Bibliometric Study of Scientific Literature of Banaras Hindu University, India: A Picture from Scopus Database

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Abstract

This study reveals the research productivity in the Banaras Hindu University, The study portraits the usage of a number of facets of Bibliometrics with the collected from most widely used, world's largest abstract and citation database Scopus. The publication data for individual university were searches with the help of affiliation search option of the database. The collected records have been analyzed to identify the distributions of records in term of block wise, source wise, document wise and collaboration with countries during the study period of 10 years. The study showed that the growth rate of research publications of Banaras Hindu University, Varanasi, India has also increased gradually. Most of these publications contributed to subjects Pharmacology, Toxicology and Pharmaceutics followed by Chemistry and so on. The lead source titles used for publications are Current Science, Rsc Advances etc.

Keywords: Banaras Hindu University, Bibliometric Analysis, Scopus, Publications density

1. Introduction

Scientific development is a continuous process attributed to theoretically and applied research conducted by the academicians. They continuously aspire for doing perfectly in their research domain by translating the research output in the form of publications in their discipline-specific international and national journals. (Mishra, A.,and Singh B. Y., 2013)

Banaras Hindu University also referred as BHU. It is a hub of scientific research output in the form of publications, situated in Varanasi, India established by Pandit Madan Mohan Malviya in the year 1916. It is one of the best and largest universities in Asia having over 32,000 students. (bhu.ac.in)

The term **'Biliometric'** was used by Alan Pritchard in 1069 stresses the method of undertaking the counting of books, articles, publications, citation etc. Kwattra, P.S.,2000 describe as Bibliometric studies can applied to any discipline to find out trends and growth of the literature and to portray the quality, maturity and productivity of journals. It is mostly performed with the help of databases and large scale data sets. There are variety of databases in the field of science and technology to perform scientometric analysis of the publications like Scopus, Science Citation Index via Web of Science, Google Scholar etc.

In present study is based on Scopus database. It is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings. Delivering a

comprehensive overview of the world's research output in   the fields of science, technology, medicine, social sciences, and arts   and humanities, Scopus features smart tools to track, analyze and   visualize research. (Scopus)

2. Literature Review

Sevukan & Sharma, 2009, examined the biotechnology contribution of selected Centra lUniverities of India from 1997-2006. The Data used for study were retrieved from two database ssources , PubMed, NCBI and ISI Web of Science database. The researcher found the growth of literature of literature in biotechnology has steadily increased from 15 articles in 1997 to 43 articles in 2006. The BHU was leading from the front with 42.55 % contributions.

Kumbar, 2008 analysed 1518 research papers indexed in SCOPUS, published by the University of Mysore faculties during 1996-2006. It was founded that average citations per paper have risen from 1.53 in 1996 to 2.62 in 2003. The international collaborative research activity in the university was confined to select few subjects, such as physics 38.4 %, biochemistry 35.6 %, and chemistry 28 %.In the another bibliometric assessment.

Ahila & Nagarajan, 2011, analysed a total of 22,065 research articles published in Web of Science and found that only 1.41 % articles were contributed by Indian authors and ranking 11th among 15 countries in which highest USA contributed 41.58% followed by England 10.37 %, Germany 8.21 %, France 6.24 % Japan 5.02 % and Canada 3.97 %. In collaborative research it has been found that 90 to 95 % of the research outputs were collaborative in nature.

Shariatmadari & Mahdi, 2012 explored the existing barriers to research productivity based on faculty member's perspectives of Islamic Azad University.

Baskaran, 2013 analyzed the author productivity, discipline-wise and institution-wise collaboration and ranking of authors in research contribution of Alagappa University during 1999-2011.

3. Objectives of the Study

The study is being carried out with the following objectives to:
- ➢ Study and analyze the overall representation of publications of the Banaras Hindu University, Varanasi, India.
- ➢ Find out the year-wise allocation of the Publications.
- ➢ Depict the subject-wise production of publications
- ➢ Identify the document type of the publication.
- ➢ Find out the most prolific authors of the university.
- ➢ Spot out the language used for publication.
- ➢ Indentify the preferences of source titles for communication of these publications
- ➢ Trace out the geographic distribution of collaborating universities/institutions

4. Research Design

Bibliometric analysis of publications by the faculty members of the Banaras Hindu University, Varanasi, India published during last ten years (2006-2015) as done which framed

the basic data for present study. The data were searched and collected from the online database Scopus, the world's largest abstract and citation database of peer-reviewed literature encompassing almost all the subject of Science and Technology for the period from 2006 to 2015. The Scopus database indexes documents of different source like Journals, Conference proceedings, Book series, Trade publications etc.

Publications as research output were published and indexed during 2006-2015 were collected and scanned subjected to statistical distribution of facilitate Year-wise, Subject-wise, Language-wise and geographical wise distribution.

5. Scope and Coverage

Methodological improvements and refinement lead the bibliometric studies to the reliability and success. Literature of different journals published from Banaras Hindu University, Varanasi have only been scanned in this study. Thoughts of the BHU's gurus and their scholarly out put has also been taken into consideration in this study. A period of 10 years from 2006-2015 has been taken to find out the trend and growth of scientific literature of faculty members of Banaras Hindu University, Varanasi, India

6. Research Objective

Main purposes of the study are:
- ➢ The study is carried out to analyze the growth of research contribution of the Banaras Hindu University, Varanasi, India in the field of Science and Technology in terms of publications.
- ➢ The main aim is to highlight the research output of Banaras Hindu University, Varanasi, India and emphasize the trends in yearly increasing and progress of the documents, subject mapping, identifying the medium of publication.
- ➢ To find out the most used document type and most prolific authors in the field in terms of publications count.

7. Results

Banaras Hindu University, Varanasi, India was searched for their publications in the Scopus database from year 2006-2015.The data were recorded, analyzed and interpreted as in the following pages:

Contribution in terms of document type

The table -1 demonstrates the distribution of publications in terms of document types. The articles were found to be the most used document type with 6998, followed by Conference Paper with 543 documents; Review with 295, and so on. The least used document type was Short Survey with only 11 documents.

Table 1: Document type distribution

S.No.	Document type	No. of Publications
1	Article	6998
2	Conference Paper	543
3	Review	295
4	Book Chapter	172

5	Article in Press	118	
6	Letter	79	
7	Note	42	
8	Editorial	37	
9	Erratum	33	
10	Book	17	
11	Short Survey	11	

Distribution in terms of language used for writing

The table -2 represents the distribution in terms of language used for writing. Here it is observed that the English language gains the ground with highest number of 8340 documents, followed by Lithuanian and Spanish with 1 document.

Table 2: Language wise distribution

S.No.	Language	Number of Publications
1.	English	8340
2	French	3
3	Portuguese	3
4	Turkish	3
5.	Lithuanian	1
6.	Spanish	1

Subject wise distribution of publications

The table-3depicts the analysis of the data, subject-wise distribution of publications retrieved for the years considered for the study. There were 1748 publications in Physics and Astronomy subject occupying the top position, followed by Chemistry with 1707 and Biochemistry, Genetics and Molecular Biology with 1647 publications and so on. The weakest subject area found to be Nursing with only 27publications due to lack of research.

Table 3:   Subject-wise distribution of publications

S.No.	Subject Area	Number of publications
1	Agricultural and Biological Sciences	1487
2	Arts and Humanities	44
3	Biochemistry, Genetics and Molecular Biology	1647
4	Business, Management and Accounting	36
5	Chemical Engineering	607
6	Chemistry	1707
7	Computer Science	335
8	Decision Sciences	44
9	Dentistry	21
10	Earth and Planetary Sciences	483
11	Economics, Econometrics and Finance	28
12	Energy	214
13	Engineering	962

14	Environmental Science	731
15	Health Professions	40
16	Immunology and Microbiology	493
17	Materials Science	1261
18	Mathematics	454
19	Medicine	1167
20	Multidisciplinary	164
21	Neuroscience	112
22	Nursing	27
23	Pharmacology, Toxicology and Pharmaceutics	562
24	Physics and Astronomy	1748
25	Psychology	46
26	Social Sciences	178
27	Veterinary	45

Top 25 source titles in term of number of publications

The table -4 shows a list of 20 ranking source titles with their total number of publications. In this analysis, it is found that the Current Science gets the maximum number of documents to be published with 116 titles in its share followed by Rsc Advances with 111 and Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy with 89 and so on.

Table 4: Top 20 Source titles in term of Number of publications Source type

S.No.	Journal Title	Total Number of Publications
1	Current Science	116
2	Rsc Advances	111
3	Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy	89
4	Indian Journal of Agricultural Sciences	67
5	Physical Review C Nuclear Physics	65
6	Journal of the Geological Society of India	64
7	Polyhedron	64
8	General and Comparative Endocrinology	55
9	Plos One	55
10	International Journal of Hydrogen Energy	54
11	Physical Review Letters	51
12	Tetrahedron Letters	44
13	Dalton Transactions	43
14	Physical Review D Particles Fields Gravitation and Cosmology	39
15	Aip Conference Proceedings	38
16	International Journal of Electrochemical Science	38
17	Journal of Food Science and Technology	37
18	Vegetos	36
19	Environmental Monitoring and Assessment	34
20	Journal of Alloys and Compounds	32

Contribution of top eleven scientist in terms of affiliations

The Banaras Hindu University, Varanasi, India has produced a total of 18264 documents during the last 10 years. Out of which the Banaras Hindu University, Varanasi produces the highest number of publications with 8910 followed by Bhabha Atomic Research Centre, Mumbai with 149, Florida State University with 123 and so on. The Westfalische Wilhelms-Universitat Munster stands at 11[th]position.Table-5 presents a picture of the overall documents.

Table -5 Contribution of top eleven Scientist in terms of affiliations

S.No.	Name of the University	Publication
1	Banaras Hindu University	8345
2	BHU Institute of Medical Sciences	304
3	Institute of Technology Banaras Hindu University	261
4	Bhabha Atomic Research Centre	149
5	Florida State University	123
6	University of Tsukuba	122
7	Oak Ridge National Laboratory	121
8	Vanderbilt University	120
9	Kyoto University	120
10	Stony Brook University State University of New York	120
11	Westfalische Wilhelms-Universitat Munster	119

Year wise distribution of publications

The table-6 illustrates the yearly allocation of publications of the Banaras Hindu University, Varanasi. It provides the year wise output of the University. It is found that the most productive year in the terms of publications count is 2014 with the highest number of 1266 publications. In the recent year publication count came down to 1227. The lowest number of publications is found to be of 2006 with 379 publications.

Table 6: Year wise distribution of publications

S.N.	Year	No. of Publications	S.N.	Year	No. of Publications
1	2015	1227	6	2010	768
2	2014	1266	7	2009	665
3	2013	1173	8	2008	550
4	2012	960	9	2007	460
5	2011	897	10	2006	379

Top 25 prolific authors in terms of productivity count:

The table -7 represents the list of top 25 prolific authors in terms of productivity count. The list is ranked in the order of decreasing productivity. It is found that author O.N. Srivastava occupied first rank followed by S.B Rai secured second rank in the list among the Banaras Hindu University.

Table 7: Top 25 Prolific Authors in terms of Productivity Court

S.No.	Name of Author	Publication Count
1	Srivastava, O.N.	183
2	Rai, S.B.	163
3	Singh, V.	132
4	Singh, C.P.	118
5	Baublis, V.	118
6	Khanzadeev, A.	118
7	Vznuzdaev, E.	118
8	Riabov, Y.	117
9	Riabov, V.	116
10	Cole, B.A.	116
11	Papavassiliou, V.	116
12	Pinkenburg, C.	116
13	Sakaguchi, T.	116
14	Goto, Y.	116
15	Jacak, B.V.	116
16	Ajitanand, N.N.	116
17	Greene, S.V.	116
18	Jouan, D.	116
19	Ogilvie, C.A.	116
20	Choi, I.J.	116
21	Purschke, M.L.	116
22	Yokkaichi, S.	116
23	Hamagaki, H.	116
24	Silvermyr, D.	116
25	Manko, V.I.	116

Geographical distribution of top eleven affiliated universities/ institutions

The table 8 shows geographical distribution of the top 11 affiliation Universities/Institutions which collaborated with Banaras Hindu University, Varanasi. The list shows India leads the table with 8223 publications, followed by United States with 482. The minimum numbers of publications were collaborated with Russian Federation with only 135 publications.

Table 8: Geographical Distribution

S.N.	Name of the Country	No. of Publications	S.N.	Name of the Country	No. of Publications
1	India	8223	7	France	188
2	United States	482	8	United Kingdom	153
3	Germany	328	9	Sweden	146
4	Japan	227	10	Brazil	145
5	South Korea	222	11	Russian Federation	135
6	China	212			

8. Conclusion

Analysis of the data shows the growth of research output of Banaras Hindu University, Varanasi, India during the period of 10 years. However, the resent research work it is revealed that Banaras Hindu University, Varanasi, India has already gained recognition in the field of scientific research output. Most significant findings needs to be highlighted as conclusion:

➢ Most productive year in terms of publications count was 2014 with the highest number of 1266 publications.
➢ English language dominated with highest publications and other languages like French, Portuguese, Turkish, Lithuanian, and Spanish did also find place in publications.
➢ Eleven type of literature covered in the study, 6998 publications of the literature contain articles followed by Conference proceeding with 543 publications.
➢ In subject wise categorization of publications, Chemistry was first position with 1707 publications.
➢ The most preferred journal was Current Science with 116 articles followed by Rsc Advances with 111 articles.
➢ Most prolific author was Prof. O.N. Srivastava with 183 publications count followed by Prof. S.B. Rai 163 publications count.

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