

A bibliometric profile of Current Science between - 2016-2020

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Abstract

Bibliometric studies have been used to study various characteristics of subject literature, both literature cited and literature provided by the researchers. The present article studies the bibliometric study of the journal titled "Current Science" for the periods 2016 to 2020. The impact factor of Current Science had an overall increasing trend and placed the journal in the quartile Q2 within 'Multidisciplinary sciences'. The most productive country in terms of articles was India and Current Science was dominated by contributions from Indian institutions. Current Science is an international peer-reviewed multidisciplinary scientific journal published by the Current Science Association in collaboration with the Indian Academy of Science, Bangalore, India which is also available on online platforms. In this study, various characteristics of subject literature cited and literature provided by the researchers are studied. The analysis covers the year-wise growth rate per issue, authorship pattern, and average length of articles is also analyzed along with the geographical distribution of an article.

Keyword: Current Science, Bibliometric, journal, Growth, Research, Authorship pattern

Introduction

Today, bibliometrics is one of the uncommon, really interdisciplinary research fields to reach out to every single logical field. Bibliometric philosophy contains parts from Mathematics, Social Science, Natural Science, Engineering, and even Life science.

The term bibliometrics was first instituted by Pritchard in 1969. A starting case of a bibliometric contemplate was a measurable examination of the writing of near-life structures from 1543 to 1860, done by including book and diary titles and gathering them by the nation of sources and periods. As per Hulme (1923) entitled "Measurable Analysis of the History of Science". His examination depended on the passages in the English International Catalogue of Scientific Literature. Another third examination was crafted by Gross and Gross detailed in 1927. They included and breakdown the references articles from the Journal of the American Chemical Society and delivered a rundown of diaries gauges imperative to concoction education.

Zipf's law (1949) identifies with the recurrence of word event. Zipf got his law from the experimental law of minimum exertion. He said that there is a connection between the rank of the word and its recurrence of a literary issue if the words are masterminded in their diminishing request of recurrence of the event in long content. Another vital work was Bradford's 1934 article on the appropriation of writing in grease investigation. It is a critical piece of the hypothetical establishment of bibliometric, "Bradford's Law of Scattering"

Definition of Bibliometric

(i) (Raising, 1962) has defined bibliometric as "the assembling and interpretation of statistics relating to books and periodicals. Use of books and journals to ascertain its many local situations the generals use of books and journals".

(ii) (Pritchard, 1969) has defined bibliometric as "the application of mathematical and statistical methods to books and other media of communication", which is the most commonly quoted 143- definition and it has served as the foundation stone and basis for many investigations.

Bibliometric Laws and Citation Analysis

Dr.Ranganathan S. R. (1969) begat the expression "Librametry" and displayed his idea in the ASLIB gathering held at Leamington Spa. He utilized the term to incorporate measurable ways to deal with ponder library and its administrations. Be that as it may, the act of utilizing quantitative technique to quantify data sources was made even before Dr.Ranganathan however under various terms or with no specific term yet "Measurable Analysis" was in like manner used before the term Librametry. Cole and Eales (1917) graphically mapped the writing and called this technique for examination "Measurable investigation". Hulme (1923) contemplated the writing and called it a "measurable reference index", yet the terms were observed to be awkward as it could without much of a stretch be mixed up. Later the term was instituted as bibliometrics by Pritchard (1969). (www.netugc.com)

What is Bibliometrics?

The term "bibliometrics" was first used by Pritchard (1969) in his article "Statistical Bibliography or Bibliometrics" published in the "Journal of Documentation". "Biblio" means book and "Metric" means a scale or measure. Bibliometric means application of statistical studies in library and information science. According to Pritchard (1969), bibliometrics is defined as "the application of mathematics and statistical methods to books and other media of communication." Potter (1981) defines bibliometrics as "the study and measurement of the publication pattern of all forms of written communication and their author".

Laws of Bibliometrics:- The three most regularly utilized laws in bibliometrics are
1)Bradford's Law of Scatter: - which portrays how the writing of a branch of knowledge is circulated in its diaries and which frames the reason for computing what number of diaries contain a specific level of distributed articles? (Tonta Y and Umut Al, 2004)

2) Lotka's Law of Scientific Productivity: - An equation for estimating/foreseeing the profitability of logical analysts. (Zhang W and Yoshiteru N, 2012)

3) Zipf's Law of Word Occurrence: - which portrays the recurrence of the presence of specific words or all the more particularly, recommends that individuals will probably choose and utilize recognizable as opposed to new words.

(LZhang W and Yoshiteru N, 2012) Among all these three laws, Bradford's Law is more helpful to LIS experts and identified with reference examination.

Objective of the Study:

- (i) To find out year wise growth rate of journal
- (ii) To find out authorship pattern
- (iii) To find out the degree of collaboration
- (iv) To find out the length of article
- (v) To analysis the number of references given in an articles
- (vi) To find out authors by geographical location

Scope of the Study:

- (a) The scope of the study is current science journal
- (b) The time span for study is 2016 to 2020

Literature review:

Amol, Pachange(2014) in his paper, the bolometric study of the current science for the static study of the Library and Information Centre for the research purpose of higher studies. In this paper, the author has explained the year-wise distribution of the articles, a study of the authorship patterns for the contributors, the distribution of the articles, and also explained the international collaborations. In his analysis reveals that the difference in the number of a single author and multiple authors and also found that Current Science journal covered all disciplines communicate their research. The objective of this research is to analyze papers published in the Current Science indexed in WOS (1990-2014) the analysis of this research reveals that a difference in the number of single authors and multiple authors. It is noticed that apart from India, researchers from other countries published their papers into CS. These papers are published in collaboration with Indian researchers or individually published.

Wang, Peng et. all (2017) in his study, the author has conducted the study from the year 1961 to 2015 and he covered a total of 31,403 Nos articles and found that the highest citations appeared in the year 2003-2005. In his study, he has also mentioned that current science is it is multidisciplinary journals. The most productive country was India and Indian institutions authors dominated the Current Science journals. Current Science is an international peer-reviewed multidisciplinary scientific journal established in 1932 and every fortnight published by the Current Science Association in collaboration with the Indian Academy of Sciences, Bengaluru, India. It publishes full-length research articles, shorter research communications, review articles, scientific correspondence, commentaries, etc.1. Current Science is now a leading interdisciplinary science journal with an impact factor (IF) of 0.967, according to the 2016 release of Journal Citation Reports. The data used here are from the Web of Science (WoS) online database of Thomson Reuters. The search was conducted on 8 November 2016, using the search terms Current Science in the publication name between 1961 and 2015.

Marisha(2019) In this article scientometric analysis of Current Science, he has taken the study for (1990-2017) total 28 years. He analyzed the authorship pattern, collaboration trends, contributing country and organization, citation pattern and he has also mentioned rate of collaboration of international is not high most of the publication of articles from India and Indian institute.

Ambika, M, and Samy, K Uthira (2019)‘Bibliometrics study on the journal proceeding of mathematical science 2001-2010 in his study he has taken 10 years journals since 2001-2010 have been carried out carefully and observed its performance, he has also analyzed the authorship pattern, length of the article, collaboration with the international.

Methodology:

The research used the quantitative research method in the study. The total number of 120 journals “Current Science (from 2016 to 2020) have been taken for this study. Details regarding each published article like the number of authors, pagination, and degree of collaboration were recorded and analyzed for the observations the info has been calculated and represented in tables. The citation analysis was conducted by using various statistics.

Data Collection:

Data collected from Current science web sites, and data collected during 2016-2020. (5 years) span period and collected 3150 articles published during five years

Data Analysis and Interpretation

Table-1 show the year wise growth rate per issue of Current Science journals for period of five years from 2016-2020. Out 3150 articles majority of articles 363 were published in the year 2016, whereas 276 articles were published in the year 2020 and year wise growth of publication trend has increased in the year 2016-2020

Table-1 Year wise growth rate per issue of the Current Science

| Year | Volume | Total No of Issues | Number of /articles/contributors | | | | | | | | | | | | No. of articles published | % of articles |
|------|--------|--------------------|----------------------------------|----|-----|----|----|----|-----|------|----|----|----|-----|---------------------------|---------------|
| | | | i | ii | iii | iv | v | vi | vii | viii | ix | x | xi | xii | | |
| 2016 | 110 | 12 | 31 | 28 | 30 | 41 | 35 | 34 | 35 | 28 | 34 | 20 | 25 | 22 | 363 | 11.68 |
| 2016 | 111 | 12 | 30 | 25 | 23 | 26 | 30 | 23 | 21 | 24 | 21 | 24 | 28 | 26 | 301 | 9.68 |
| 2017 | 112 | 12 | 24 | 27 | 36 | 26 | 25 | 30 | 37 | 22 | 21 | 26 | 24 | 24 | 322 | 10.36 |

| | | | | | | | | | | | | | | | | |
|-------|---------|----|--------|----|--------|--------|--------|--------|--------|----|----|----|--------|----|------|----------|
| 2017 | 11 3 | 12 | 2 4 | 19 | 2 2 | 3 9 | 2 2 | 2 7 | 3 2 | 17 | 27 | 24 | 2 7 | 28 | 308 | 9.8 |
| 2018 | 11 4 | 12 | 3 3 | 24 | 3 2 | 3 1 | 3 0 | 3 3 | 2 4 | 28 | 28 | 32 | 2 3 | 27 | 345 | 11.09 |
| 2018 | 11 5 | 12 | 2 7 | 29 | 3 3 | 3 5 | 3 2 | 3 4 | 2 9 | 29 | 31 | 28 | 2 6 | 22 | 355 | 11.41 |
| 2019 | 11 6 | 12 | 2 5 | 36 | 2 3 | 2 6 | 2 2 | 2 3 | 2 5 | 23 | 21 | 24 | 2 2 | 26 | 296 | 9.39 |
| 2019 | 11 7 | 12 | 2 3 | 25 | 2 4 | 2 4 | 2 3 | 3 0 | 1 6 | 24 | 19 | 35 | 2 1 | 23 | 287 | 9.23 |
| 2020 | 11 8 | 12 | 2 6 | 28 | 2 6 | 2 7 | 2 1 | 1 8 | 2 0 | 34 | 19 | 22 | 3 3 | 23 | 297 | 9.42 |
| 2020 | 11 9 | 12 | 1 8 | 32 | 2 0 | 2 2 | 2 1 | 2 7 | 2 6 | 22 | 23 | 23 | 2 2 | 20 | 276 | 8.76 |
| Total | | | | | | | | | | | | | | | 3150 | 100 % |

To measure the authorship pattern is important aspect in bibliometrics. The below table-2 show that the highest number of person i.e. 663(21.4%) are by single authors. two authors contribution count is 640(20.31%) followed by the three authors 598(18.03%) more than five authors 478 (15.71%) four authors 471(15.09%) and more than five authors 300(9.52%) respectively. It is evident that, over the years level of collaboration is very high in case of publication in the Current Science during the study periods

Table-2 Authorship Pattern

| Year | Vol. | Single Author | Two Author | Three Author | Four Author | Five Author | More than Five Author | Total |
|-------|------|---------------|-------------|--------------|-------------|-------------|-----------------------|-------|
| 2016 | 110 | 99 | 68 | 55 | 73 | 40 | 48 | 383 |
| 2016 | 111 | 70 | 69 | 48 | 44 | 29 | 56 | 316 |
| 2017 | 112 | 68 | 72 | 63 | 44 | 35 | 40 | 322 |
| 2017 | 113 | 55 | 68 | 66 | 37 | 26 | 56 | 308 |
| 2018 | 114 | 65 | 63 | 73 | 55 | 35 | 54 | 345 |
| 2018 | 115 | 65 | 63 | 84 | 57 | 33 | 53 | 355 |
| 2019 | 116 | 60 | 59 | 58 | 36 | 38 | 45 | |
| 2019 | 117 | 81 | 56 | 54 | 45 | 13 | 38 | 287 |
| 2020 | 118 | 53 | 58 | 46 | 46 | 31 | 52 | 286 |
| 2020 | 119 | 47 | 64 | 51 | 34 | 20 | 36 | 252 |
| Total | | 663(21.04%) | 640(20.31%) | 598(18.03%) | 471(15.09%) | 300(9.52%) | 478(15.71%) | 3150 |

Table – 2: To measure the authorship pattern is important aspect in bibliometrics. The above table-2 show that the highest number of person i.e 663 (21.4%) are by single authors and 640 (20.31 %) by the two authors

Table-3 Degree of collaboration is highest in volume

| Year | Volume | With single author | | With multi authors | | Total | Degree of Collaboration |
|-------|--------|------------------------|------------|------------------------|------------|-------|-------------------------|
| | | Number of contribution | Percentage | Number of contribution | Percentage | | |
| 2016 | 110 | 99 | 14.93 | 284 | 11.41 | 383 | 0.74 |
| 2016 | 111 | 70 | 10.55 | 246 | 9.89 | 316 | 0.77 |
| 2017 | 112 | 68 | 10.25 | 254 | 10.21 | 322 | 0.78 |
| 2017 | 113 | 55 | 8.29 | 253 | 10.17 | 308 | 0.82 |
| 2018 | 114 | 65 | 9.80 | 280 | 11.25 | 345 | 0.81 |
| 2018 | 115 | 65 | 9.80 | 290 | 11.66 | 355 | 0.81 |
| 2019 | 116 | 60 | 9.04 | 236 | 9.48 | 296 | 0.72 |
| 2019 | 117 | 81 | 12.21 | 206 | 8.28 | 287 | 0.71 |
| 2020 | 118 | 53 | 7.99 | 233 | 9.37 | 286 | 0.72 |
| 2020 | 119 | 47 | 7.08 | 205 | 8.24 | 252 | 0.81 |
| Total | | 663 | | 2487 | | 3150 | 0.78 |

Table-3 and figure -2 shows that the degree of collaboration is highest volume

Degree of Collaboration $C = N_m / (N_m + N_s)$

C = Degree of Collaboration

N_m = Number of multiple author

N_s = Number of single authors

$C = 284 / 383 = 0.74$

Table-4 Average length of articles in the Current science

| Year | Volume | No. of articles | Cumulative total of articles | Pages | Cumulative total of pages | Average page per articles |
|------|--------|-----------------|------------------------------|-------|---------------------------|---------------------------|
| 2016 | 110 | 383 | 383 | 1858 | 1858 | 4.85 |
| 2016 | 111 | 316 | 699 | 1874 | 3732 | 5.33 |
| 2017 | 112 | 322 | 1021 | 1925 | 5657 | 5.54 |
| 2017 | 113 | 308 | 1329 | 1880 | 7537 | 5.67 |
| 2018 | 114 | 345 | 1674 | 2326 | 9863 | 5.71 |
| 2018 | 115 | 355 | 2029 | 2132 | 11995 | 5.91 |
| 2019 | 116 | 296 | 2325 | 1929 | 13924 | 7.21 |
| 2019 | 117 | 287 | 2612 | 1846 | 15770 | 6.03 |
| 2020 | 118 | 286 | 2898 | 1828 | 17589 | 6.07 |
| 2020 | 119 | 252 | 3150 | 1991 | 19589 | 6.21 |

The table-4 show that minimum average length of article 4.85 pages which reported for the cumulative issues of 2016 which the maximum average length of page article is 7.21 for the year 2019. Taking all the issues from 2016-2020 into account. It is found that Current Science journal accommodates on an average 5.85 pages per article.

Table 5 - Top ten authors uses maximum references and Institution names

| Year | Volume | Issues | Author | Reference | Name of Institution | Percentage |
|------|--------|--------|--|-----------|---|------------|
| 2019 | 117 | 5 | Singh, B N | 229 | Genetics Laboratory, Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi 221 005, | 16.10% |
| 2016 | 110 | 1 | Moorthy, K Krishna et all | 155 | Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru 560 012, India | 10.90% |
| 2016 | 110 | 7 | Goutam, Mukesh Kumar and Lee, kwang-sik | 154 | Division of Earth and Environmental Sciences, Korea Basic Science Institute, 162 Yeongudanji-ro, Ochang-eup, Cheongju, | 10.82% |
| 2019 | 116 | 110 | Bashyam, Murali , Dharan, Animireddy, and Srinivas, Bala, | 146 | Laboratory of Molecular Oncology, Centre for DNA Fingerprinting and Diagnostics, Inner Ring Road, Uppal, Hyderabad 500 039, India | 10.26% |
| 2019 | 116 | 6 | Rakshit, AnimeshKumar ,Naskar, Bappaditya and Moulik, Satya Priya | 144 | Indian Society for Surface Science and Technology, Department of Chemistry, Jadavpur University, Kolkata | 10.12% |
| 2017 | 113 | 10 | Thakur, Sidharath Dev and Pandey, A K | 121 | Department of Veterinary Public Health and Epidemiology, Dr G. C. Negi College of Veterinary and Animal Sciences | 8.50% |
| 2020 | 119 | 1 | Mandal, Satyajit and Gupta, Ankit | 121 | Department of Civil Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi 221 005, India | 8.50% |
| 2018 | 115 | 6 | Mandal, Suraj et all | 121 | Kalindi Housing Estate, Kalindi, Kolkata 700 089, India | 8.50% |
| 2016 | 111 | 2 | Narahari, S R et all | 116 | 1The Hillingdon Hospitals NHS Foundation Trust, Oxford, UK | 8.15% |
| 2016 | 111 | 5 | Singh, Anil Kumar, Garg, Neelima and | 115 | Shriram Institute for Industrial Research, 19, University Road, Delhi | 8.08% |

| | | | | | |
|-------|--|-------------------|------|----------------|------|
| | | Tyagi, Ajay kumar | | 110 007, India | |
| Total | | | 1422 | | 100% |

Table-5 show that top 20 twenty highest references out of 3150 titles. Table also show that year volume, No., author and institution names.

Table-6 Geographical Distribution of article (Country wise) in the Current Science

| S.No | Country | Contribution | Percentage | Rank |
|------|--------------|--------------|------------|------------------------|
| 1 | India | 2767 | 87.84 % | 1 st Rank |
| 2 | China | 198 | 6.28 % | 2 nd Rank |
| 3 | USA | 26 | 0.82 % | 3 rd .Rank |
| 4 | Pakistan | 12 | 0.38 % | 4 th .Rank |
| 5 | Iran- | 11 | 0.34 % | 5 th .Rank |
| 6 | Australia | 9 | 0.28% | 6 th .Rank |
| 7 | Poland | 8 | 0.25% | 7 th .Rank |
| 8 | Egypt | 7 | 0.22% | 8 th .Rank |
| 9 | Serbia | 7 | 0.22% | 9 th .Rank |
| 10 | UK | 7 | 0.22% | 10 th .Rank |
| 11 | South Africa | 6 | 0.19% | 11 th Rank |
| 12 | Malaysia | 5 | 0.15% | 12 th Rank |
| 13 | Romania | 5 | 0.15% | 13 th rank |
| 14 | Saudi Arabia | 5 | 0.15% | 14 th Rank |
| 15 | Brazil | 4 | 0.12% | 15 th Rank |
| 16 | Germany | 4 | 0.12% | 16 th Rank |
| 17 | Korea | 4 | 0.12% | 17 th Rank |
| 18 | Nepal | 4 | 0.12% | 18 th Rank |
| 19 | Spain | 4 | 0.12% | 19 th .Rank |
| 20 | Switzerland | 4 | 0.12% | 20 th .Rank |
| 21 | Canada | 3 | 0.09% | 21 st .Rank |
| 22 | France | 3 | 0.09% | 22 nd Rank |
| 23 | Japan- | 3 | 0.09% | 23 rd Rank |
| 24 | Russia | 3 | 0.09% | 24 th Rank |
| 25 | South Korea | 3 | 0.09% | 25 th Rank |
| 26 | Thailand | 3 | 0.09% | 26 th Rank |
| 27 | Algeria | 2 | 0.06% | 27 th Rank |
| 28 | Argentina | 2 | 0.06% | 28 th Rank |
| 29 | Bangladesh | 2 | 0.06% | 29 th Rank |

| | | | | |
|----|----------------|---|-------|-----------------------|
| 30 | Colombia | 2 | 0.06% | 30 th Rank |
| 31 | Hong Kong | 2 | 0.06% | 31 st Rank |
| 32 | Israel | 2 | 0.06% | 32 nd Rank |
| 33 | Italy | 2 | 0.06% | 33 rd Rank |
| 34 | Mexico | 2 | 0.06% | 34 th Rank |
| 35 | Nigeria | 2 | 0.06% | 35 th Rank |
| 36 | Portugal | 2 | 0.06% | 36 th Rank |
| 37 | Singapore | 2 | 0.06% | 37 th Rank |
| 38 | Srilanka | 2 | 0.06% | 38 th Rank |
| 39 | Taiwan | 2 | 0.06% | 39 th Rank |
| 40 | Turkey | 2 | 0.06% | 40 th Rank |
| 41 | Vietnam | 2 | 0.06% | 41 st Rank |
| 42 | Chicago | 1 | 0.06% | 42 nd Rank |
| 43 | Czech Republic | 1 | 0.03% | 43 rd Rank |
| 44 | Howard | 1 | 0.03% | 44 th Rank |
| 45 | Iraq | 1 | 0.03% | 45 th Rank |
| 46 | Kazakhstan | 1 | 0.03% | 46 th Rank |
| 47 | Norway | 1 | 0.03% | 47 th Rank |
| 48 | Sudan | 1 | 0.03% | 48 th Rank |

Table-6 shows that the international collaboration of article out of 48 country and also show that the maximum article published by India that is 2767 (87.84%) between the year 2016-2020. China is the second country it published 198 (6.28%) in the Current Science. USA is the third country it published 26 (0.82%) paper in the Current Science Fourth country i.e. Pakistan it published 12 paper (0.38%) in Current Science. Fifth country it published 11 (0.34%) in current science during 2016-2020. The other country published less number of papers as compared to above countries.

It has been found that apart from researcher from other countries published their papers in current science. These papers may be in collaboration with Indian researcher or individually published

Findings and Conclusion:

After analysing the data we found that the above study fulfil the objective of the present study. These are following

- It has been found that apart from our country i.e. India researcher from other countries published their papers into Current Science. These papers may be in collaboration with Indian researchers or individually published.
- The maximum papers written single authors i.e.663 (21.04%) and minimum papers written by five authors i.e. 300(9.52%)
- The number of papers in the journal is not consistent and varies from volume to volume
- The data analysis show that the maximum number of papers i.e. 1994 published during 2016-2018.
- The papers have an average length of 5.85 pages per article.
- India where from the journal originate accounts for the highest number of papers 2767 (87.84%) published during the 2016-2020 in the Current science.
- Chicago, Czech Republic, Howard, Iraq, Kazakhstan and Norway published their lowest number of papers in the Current Science

The highest references in the paper 229 used by author name B N Singh from Banaras Hindu University, India.

It is also observed that apart from India, researchers from the other countries published their papers into Current Science. These papers may be collaboration with Indian researchers or individually published.

Conclusion:

The objective of the research is to analyse papers published in the Current Science during the year (2016-2020) and it is found that difference in the number of single author and multiple authors and it is also observed that Indian authors dominates the important contributions in the international journal Current Science in the given period (2016-2020). Apart from India researchers many other researchers from different countries too contributed along with the Indian authors, which shows the trend of increasing research and development in India and the global community interest in research in India especially, in the field of science and technology. Though very less collaborations have been observed among the Indian and foreign authors, still collaborations in the field of research at global level is a positive sign for any developing country. Collaboration bridge the gap of digital divide and also helps in sharing the ideas and thoughts among the researchers. If conducted at a much bigger stage, this collaborations will also lead to technology transfer. Such studies are useful mainly to find out the popularity of Indian journal among Indian researchers. Current Science is Indian leading journal in which scientist from all disciplines communicate their research. Current Science indexed in leading abstracting services

References

1. Ambika, M and Samy, KUthira “Bibliometrics study on the journal proceedings of Mathematical Science 2001-2010, Published in Professional Journal of Library and Information Technology. Vol.9 No.1 Jan-June, ISSN 09767274, pp.13-60, 2009
2. Wang, Peng et al, A bibliometrics profile of current science between 1961 to 2015, Published in Current Science, Vol.113No.3, pp 386-392, 2017
3. Marish Scientometric analysis of Current Science, published in Current Science, Vol.117No.2, 25 July 2019 pp 190-197, (2019)
4. Amol, Pachange (2014) Current Science: A Bibliometric study, Published in Current Science, 2014,
5. Bradford, S.C. Sources of information on specific subjects. Engineering: An Illustrated Weekly, 1934, 3550, 85-86. 4. Ungern-Sternberg, S.V. Bradford's law
6. Nichols, P.T.” Empirical validation of Lotka's law. Information Processing and Management, 1986, 22(5), 417-19.
7. Maranna, O .2016.”Bibliometric Study of mathematical science thesis literature available in R C University library”: A Study, Volume-2 issue.1, International Journal of Research in library Science
8. Chaman Sab, M,”Bibliometric study of PhD Thesis in Library and information science as through INFLIBNET-Shodhganga”, Volume .5.Issue.12 December 2016.
- 9..Mallik, Mamta,”Bibliometric study of political science Ph.D. thesis Vikram University, Ujjain, 2009-2012”, Vol.6, Jan-March 2016 . Issue-1
10. Chapter Five - Scientometrics/Bibliometrics laws . (n.d.). Retrieved from Shodh Ganga: http://shodhganga.inflibnet.ac.in/bitstream/10603/55314/13/13_chapter%205.pdf
11. Pandey, D K (2018). Bibliometric Study of Ph.D Thesis in History available in Central Library at Rajiv Gandhi University Itanagar, Arunachal Pradesh: A study of Professional Journal of Library and Information Technology, July to December 8(2):70-76p
- 12...Pandey, D K (2020). Bibliometric Study of “The Indian Economic and Social History Review 2007-2016: A study of Professional Journal of Library and Information Technology, January-June to 2020 (1):13-29p.