

## Publication Trends in Indian Journal of Traditional Knowledge: A Bibliometric Analysis

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### **Abstract**

*In this paper, author has discussed the publication trends in the Indian Journal of Traditional Knowledge using bibliometric tools. The bibliographic data was collected from the Web of Science database. A total of 990 articles were published in the journal during 2007–2015. Further, researcher analyzed articles by year-wise distribution, authorship pattern, prolific authors, citation counts, country-wise contribution, most cited references, sources and keyword analysis.*

**Keywords:** *Bibliometric analysis, Indian Journal of Traditional Knowledge, Authorship pattern, prolific authors*

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### **INTRODUCTION**

Bibliometrics is an area of research in Library and Information Science subject, which has received considerable attention from the researchers all over the world for past decade. Bibliometric serves as tool for research evaluation. The bibliometric tools are widely used to measuring the research excellence and reveal the trends in the research. According to Prichard [1], bibliometrics is as the application of mathematical and statistical methods to the entire scientific literature, books and other documentation form. Bibliometric analysis serves as a useful tool in assessing the quality of a journal and its articles [2]. Major derivatives of bibliometrics include but are not limited to publication counts, citations, co-citation analysis, authorship pattern, keyword analysis, country contribution and prolific authors [3].

*Indian Journal of Traditional Knowledge* (IJTK), is an open access quarterly journal dedicated to Traditional Knowledge, provides an outstanding platform for publication of research papers related to Traditional Knowledge Systems. *IJTK* carries original research papers, review articles, short communications based on traditional wisdom. The journal covers papers on Traditional Knowledge in the following main areas: (i) Traditional Agriculture; (ii) Traditional Animal husbandry; (iii) Traditional

Architecture; (iv) Traditional Foods & Beverages; (v) Traditional Handicrafts and Handlooms; (vi) Traditional Medicine; (vii) Indian Systems of Medicine, and other related aspects [4]. *IJTK* dedicated and dedicated to the preservation, documentation, and dissemination of Traditional Knowledge, attempts to bring the wisdom of the past to the present. *Indian Journal of Traditional Knowledge* is included in the Non Patent Literature part of the PCT Minimum Documentation [4].

In this context, the bibliometric analysis of articles published in “*Indian Journal of Traditional Knowledge (2007–2015)*” would be useful to reveal the latest publication trend, citation details, major contributing organizations, countries contribution and most contributing institutions. Further, the analysis would provide useful guidelines for journal editors, librarians, researchers, information scientists and others involved in economic, social and research policy formulation. This article gives insight into kind of research work published in the *IJTK* in 2007–2015.

### **REVIEW OF LITERATURE**

As relevant to the present study, some of the important studies conducted in the area bibliometric are worthy of review. In this context, Thajudin [5] analyzed articles published in *Journal of Plantation Crops*

(1973-11996). A total of 558 articles were published, out of them, majority of articles were contributed by Indian based authors and most were contributed as joint authors and Central Plantation Crops Research Institute had contributed maximum articles. Kulkarni, Balaji, and Narwade [6] also conducted bibliometric study of articles published in the *Indian Journal of Pharmaceutical Education Research (1996–2006)*.

The findings of the study include the journals were the predominant sources of citations followed by books and most of the articles were contributed by more than one author. Kumar et al. [7] also did a study to analyze the articles published in *Pramana-Journal of physics (1982-2006)* using scientometrics techniques. The authors found that the articles were kept increasing and Indian Institute of science was the major contributing institute. One more interesting finding is that one fourth of the articles were contributed by other than India.

Vijay and Raghavan [8] also made a study to analyze the articles published in *Journal of Food Science and Technology*. A total of 779 articles were considered for analysis. The results indicate that increase in number of articles in successive years and majority of the articles were contributed by joint authors. Similarly, Dixit and Katare [9] also conducted a study of *Journal of Indian Society for Cotton Improvement (1995-2004)*. Total of 327 articles published in the journal for the period. Majority of the articles were contributed by more than three authors and journal was the highly cited publication form followed by conference proceedings papers. Narang [10] made a bibliometric study of *Indian Journal of Pure & Applied Mathematics* to reveal authorship pattern, citations and length of articles.

The results include that the articles kept increasing from year to year; most of the articles were written by joint authors and most cited were the journal articles. Paramasivam et al. [11] did a bibliometric analysis of the journal titled "*Indian Journal of Radio and Space Physics 2007–2011*". The study shows that the total 246 contributions and maximum number of papers has been contributed by

(40.24%) four and more than four authors and the maximum contributions were from foreign countries (149; 19.51%) to the journal. Kumar and Moorthy [12] revealed various facets like content coverage, authorship pattern, and subject-wise distribution of articles published in *DESIDOC Journal of Library and Information Technology* from 2001 to 2010. The present study aimed at revealing the findings of the scholarly communication in the *Indian Journal of Traditional Knowledge*, which is not unexplored.

## OBJECTIVES

The main objectives of the study are:

- To study the year-wise distribution of articles published in the journal;
- To study the chronological distribution of citations;
- To study the average length of articles published in *IJTK*;
- To study the authorship pattern;
- To study the geographical distribution of contributors;
- To study the prolific authors; and
- To identify the leading journals that had been most frequently cited by authors.

## METHODOLOGY

The bibliographic data related to articles published in *Indian Journal of Traditional Knowledge (IJTK)* was collected from the *Web of Science*. The title was used for search "*Indian Journal of Traditional Knowledge*" in publication field and time span was selected between 2007 and 2015. A total of 1007 articles were found from the search. Four type's documents were published, i.e., articles (990), review (7), editorial material (7), corrections (2), and biographical item (1). As the tradition followed in bibliometric research, the only research articles were considered for analysis purpose. Further, bibliometric tools and techniques were employed to explore the scholarly communication in the *IJTK*.

The articles were analyzed by year of the publication and citations, types of publications, length of articles, authorship pattern, most contributing authors and country (Figure 1). MS excel was used for the tabulation and analysis of the data. The VOSViewer was used to draw the map of most contributing country. The degree of

collaboration (DC) of the contributors was derived using the Subramanyam [13] formula:

$$DC = \frac{NM}{NM + NS}$$

Where:

DC = degree of collaboration.

NM = number of multiple authored papers.

NS = number of single authored papers.

## RESULTS AND DISCUSSION

### Publication Outputs and Citations

Table 1 presents the year-wise distribution of articles with citations in *IJTK* during 2007–2015. The highest no. of articles were contributed in the 2010 (138; 13.94%), while lowest number of articles were appeared in 2014 (94; 9.49%). The highest number of citations was received by the articles published in the year 2007 (395) with an average of 3.59

citations per article and the articles published in 2015 has received lowest rate of citation (0.19 per article). This is common trend as the articles need at least two or three years to get more citations [14] but some articles which are classic and breaks the current research may receive good number of citations in the publication year itself [15]. Similar results were reported in the other studies [16, 17] A total of 990 articles were published in the *IJTK* during the period of 2007–2015 with an average of 110 articles per year. The documentation of traditional knowledge is useful for effective use, and transfer the same to future generation usage. It is clear from Table 1 that a negative growth is evident for some years and fluctuation in publication of number of articles is seen from the Figure 2.

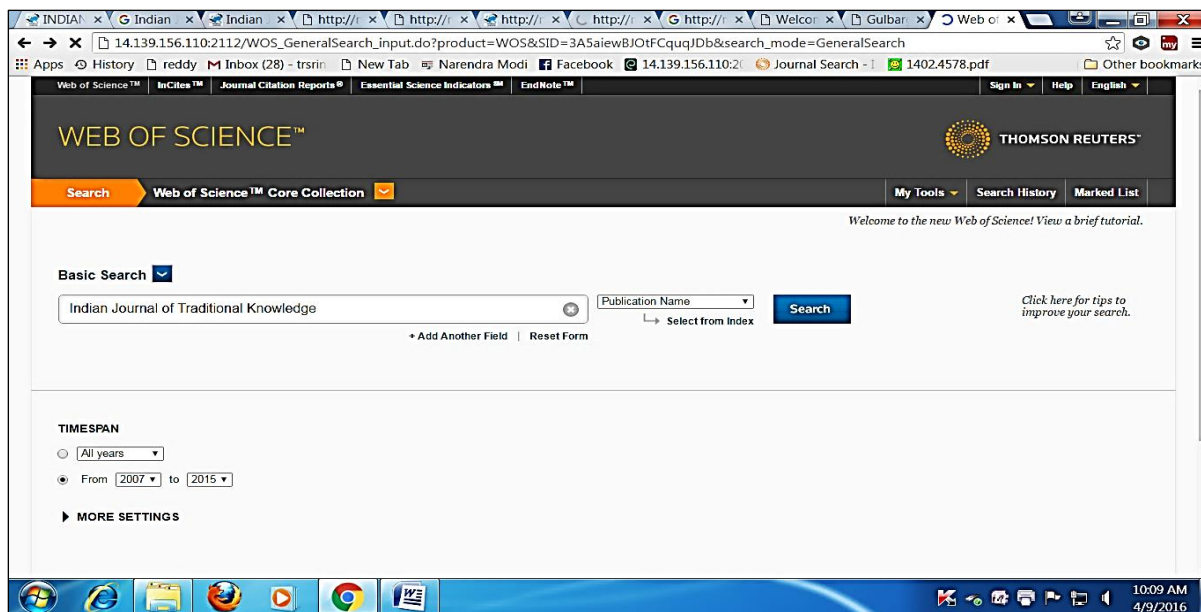


Fig. 1: Web of Science Search Window.

Table 1: Year-wise Distribution of Articles and Citations.

Year	Total no. of Articles	Cumulative Total of Articles	%	Total no. of Citations	Cumulative Total of Citations	Average Citations per Article	Cumulative Average of Citations
2007	110	110	11.11	395	395	3.59	3.59
2008	119	229	12.02	354	749	2.97	6.56
2009	114	343	11.52	349	1098	3.06	9.63
2010	138	481	13.94	456	1554	3.30	12.93
2011	112	593	11.31	231	1785	2.06	14.99
2012	105	698	10.61	139	1924	1.32	16.32
2013	100	798	10.10	79	2003	0.79	17.11
2014	94	892	9.49	43	2046	0.46	17.56
2015	98	990	9.90	19	2065	0.19	17.76
Total	990		100	2065		2.09	

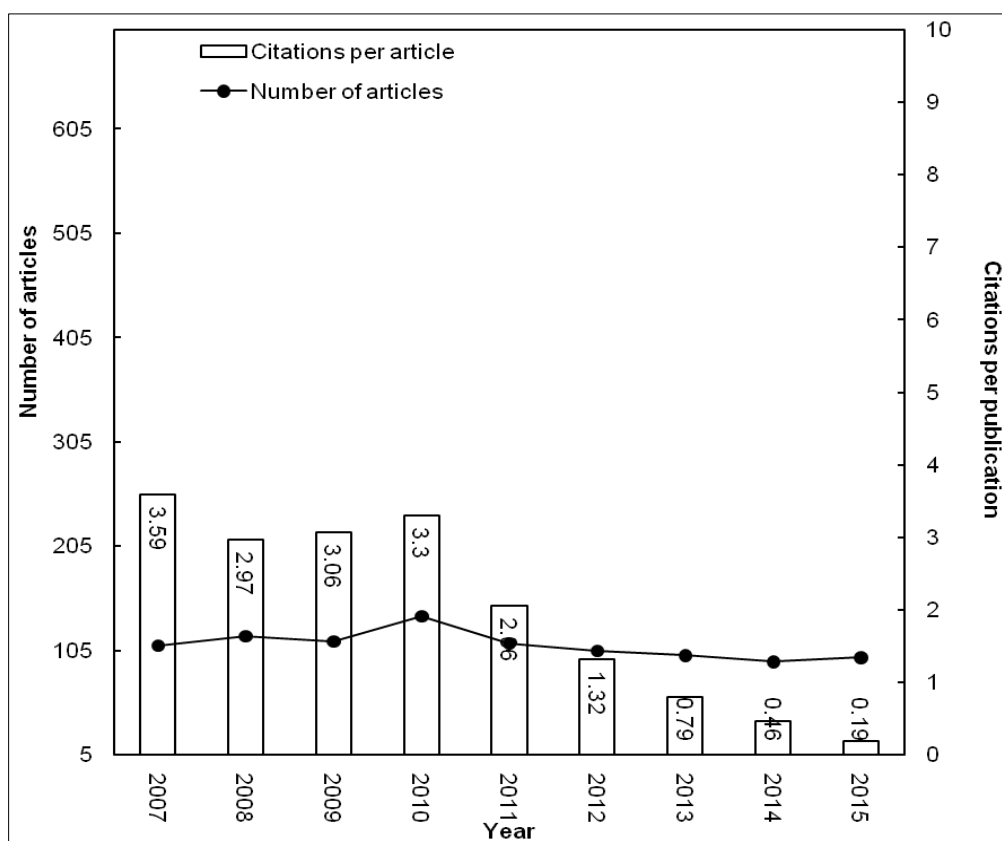


Fig.2: Year-wise Publication Outputs and Citations Over Years.

Table 2: Length of articles.

Year	Total pages	Total no. of articles	Average pages per article
2007	639	110	5.81
2008	640	119	5.38
2009	607	114	5.32
2010	752	138	5.45
2011	696	112	6.21
2012	695	105	6.62
2013	708	100	7.08
2014	743	94	7.90
2015	632	98	6.45
	6112	990	6.17

**Length of Articles**

Table 2 gives details about page length of articles. The result shows that average length of article published in IJTK is 6.17 pages. Articles published in 2014 has recorded highest average pages per article (7.90) and while, lowest was seen in the year 2009 (5.32 per article). A total of 6,112 pages of literature are published by the journal in 2007–2015. Except for the years, 2008, 2009, 2010 and 2015, an increasing trend from 5.81 to 7.90 is evident.

**Authorship Pattern**

Table 3 presents the authorship pattern in the articles published in the IJTK. Majority of the articles were contributed by the joint author (306; 30.91%) followed by three authors (260; 26.26%), four authors (158; 15.96%) and five authors (134; 13.54%) and very small portion of articles were contributed by single author (97; 9.80%). It is clear that collaborative nature of research is evident in the articles published by the journal.

### Degree of Collaboration

The degree of collaboration (DC) of the contributors was derived using the Subramanyam (1983) formula:

$$DC = 893 / (893 + 97) = 0.902$$

Where:

DC = degree of collaboration.

NM = number of multiple authored papers.

NS = number of single authored papers.

It is evident from the Table 3 that degree of collaboration is 0.902 for the period 2007-2015 i, e, 90% percent of the articles published in *IJTK* are published by multiple authors. This indicates the high level of collaborative research in traditional knowledge.

**Table 3: Authorship Pattern.**

Authors	No. of Articles	Cumulative no. of Articles	Percentage	Cumulative Percentage
Single	97	97	9.80	9.8
Joint	306	403	30.91	40.71
Three	260	663	26.26	66.97
Four	158	821	15.96	82.93
Five	35	856	3.54	86.47
>Five	134	990	13.54	100.00

**Table 4: Prolific authors.**

Sl. No.	Author	No. of articles	%	Citations	Average citations per article
1	Singh, RK	39	3.94	93	2.38
2	Singh, A	16	1.62	48	3.00
3	Srivastava, RC	13	1.31	31	2.38
4	Borthakur, SK	13	1.31	36	2.77
5	Khatoon, S	11	1.11	15	1.36
6	Katewa, SS	11	1.11	40	3.64
7	Tamang, JP	10	1.01	55	5.50
8	Mukherjee, PK	10	1.01	30	3.00
	Total	123	12.42	348	2.83

### Prolific Authors

Table 4 gives the details of the most contributed authors with citations. A total of 2,226 authors had contributed to the journal with an average of 2.24 authors per article. Singh, RK has contributed highest number of articles (39; 3.94%) followed by Singh, A (16; 1.62%), Srivastava, RC (13; 1.31%), Borhtakur, SK (13; 1.31%), Khatoon, S (11; 1.11%), Katewa, SS (11; 1.11%), Tamang, PK (10; 1.01%) and Mukherjee, PK (10; 1.01%), respectively. These eight authors are highly involved in research on traditional knowledge and they prefer *IJTK* for communication of their research findings.

These eight authors have had contributed 12.42% of the articles published in the journal in 2007–2015. The citations are indicators of quality of research, the articles contributed by Tamang, JP has received considerable no. of citations for per article (5.50 citations per article) and articles published by Khatoon, S has received lowest rate of citation (1.36

citations per article). A total of 2065 citations were received by the all the articles, of them, 348 citations were recorded for these eight authors' articles, which accounts for 16.85% of the total citations.

### Top Contributing Organizations

Table 5 presents top eleven most contributing organizations to *IJTK* in 2007–2015. A total of 833 organization have had contributed their articles to the journal with an average 0.84 organization per article. Central Agricultural University, Manipur is most contributing organizations with 34 article (3.43%) followed by Council of Scientific and Industrial Research, New Delhi (29; 2.93%), Botanical Survey of India (28; 2.83%), Gauhati University, Bhubaneswar (23; 2.32%), Assam University (21; 2.12%) respectively.

Remaining six organizations had contributions of 11 or more articles to the journal. Citations are credential of articles [18], the articles

contributed by Central Agricultural University had received highest rate citation per article (3.09) and lowest rate of citation per article (0.36) was observed for the articles contributed by National Institute Unani

Medicine. These eleven organizations had contributed 21.62% of the articles published in IJTK in 2007–2015. Based on all these, it confirms that the eleven organizations are most active in traditional knowledge research.

**Table 5: Top contributing organizations.**

Sl. No.	Organization	No. of Articles	Percentage	Citations	Average Citations per Article
1	Central Agricultural University, Manipur	34	3.43	105	3.09
2	Council of Scientific and Industrial Research, New Delhi	29	2.93	55	1.90
3	Botanical Survey of India, Kolkata	28	2.83	84	3.00
4	Gauhati University, Bhubaneswar (Orissa)	23	2.32	64	2.78
5	Assam University, Silchar (Assam)	21	2.12	51	2.43
6	Aligarh Muslim University, Aligarh (Uttar Pradesh)	18	1.82	14	0.78
7	North Eastern Hill University, Shillong (Meghalaya)	17	1.72	83	4.88
8	Banaras Hindu University, Varanasi	11	1.11	35	3.18
9	GB Pant Institute of Himalayan Environment & Development, Almora (Uttarakhand)	11	1.11	23	2.09
10	Jadavpur University, Kolkatta (West Bengal)	11	1.11	33	3.00
11	National Institute Unani Medicine, Bengaluru (Karnataka)	11	1.11	4	0.36
	Total	214	21.62	551	

**Table 6: Country-wise contribution.**

Sl. No	Country	No. of Articles	Sl. No	Country	No. of Articles
1	India	812	25	Germany	3
2	Turkey	25	26	Ethiopia	3
3	Nigeria	14	27	Wales	2
4	USA	13	28	Sikkim	2
5	Iran	12	29	New Zealand	2
6	Bangladesh	12	30	Japan	2
7	Nepal	9	31	England	2
8	Pakistan	8	32	Egypt	2
9	Malaysia	7	33	Zimbabwe	1
10	South Africa	6	34	Uganda	1
11	Saudi Arabia	6	35	Tanzania	1
12	Philippines	6	36	Slovenia	1
13	Indonesia	6	37	Scotland	1
14	Thailand	5	38	Romania	1
15	Sri Lanka	5	39	Norway	1
16	Peoples Republic China	5	40	Nepal	1
17	Canada	5	41	Namibia	1
18	Cameroon	5	42	Morocco	1
19	Brazil	5	43	Lithuania	1
20	South Korea	4	44	Kenya	1
21	Serbia	4	45	France	1
22	Mexico	4	46	Denmark	1
23	Italy	4	47	Croatia	1
24	Bulgaria	4	48	Bhutan	1



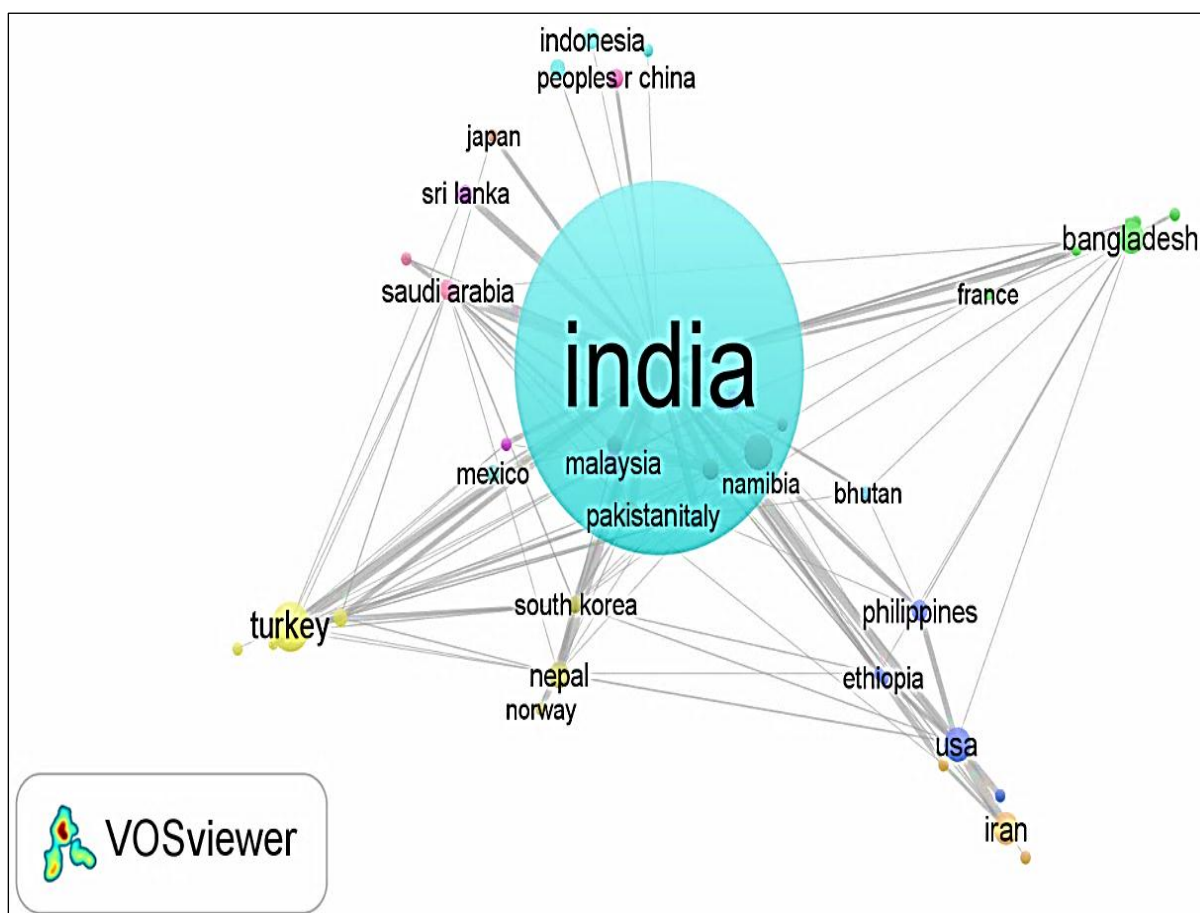


Fig.3: Contributed Countries.

### Country-wise Distribution of Articles

Table 6 shows the country-wise contribution of articles to the *IJTK* in the years of 2007-2015. If an article is contributed by authors belonging to two different countries, equal credit is given to each author. A total of 48 countries had contributed to the journals as one of the authors from the each with one or more articles. The highest no. of articles were contributed by India (812) followed by Turkey (25), Nigeria (14), USA (13), Iran (12), and Bangladesh (12), respectively. Remaining 42 countries had contribution of 1 or more article to the journal. Map of the countries which had contribution to the journal was created using VOSViewer software (Figure 3).

### Author Keyword Analysis

The keyword analysis would provide clue about the content of the research articles published in the *IJTK* during 2007-2015. Keeping this in view, an effort is made here to find out most frequently existed keywords rendered by authors (Figure 4). Ethno-

medicine word appeared 123 times followed by traditional knowledge (112 times), medicinal plants (107 times). It is confirmed from the Figure 3 that major amount of research published in the journal was concerned with ethno-medicine, medicinal plants, ethno botany and Ayurveda drug. The traditional knowledge which is originated from Assam, Arunachal Pradesh, Kerala, Tamil Nadu, Himachal Pradesh, Rajasthan, Manipur, Orissa, Western Ghats, Nigeria, and Uttarakhand reported in the journal.

### Top Cited References

Table 7 provides the top 19 cited reference by the authors. A total of 18,632 references were used to write the 990 articles published in the *IJTK* in 2007-2015 with an average of 18.82 references per article. Jain, SK written sources, i.e., Dictionary of Indian Folk medicine and Handbook of filed herbarium was cited 80 times. These 19 references are most used sources by who is doing research on the traditional knowledge.

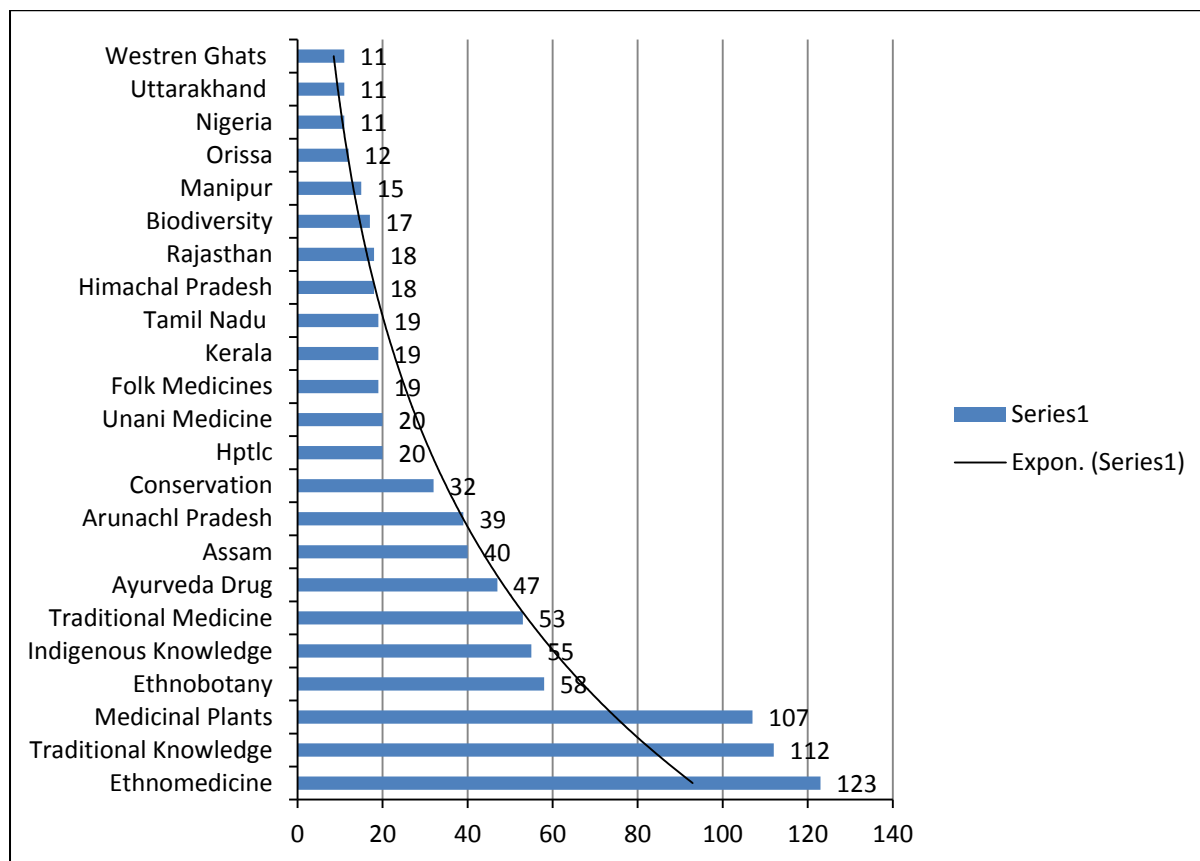


Fig.4: Author Keyword Analysis.

Table 7: Top Cited References.

Sl. No	Cited Reference	No. of Citations	Cumulative Citations	Percentage	Cumulative Percentage
1	“Jain S.K., 1991, Dict Indian Folk Med”	49	49	0.26	0.26
2	“Jain S.K., 1977, Hdb Field Herbarium”	31	80	0.17	0.43
3	“Chopra R.N., 1956, Glossary Indian Med”	25	105	0.13	0.56
4	“Jain S.K., 1987, Manual Ethnobotany”	15	120	0.08	0.64
5	“Jain S.K., 1999, DictEthnoveterinary”	14	134	0.08	0.72
6	“Martin G., 1995, Ethnobotany methods”	14	148	0.08	0.79
7	“Myers N, 2000, Nature, v403, p853, doi 10.1038/35002501”	14	162	0.08	0.87
8	“Dutta B.K., 2005, Indian Journal of Traditional Knowledge, v4, p7”	13	175	0.07	0.94
9	“Joshi P., 1995, Ethnobotany Primitiv”	13	188	0.07	1.01
10	“Singh R.K., 2004, Honey Bee, v15, p12”	13	201	0.07	1.08
11	“Hooker J.D., 1872, Flora Brit India, v1”	12	213	0.06	1.14
12	“Lowry O.H., 1951, J BiolChem, v193, p265”	12	225	0.06	1.20
13	“Gadgil M., 1993, Ambio, v22, p151”	11	236	0.06	1.26
14	“Gurumayum S.D., 2009, Indian J Tradit Know, v8, p237”	11	247	0.06	1.32
15	“Kanjilal U.N., 1934, Flora Assam, v1-5”	11	258	0.06	1.38
16	“Kirtikar K.R., 1935, Indian Med Plants, p1638”	11	269	0.06	1.44
17	“Gamble J.S., 1915, Flora Presidency Mad, v1”	10	279	0.05	1.49
18	“Gaur R.D., 1999, Flora District Garhw”	10	289	0.05	1.55
19	“Saklani A., 1994, Cross Cultural Ethno”	10	299	0.05	1.60



**Table 8: Most cited journals.**

Sl. No	Source	No. of Citations	Cumulative Citations	Percentage	Cumulative
1	Indian J Traditional Knowledge	815	815	9.64	9.64
2	Journal of Ethnopharmacology	477	1292	5.64	15.28
3	Ethnobotany	225	1517	2.66	17.94
4	Economic Botany	170	1687	2.01	19.95
5	Journal Of Economic And Taxonomic Botany	161	1848	1.90	21.85
6	Fitoterapia	128	1976	1.51	23.37
7	Curr Sci India	120	2096	1.42	24.79
8	J EthnobiolEthnomed	119	2215	1.41	26.19
9	Indian Med Plants	90	2305	1.06	27.26
10	Phytochemistry	88	2393	1.04	28.30
11	Food Chem	83	2476	0.98	29.28
12	J Agr Food Chem	67	2543	0.79	30.07
13	Glimpses Indian Ethn	64	2607	0.76	30.83
14	Int J Food Microbiol	62	2669	0.73	31.56
15	Dict Indian Folk Med	59	2728	0.70	32.26
16	J Ec Tax Bot	59	2787	0.70	32.96
17	Indigenous Knowledge	51	2838	0.60	33.56
18	Bulletin Of The Botanical Survey Of India	50	2888	0.59	34.15
19	Flora Presidency Mad	50	2938	0.59	34.74

### Top Most used Journals

Table 8 gives the list of top 19 most cited journals. A total of 8,458 sources were consulted for the writing of the articles published in the journal in 2007–2015. The *Indian Journal of Traditional Knowledge* is cited 815 times followed by J Ethnopharmacol (477), Ethnobotany (225) and Econ Bot (170 times) respectively. These 19 sources are accounted for 34.74 percent of the sources used for the preparation of the papers. Journals listed in the Table 8 are very useful sources for the researchers who are engaged in the traditional knowledge research.

### CONCLUSION

In this paper, bibliometric analysis of *Indian Journal of Traditional Knowledge* is revealed. A total 990 articles were published in the journal for the period of 2007–2015. An average of 110 articles was published year. The articles published in 2007 had received good number of citations. The majority of the articles were contributed by more than one author. The value of degree of collaboration is 0.902, which indicates dominance of collaborative research in the articles published by the journal. Singh RK and Central

Agricultural University is most contributed author and organizational respectively. Most of the articles were contributed by India and Indian Journal of Traditional Knowledge is most cited journal.

### REFERENCES

1. Pritchard A. Statistical bibliography or bibliometrics. *Journal of Documentation*.1969;25:348-9p.
2. Thanuskodi S. Journal of Social Sciences : A Bibliometric Study. *Journal of Social Science*. 2010;24 (2010): 77–80p.
3. Adeyinka TAAO. Bibliometric analysis of African Journal of Library, Archives and Information Science from 2000-2012. *Library Review*.2014; 63 (4/5): 305–23p.
4. Indian Journal of Traditional Knowledge <http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijtk/ijtk0.asp> (Accessed on 10 March 2016)
5. Thajudin S. Journal of Plantation Crops: a bibliometric appraisal. *Annals of Library and Information Studies*.1987; 45(4):117–24p.
6. Kulkarni AP, Balaji P, Narwade GR. Indian Journal of Pharmaceutical Education Research (1996–2006): a

- bibliometric analysis. *Annals of Library and Information Studies*.2009; 56: 242-8p.
7. Kumar A, Prakashan VL, Kalyane VL, et al. Pramana-Journal of Physics: A scientometrics analysis. *Annals of Library and Information Studies*.2008; 55: 52-1p.
  8. Vijay KR, Raghavan I. Journal of Food Science and Technology: a bibliometric analysis. *Annals of Library and Information Studies*. 2007; 54: 207-2p.
  9. Dixit S, Katare VV. A bibliometric analysis of the Journal of Indian Society for Cotton Improvement (1995-2004). *Annals of Library and Information Studies*.2007;54:119-3p.
  10. Narang A. Indian Journal of Pure & Applied Mathematics: A bibliometric study. *Annals of Library and Information Studies*.2004; 51 (1): 28-38p.
  11. Paramasivam S, Rajinikanth A, Pandiyan M. Bibliometric Analysis of Indian Journal of Radio and Space Physics (2007-2011). *PEARL-A Journal of Library and Information Science*. 2013; 7 (1): 57-3p.
  12. Kumar M, Moorthy AL. A bibliometric analysis of DESIDOC Journal of Library & Information Technology during 2001-2010. *DESIDOC Journal of Library & Information Technology*. 2011; 31 (3): 203-8p.
  13. Subramanyam K. Bibliometric Studies of Research Collaboration. A Review. *Journal of Information Science*. 1983; 6(1):33-8p.
  14. Kolle ST, Shankarappa TH, Reddy B. Manjunatha et al. Scholarly Communication in the International Journal of Pest Management: A Bibliometric Analysis from 2005 to 2014. *Journal of Agricultural & Food Information*.2015; 16(4):301-14p.
  15. Li Z, Ho YS. Use of citation per publication as an indicator to evaluate contingent valuation research. *Scientometrics*.2008; 75: 97-10p.
  16. Kolle SR and Shankarappa T H. Indian Journal of Agricultural Sciences: a bibliometric analysis of scientific literature (2006-2015). *Indian Journal of Agricultural Library and Information Services*. 2015; 31; 18-3p.
  17. Kolle SR et al. Characteristics of Highly cited papers from Indian Institute of Science 1989-2013: A Web of Science based investigation. *Journal of Advances in Library and Information Science*. 2015; 53;82-8p.
  18. Garfield E. Citation analysis as a tool in journal evaluation. *Science*.1972; 178: 471-9p.

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