_t =Total number of Citations for all the years; TNP_i = Total number of Publications in a particular year ‘i’; TNP_t = Total number of Publications for all the year.

YEARS	Total publications	Total No. of Citations	ACPP	TNC_i / TNC_t	TNPI/TNPt	PEI
2008	2	1	0.50	0.00	0.02	0.09
2009	4	59	14.75	0.12	0.04	2.80
2010	11	110	10.00	0.22	0.12	1.90
2011	8	82	10.25	0.17	0.09	1.95
2012	11	93	8.45	0.19	0.12	1.61
2013	8	63	7.88	0.13	0.09	1.50
2014	10	15	1.50	0.03	0.11	0.28
2015	14	41	2.93	0.08	0.15	0.56
2016	12	10	0.83	0.02	0.13	0.16
2017	14	21	1.50	0.04	0.15	0.28
Total	94	495	58.59			11.13
Average			5.86			1.11

If PEI value is greater than one, it indicates that impact of publication and research effort is higher in that particular year. In Indian Geese research output, PEI is found to be greater than one in 2009 to 2013, and also, ACPP values are higher in those years. PEI and ACPP are uppermost in 2009(2.80 and 14.75) since 59 citations received for four publications. Average ACPP during the span of study is 5.86 and Average PEI is 1.11.

Price Square Root Law and Most Prolific Authors

Price square root law pertains to the relationship between the literature on a subject and the number of authors in the subject area, stating that half of the publications come from the square root of all authors publishing in that area. The square root of the total number of authors constitutes a prolific group. The following table lists the total Authors in Geese literature and their count of Titles in percentage.

Sl.No.	Authors	Count of Titles	Sl.No.	Authors	Count of Titles
1	Batbayar N.	1.63%	165	Loth L.	0.23%
2	Newman S.H.	1.40%	166	Khan A.N.	0.23%
3	Balachandran S.	1.40%	167	Asok Kumar M.	0.23%
4	Prosser D.J.	1.40%	168	Kumaresan V.	0.23%
5	Takekawa J.Y.	1.16%	169	Luo Z.	0.23%
6	Ali I.	0.93%	170	Mehta S.	0.23%
7	Wikelski M.	0.93%	171	Malik Y.S.	0.23%
8	Bishop C.M.	0.93%	172	Palm E.C.	0.23%
9	Natsagdorj T.	0.93%	173	Mallajosyula V.V.A.	0.23%
10	Butler P.J.	0.93%	174	Pawar S.D.	0.23%

ATINER CONFERENCE PRESENTATION SERIES No: LIB2019-0170

11	Yan B.	0.93%	175	Mani K.	0.23%
12	Khan A.A.	0.93%	176	Ramachandran P.	0.23%
13	Hamadani H.	0.93%	177	Marathe S.	0.23%
14	Douglas D.C.	0.70%	178	Sheth N.M.	0.23%
15	Hou Y.	0.70%	179	Marimuthu K.	0.23%
16	Mathew J.	0.70%	180	Gaonkar C.A.	0.23%
17	Hamadani A.	0.70%	181	Marthaler D.	0.23%
18	Thomas M.S.	0.70%	182	Singh R.	0.23%
	Total	17.93%			
19	Sarma K.	0.70%	183	Awasthi C.P.	0.23%
20	Xiao X.	0.70%	184	Gawas-Sakhalkar P.	0.23%
21	Scott G.R.	0.70%	185	Mathur P.N.	0.23%
22	Frappell P.B.	0.70%	186	Symons L.	0.23%
23	Sharma D.	0.70%	187	Matsuno F.	0.23%
24	Milsom W.K.	0.70%	188	Goyal G.	0.23%
25	Singh S.K.	0.70%	189	Maya S.	0.23%
26	Tiwari A.	0.47%	190	Senthilkumar P.	0.23%
27	Mor S.K.	0.47%	191	Mehra M.	0.23%
28	Ganai T.A.S.	0.47%	192	Cherian S.S.	0.23%
29	Gupta S.	0.47%	193	Mehra S.	0.23%
30	Biswas A.	0.47%	194	Sharma R.P.	0.23%
31	Shyamala V.	0.47%	195	Arora N.	0.23%
32	Kumar V.	0.47%	196	Shawl T.	0.23%
33	Sinha A.	0.47%	197	Minj A.P.	0.23%
34	Dhama K.	0.47%	198	Choudhury B.C.	0.23%
35	Banday M.T.	0.47%	199	Mir M.S.	0.23%
36	Shukla S.K.	0.47%	200	Singh K.	0.23%
37	Sathiyaselvam P.	0.47%	201	Mishra A.	0.23%
38	Kumar S.	0.47%	202	Chua B.	0.23%
39	Ahmed S.U.	0.47%	203	Mishra A.C.	0.23%
40	Tiwari R.	0.47%	204	Singh R.K.	0.23%
41	Kaushik T.K.	0.47%	205	Mishra N.N.	0.23%
42	Lucy K.M.	0.47%	206	Sivagaminathan N.	0.23%
43	Sharma M.	0.47%	207	Mishra R.K.	0.23%
44	Goyal S.M.	0.47%	208	Slingenbergh J.	0.23%
45	Shukla S.K.	0.47%	209	Chaklader G.	0.23%
46	Gupta R.C.	0.47%	210	Srinivasan M.	0.23%
47	Singh P.K.	0.47%	211	Chakrabarti A.K.	0.23%
48	Hawkes L.A.	0.47%	212	Suhail I.	0.23%
49	Singh S.	0.47%	213	Muruges P.	0.23%
50	Mundkur T.	0.47%	214	Sundar S.J.	0.23%
51	Suri S.	0.47%	215	Muthu Kumar S.	0.23%

ATINER CONFERENCE PRESENTATION SERIES No: LIB2019-0170

52	Patnayak D.P.	0.47%	216	Dalvi B.	0.23%
53	Takekawa J.Y.	0.47%	217	Nagarajan R.	0.23%
54	Rao S.	0.47%	218	Swarup K.S.	0.23%
55	Aggarwal A.	0.47%	219	Namgail T.	0.23%
56	Singh M.P.	0.23%	220	Takpa J.	0.23%
57	Ze L.	0.23%	221	Chakraborty S.	0.23%
58	Sujatha T.	0.23%	222	Thoke A.S.	0.23%
59	Goyal K.	0.23%	223	Arasu M.V.	0.23%
60	Kannan B.R.J.	0.23%	224	Thyagarajan D.	0.23%
61	Al-Dhabi N.A.	0.23%	225	Nirmala G.C.	0.23%
62	Sheikh A.	0.23%	226	Tiwari D.P.	0.23%
63	Griffin L.	0.23%	227	Nizar M.A.	0.23%
64	Tsuji M.	0.23%	228	Tseveenmyadag N.	0.23%
65	Gulati A.S.	0.23%	229	Pal B.	0.23%
66	Desai P.	0.23%	230	Unnikrishnan S.	0.23%
67	Bekele A.Z.	0.23%	231	Palanivelu M.	0.23%
68	Patnaik A.N.	0.23%	232	Vedachalam N.	0.23%
69	Gupta S.K.	0.23%	233	Paliwal R.	0.23%
70	Sengupta R.	0.23%	234	Verma A.K.	0.23%
71	Habib B.	0.23%	235	Palm E.C.	0.23%
72	Chungath J.J.	0.23%	236	Vinod M.P.	0.23%
73	Bhat S.S.	0.23%	237	Parashar M.	0.23%
74	Thangapandiyam M.	0.23%	238	Deshmukh M.	0.23%
75	Harikrishnan R.	0.23%	239	Paraskevis D.	0.23%
76	Voronkin I.O.	0.23%	240	Divya P.S.	0.23%
77	Hawkes L.A.	0.23%	241	Parkhi S.S.	0.23%
78	Anilkumar R.	0.23%	242	Yadav K.D.S.	0.23%
79	Hazra P.	0.23%	243	Pasupuleti M.	0.23%
80	Hakim H.	0.23%	244	Doley P.J.	0.23%
81	Heath S.R.	0.23%	245	Patel B.J.	0.23%
82	Mahar N.	0.23%	246	Ziegler A.F.	0.23%
83	Hill N.J.	0.23%	247	Patel V.	0.23%
84	Sasan J.S.	0.23%	248	Adige R.	0.23%
85	Hogerwerf L.	0.23%	249	Patil M.	0.23%
86	Sreeranjini A.R.	0.23%	250	Balasani S.R.	0.23%
87	Hoshino T.	0.23%	251	Patil S.	0.23%
88	Cheriyam E.P.	0.23%	252	Anil A.C.	0.23%
89	Bhatt P.	0.23%	253	Chand D.	0.23%
90	Singh O.P.	0.23%	254	Bakhru S.	0.23%
91	Hussain S.A.	0.23%	255	Pawar S.D.	0.23%
92	Spragens K.A.	0.23%	256	Bhattacharya T.K.	0.23%
93	Hussain S.M.S.	0.23%	257	Perry W.M.	0.23%

ATINER CONFERENCE PRESENTATION SERIES No: LIB2019-0170

94	Suwal R.N.	0.23%	258	Chatterjee A.	0.23%
95	Indu V.R.	0.23%	259	Pinto R.	0.23%
96	Debnath S.	0.23%	260	Dayal D.	0.23%
97	Iyue M.	0.23%	261	Porter R.E.	0.23%
98	Venkataramanan R.	0.23%	262	Ashok N.	0.23%
99	Jadav S.K.	0.23%	263	Prabakaran R.	0.23%
100	Xing Z.	0.23%	264	Dikshit N.	0.23%
101	Jadhav S.M.	0.23%	265	Prasad B.V.S.S.S.	0.23%
102	Agarwal R.	0.23%	266	Gilbert M.	0.23%
103	Janies D.	0.23%	267	Premalatha M.	0.23%
104	Bhende S.S.	0.23%	268	Gadge S.R.	0.23%
105	Javed S.	0.23%	269	Yadav S.	0.23%
106	Doley P.J.	0.23%	270	Gahlot P.K.	0.23%
107	Jayaram A.A.	0.23%	271	Yashwant K.	0.23%
108	Jindal N.	0.23%	272	Jain A.	0.23%
109	Jindal N.	0.23%	273	Arockiaraj J.	0.23%
110	Kumar C.S.	0.23%	274	Jose S.T.	0.23%
111	Jithin Sundar S.	0.23%	275	Rahim F.	0.23%
112	Mohamed Hatha A.A.	0.23%	276	Kamble A.K.	0.23%
113	Kalbande S.R.	0.23%	277	Rahiman M.	0.23%
114	Prins H.H.T.	0.23%	278	Khan A.	0.23%
115	Karthik K.	0.23%	279	Rahmani A.R.	0.23%
116	Shirodkar S.	0.23%	280	Kumar A.	0.23%
117	Bhattacharyya A.	0.23%	281	Rajagunalan S.	0.23%
118	Singh S.M.	0.23%	282	Kumar N.	0.23%
119	Bhide S.R.	0.23%	283	Rajani C.V.	0.23%
120	Tiwari C.M.	0.23%	284	Madhupriya	0.23%
121	Khan T.N.	0.23%	285	Rajkumar U.	0.23%
122	Shabbir M.Z.	0.23%	286	Malik A.	0.23%
123	Khandeparker L.	0.23%	287	Ramchand R.	0.23%
124	Sharma Y.	0.23%	288	Mishra A.C.	0.23%
125	Khatri N.	0.23%	289	Rao G.P.	0.23%
126	Singh D.K.	0.23%	290	Newman S.H.	0.23%
127	Khurana S.M.P.	0.23%	291	Rao K.	0.23%
128	Singh R.	0.23%	292	Pandian C.	0.23%
129	Kode S.S.	0.23%	293	Rao K.V.H.	0.23%
130	Sivaraj N.	0.23%	294	Pattery J.M.	0.23%
131	Koneti N.R.	0.23%	295	Rao M.S.	0.23%
132	Subba Rao M.V.	0.23%	296	Prasad A.	0.23%
133	Koratkar S.	0.23%	297	Chandrasekhar L.	0.23%
134	Sundaresan A.	0.23%	298	Rajan V.	0.23%
135	Koratkar S.S.	0.23%	299	Raut A.A.	0.23%

136	Dash T.K.	0.23%	300	Sarkar D.	0.23%
137	Krishnan K.P.	0.23%	301	Raut S.	0.23%
138	Datta D.	0.23%	302	Shah N.	0.23%
139	Kulathu G.	0.23%	303	Reddy R.P.	0.23%
140	Desai D.V.	0.23%	304	Shingate H.M.	0.23%
141	Kumar A.	0.23%	305	Roy P.	0.23%
142	Varadarajan R.	0.23%	306	Ganesh M.-R.	0.23%
143	Kumar N.	0.23%	307	Sai Kumar T.	0.23%
144	Verma S.	0.23%	308	Singh A.	0.23%
145	Kumar P.	0.23%	309	Saileela R.	0.23%
146	Witt M.J.	0.23%	310	Singh P.L.	0.23%
147	Kumar R.	0.23%	311	Saminathan M.	0.23%
148	Yadava S.	0.23%	312	Garg K.	0.23%
149	Bindand M.	0.23%	313	Sandeep J.	0.23%
150	Adhikary B.	0.23%	314	Singh V.K.	0.23%
151	Kumar T.S.	0.23%	315	Saramma A.V.	0.23%
152	Amulya	0.23%	316	Somani G.	0.23%
153	Biradar C.	0.23%	317	Chandy G.	0.23%
154	Balavignesh G.	0.23%	318	Suri S.	0.23%
155	Kumaravelu N.	0.23%	319	Chapman C.A.	0.23%
156	Chattopadhyay S.	0.23%	320	Gopi G.V.	0.23%
157	Kumari N.R.	0.23%	321	Saxena M.	0.23%
158	Dhanalakshmi N.P.	0.23%	322	Venkatesan R.	0.23%
159	Kurien S.	0.23%	323	Chatterjee R.N.	0.23%
160	Gupta A.	0.23%	324	Sen S.	0.23%
161	Lei F.	0.23%	325	Yashwant Kumar C.	0.23%
162	Barik R.	0.23%	326	Purkayastha D.	0.23%
163	Loonen M.J.J.E.	0.23%	327	Rafiq A.	0.23%
164	Kalirajan K.	0.23%		Grand Total	100.00%

Total number of authors in Geese literature, N=327

Total number of publications=94

According to this law, \sqrt{N} authors contributed half of the total number of publications

Therefore, $\sqrt{327} = 18.08 \approx 18$ Authors

Half of the total publications $= \frac{94}{2} = 47$

From the above table, it is found that 18 authors contributed only 17.93% of total publications.

That is $94 \times \frac{17.93}{100} = 16.356$ publications.

i.e., the square root of total authors (18 authors) contributed only 16.356 number of total (94) papers. So, Price square root law does not apply to the Indian Geese literature output.

From the analysis, it is found that Batbayar N. is the most prolific author in this field with 1.63% of publications followed by Newman S.H. and Balachandran S. and Prosser D.J. with 1.40% of publications. Takekawa J.Y. hold the 3rd position with 1.16% of publications. According to Price square root law, the square root of the total number of authors, i.e., first 18 authors constitutes the prolific group.

Application of Pareto Principle (80/20 Rule)

According to the Pareto Principle, 80% of total publications in a subject field is arriving from 20% of total authors of that field.

Total number of articles in Geese Research publications of India from 2008 to 2017 = 94

Total number of authors in the same period of study= 327

80% of total publications = $80 \times 94 / 100 = 75.2 \approx 75$ publications

20% of total authors = $20 \times 327 / 100 = 65.4 \approx 65$ authors

Sl.No .	Authors	Percentage of Title	Sl.No .	Authors	Percentage of Title
1	Batbayar N.	1.63%	34	Dhama K.	0.47%
2	Newman S.H.	1.40%	35	Banday M.T.	0.47%
3	Balachandran S.	1.40%	36	Shukla S.K.	0.47%
4	Prosser D.J.	1.40%	37	Sathiyaselvam P.	0.47%
5	Takekawa J.Y.	1.16%	38	Kumar S.	0.47%
6	Ali I.	0.93%	39	Ahmed S.U.	0.47%
7	Wikelski M.	0.93%	40	Tiwari R.	0.47%
8	Bishop C.M.	0.93%	41	Kaushik T.K.	0.47%
9	Natsagdorj T.	0.93%	42	Lucy K.M.	0.47%
10	Butler P.J.	0.93%	43	Sharma M.	0.47%
11	Yan B.	0.93%	44	Goyal S.M.	0.47%
12	Khan A.A.	0.93%	45	Shukla S.K.	0.47%
13	Hamadani H.	0.93%	46	Gupta R.C.	0.47%
14	Douglas D.C.	0.70%	47	Singh P.K.	0.47%
15	Hou Y.	0.70%	48	Hawkes L.A.	0.47%
16	Mathew J.	0.70%	49	Singh S.	0.47%
17	Hamadani A.	0.70%	50	Mundkur T.	0.47%
18	Thomas M.S.	0.70%	51	Suri S.	0.47%
19	Sarma K.	0.70%	52	Patnayak D.P.	0.47%
20	Xiao X.	0.70%	53	Takekawa J.Y.	0.47%
21	Scott G.R.	0.70%	54	Rao S.	0.47%
22	Frappell P.B.	0.70%	55	Aggarwal A.	0.47%
23	Sharma D.	0.70%	56	Singh M.P.	0.23%

24	Milsom W.K.	0.70%	57	Ze L.	0.23%
25	Singh S.K.	0.70%	58	Sujatha T.	0.23%
26	Tiwari A.	0.47%	59	Goyal K.	0.23%
27	Mor S.K.	0.47%	60	Kannan B.R.J.	0.23%
28	Ganai T.A.S.	0.47%	61	Al-Dhabi N.A.	0.23%
29	Gupta S.	0.47%	62	Sheikh A.	0.23%
30	Biswas A.	0.47%	63	Griffin L.	0.23%
31	Shyamala V.	0.47%	64	Tsuji M.	0.23%
32	Kumar V.	0.47%	65	Gulati A.S.	0.23%
33	Sinha A.	0.47%	Total		39.23%

39.23% of total publication= $39.23 \times 94 / 100 = 36.8762 \approx 36.88$ publications
 From the table, it can be found that 20% of total authors (65 authors) contributed only 39.23% (36.88 publications) of total publications of this subject field. So, this rule is not applicable in this subject area during the selected period of study.

Conclusion

The assessment explores that there is a total of 94 publications during the study period. Most numbers of publications are found in the years 2015 and 2017 with 14 publications. RGR is highest in the year 2009 (1.099) and doubling time is largest in the year 2017 (4.297 years). Publication growth analysis indicates that the exponential model of growth is found in this field of publications, and the highest exponential growth found in the year 2010 (1.012). Out of 94, Sixty-four publications are in the form of articles. Batbayar N. is the most prolific author, and Indian Veterinary Journal is the leading journal of this field. Four authorship patterns are dominating other authorship patterns with 19.05% of total authorship pattern and by donating 20.21% of total literature. Average Citations Per Paper and Publication Efficiency Index are found to be top in the year 2009 with the values 14.75 and 2.80. Application of Price Square Root law, as well as 80/20 rule, revealed that this law is not fit to the Geese Research publications of India.

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