



RESEARCH PRODUCTIVITY OF FACULTIES IN SRTMUN SUB-CENTRE, LATUR: A BIBLIOMETRIC STUDY



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ABSTRACT

The paper presents Bibliometric analysis of 256 research publications of faculty members of S.R.T.M.U.N. Sub-centre, Latur during 2010 to 2015. For the analysis of the study different types of publications i.e. research papers in journals, articles published in Conference proceedings, books and book chapters have been taken up for evaluation. The present paper covers the yearwise, subjectwise analysis, Relative Growth Rate & Doubling Time of publications, authorship pattern and degree of collaboration of authors, most prolific authors having largest no. of publications.

KEYWORDS :SRTMUN Sub-centre, Bibliometrics, Scientometrics, Research productivity, Research output, Research publications

1. INTRODUCTION

The word "Bibliometrics" constitutes one of the major thrust areas of research in the field of Library & information science. It utilizes qualitative analysis and statistics to describe pattern of publications within a given field or body of literature. The term statistical bibliography was first employed by E. W. Hulme in 1923, to refer to the application of quantitative techniques to libraries. The word Bibliometrics was originated from the combination of two Latin and Greek words i.e. 'biblio' and 'metrics', which means the application of mathematics to the study of bibliography. Bibliometric analysis tools are used to study the properties and behavior of recorded knowledge for analysis of structures of scientific and research areas and for evaluation of research activities (Patra et al. 2006). Bibliometric study is widely used for mapping of scientific research growth, authorship pattern, research collaboration, author's productivity, etc. in any discipline of knowledge. Mainly it is a best

instrument in social science research for systematic analysis of publication output of any subject, author, institution and country. Bibliometrics is used to measure the qualitative and quantitative research and to investigate the research trends in a subject.

2. ABOUT SRTMUN, SUB-CENTRE, LATUR:

Swami Ramanand Teerth Marathwada University, Nanded has made a land mark achievement by securing 'A' grade through evaluation by National Assessment & Accreditation Council (NAAC) located at Bangalore, Karnataka in 2015. The Sub-centre of SRTMUN at Latur was initiated in the academic year 2007-08 by the Govt. of Maharashtra on the recommendation of the management of the University and of public demand to encourage, to support and to nourish the students of Latur region in specialized courses after Graduation. The Govt. of Maharashtra state has provided the required land, financial support to construct the main building and salary grants to staff for the functioning of the sub-centre at Latur. Apart from conducting specialized courses of higher learning, the Sub-centre has also become the nodal agency for the affiliated colleges/institutions/research centers of Latur district in the context of University's administrative and examination related activities. It is an unique of its kind within the state of Maharashtra for its origin, infrastructure, academic competency and sensitivity towards social responsibility.

The Schools of higher learning at Latur sub-centre are –

- School of Management Sciences
- School of Technology
- School of Social Sciences

3. LITERATURE REVIEW:

A number of quantitative studies based on Bibliometric and Scientometric techniques have been reported to evaluate the research productivity of individuals, institutions, countries, etc. Studies are also available to verify the fitness of classic laws of bibliometrics, factors of productivity and impact of research conducted in various countries.

Pillai Sudhier & Priyalakashmi (2013) analyzed the Bibliographic details of 1076 research articles of Central Tuber Crops Research Institute (CTCRI) were studied and it was found that the highest number of 169 papers was published in the year 2006 and average number of publications per year was 97.82. Most of the contributions were multi authored (87.68%). The degree of collaboration of scientist of CTCRI was 0.87 and most of the articles published by the scientists were in the foreign journals (51.89%). Sharma R. (2009) studied a total of 2603 research articles published by the scientist of Central Potato Research Institute (CPRI) during 1991 to 2007 were collected by scanning of Annual reports of CPRI and Journal of the Indian Potato Association. Analysis show that majority of the scientists preferred to publish research papers in joint authorship (82.67%) having 0.82 degree of collaboration.

Kumar, Dora & Desai (2015) undertook the study to analyze the research publications of Gujarat University during the ten-year period between 2004 and 2013. The total of 760 publication data was analyzed with respect to the type of publications where 83% are journal articles and a steady growth in publication trend increased from 2008 onwards. The collaboration was found to be the highest in the year 2012 at 0.70. Kandalkar (2014) studied Research performance of Social science faculty members working in affiliated colleges and department of Sant Gadge Baba Amravati University, Amravati during 2008-2010. The study covers the research productivity of the faculty authorwise, subjectwise, yearwise, journal wise etc. The distribution of 266 articles reveals the highest no. of contribution is 139

articles in the year 2010.

Veer & Kale (2014) studied the publication output of the Science faculty of the S.R.T.M. University, Nanded for the year 1994-2011. The research output shows a steady growth during the period of study that Schools under the faculty of Science are successful in carrying out research activities. It reveals that out of 1059 total publications 338 (31.92%) are single authored. Further the study determines the Degree of Collaboration of publications of the Science faculty of the SRTM University is 0.680. Baskarn (2013) analysed the author productivity, discipline-wise and institution-wise collaboration and ranking of authors in research contribution of Alagappa University during 1999-2011. Relative growth rate (RGR) was found to be fluctuating trend during the study period. The doubling time (DT) was found to be increased and decreased trend in this study. Degree of collaboration and its' mean value is found to be 0.963.

Okiki (2013) assessed the level of research productivity of teaching faculty members in Nigerian federal universities. The findings of the study show that the research productivity of the teaching faculty members in Nigerian federal universities is high in journal publications, technical reports, conference papers, working papers, and occasional papers. Aswathy & Gopikuttan (2013) analysed the publication pattern of faculty members of three universities in Kerala viz., University of Kerala, Mahatma Gandhi University and University of Calicut during 2005 to 2009. Authorship pattern, Degree of Collaboration, the appropriateness of Lotka's Inverse Square Law and year-wise and designation-wise distributions has been studied. In UoK there are 966 journal article contributions, while in MGU and UoC there are 635 and 734 journal articles.

4. OBJECTIVES OF THE STUDY:

The main objective of the present study is to analyze the research productivity of Faculty members working in Sub-Centre, Latur during 2009 to 2015. In particular, the study focuses on the following objectives.

- To find out year wise research productivity
- To find out subject wise research productivity
- To know Authorship pattern of Publications
- To identify the prolific author having largest number of publication
- To find out Relative Growth Rate [R(P)] And Doubling Time [Dt(p)]
- To analyze the Degree of collaboration of publications

5. SCOPE AND LIMITATIONS OF THE STUDY:

The scope of the study is limited to the Bibliometrics analysis of total no. of 265 research publications of the core faculty members of three different schools Viz. School of Management Sciences, School of Technology and School of social Sciences during 2010 to 2015.

6. METHODOLOGY AND DATA COLLECTION:

The primary data for the present study is collected through questionnaire and Curriculum Vitae (CV) of the faculties. The data collected for the study was fed into MS- Excel with variables such as- no. of authors, bibliographic form of publications, title of the books(s), proceedings, name of the journal, publishers of the book, pages, place of publications, state/national /international level workshop/seminar/conference. The collected data and information were analyzed, tabulated and represented by graphs and diagrams using MS-Excel 2007 software. The secondary data were collected

from the Books, encyclopedias, printed/online journal articles, various e-databases and the particular University website.

7. Data analysis:

Table No. 1: Year wise productivity of Faculty

Year	Journal articles	Conference Proceedings	Workshops	Books/Book Chapters	Total
2010	11 (29.72%)	20 (54.05%)	6 (6.21%)	0	37 (13.96%)
2011	9 (24.31%)	18 (48.64%)	9 (24.31%)	1 (2.70%)	37 (13.96%)
2012	8 (15.09%)	23 (43.39%)	14 (26.41%)	8 (15.09%)	53 (20.00%)
2013	21 (30.43%)	27 (39.13%)	15 (21.73%)	6 (8.69%)	69 (26.03%)
2014	12 (38.70%)	15 (48.38%)	2 (6.45%)	2 (6.45%)	31 (11.69%)
2015	11 (28.94%)	23 (60.52%)	3 (7.89%)	1 (2.63%)	38 (14.33%)
TOTAL	72 (27.71%)	126 (47.54%)	49 (18.49%)	18 (6.79%)	265 (100%)

Table No. 1 and Figure 1 shows the information regarding the distribution of 265 publications that the highest no. research output is 69 (26.03%) in the year 2013 followed by 2012 i.e. 53 (20%), similar research output shown in the year 2010 and 2011 i.e. 37 (13.96%) and lowest no. of contribution is 31 (11.69%) in the year 2014.

Figure 1: Year wise productivity of Faculty

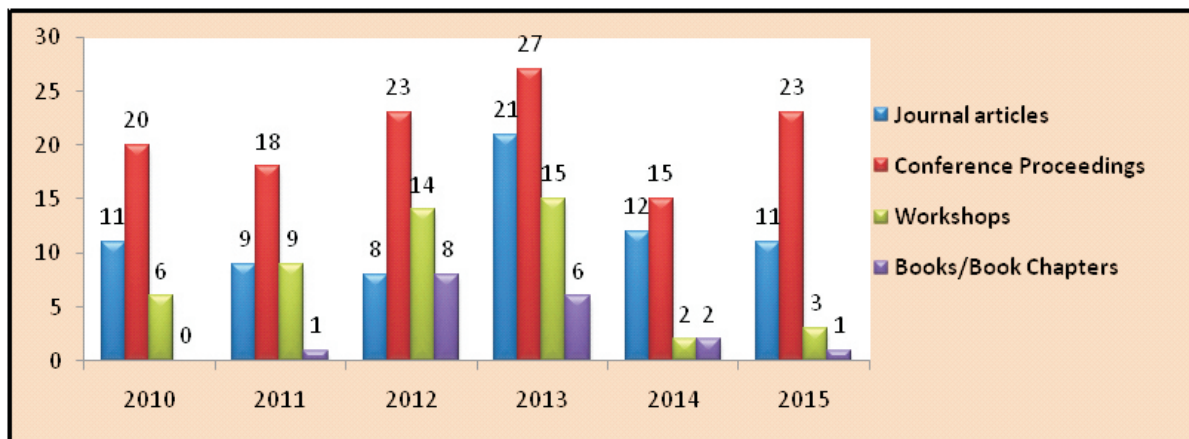


Table No. 2: Journal wise Productivity of Faculty

Rank	Journal Name	No. of Articles	Cumulative no. of Articles	Percentage	Cumulative Percentage
I	Inter. Jrl. Of Multi-disciplinary Research	4	4	0.168%	0.168%
II	Southern Economist	3	7	0.125%	0.296%
II	Indian Streams Research Journal	3	10	0.125%	0.414%
II	Indian Jrl. Of Management Review	3	13	0.125%	0.538%
III	The Unique Research analysis	2	15	0.083%	0.619%
III	Arthvichar	2	17	0.083%	0.702%
III	Inter. Jrl. Of Business management & Social sciences	2	19	0.083%	0.783%
III	e-journal world Res. jrl. Of entrepreneurship & Business	2	21	0.083%	0.865%
III	Indian jrl. Of Research in mgmt, Business & Social sciences	2	23	0.083%	0.948%
III	Inter. Jrl. Of Computer application & business intelligence	2	25	0.083%	1.031%
III	Inter. Jrl. Of Computer science engineering	2	27	0.083%	1.112%
IV	Different Journals	45(1article each)	72	0.041%	2.961%
Total		72	2431	2.963%	100%

Table No. 2 depicts that most preferred journal is Inter. Jrl. Of Multi-disciplinary Research with 4 contributions (0.168 %) in Ist position. IInd Rank is Southern Economist, Indian Streams Research Journal and Indian Jrl. Of Management Review have 3 (0.125%) articles each. And III rank is The Unique Research analysis, Arthvichar, Inter. Jrl. Of Business management & Social sciences, e-journal world Research jrl. of entrepreneurship & Business, Indian journal of Research in mgmt, Business & Social sciences, Inter. Jrl. of Computer application & business intelligence and Inter. Jrl. Of Computer science engineering have 2 (0.083%) articles each and IV rank is different 45 journals with 1 (0.041%) article each.

Table No. 3: Subject wise Research productivity of Journal articles

Rank	Subject	No. of Articles	Cumulative Articles	Percentage	Cumulative Percentage
I	HRD Practices	11	11	0.774	0.774
II	Biometric palm prints features	7	18	0.493	1.266
III	Globalization, Urbanization & development	6	24	0.423	1.687
III	Performance Appraisal & Industrial Development	6	30	0.423	2.109
IV	New Economic Policy	5	35	0.352	2.460
IV	Micro-Finance	5	40	0.352	2.811
V	Women empowerment	3	43	0.211	3.022
V	Role of NABARD in Agricultural Development	3	46	0.211	3.234

VI	Wavelet & Multiwavlet based synthetic aperture	2	48	0.141	3.374
VI	Speech recognition	2	50	0.141	3.514
VI	GIS & remote sensing	2	52	0.141	3.655
VI	Exploitation of Human Rights	2	54	0.141	3.795
VI	Data structure	2	56	0.141	3.936
VI	Morphological & segmentation techniques	2	58	0.141	4.077
VI	Insilico structural annotation	2	60	0.141	4.217
VII	Malnutrition in India	1	61	0.070	4.287
VII	Entrepreneurship	1	62	0.070	4.358
VII	Food security bill & Food security	1	63	0.070	4.428
VII	HRD Risk management	1	64	0.070	4.498
VII	Distributed databases	1	65	0.070	4.568
VII	e-governance in the growing era of ICT	1	66	0.070	4.638
VII	Data warehousing for decision making	1	67	0.070	4.708
VII	Foreign Direct Investment	1	68	0.070	4.778
VII	Green marketing	1	69	0.070	4.849
VII	Bank account number portability (BANP)	1	70	0.070	4.919
VII	Mobile banking	1	71	0.070	4.989
VII	visual cryptography schemes	1	72	0.070	5.059
	TOTAL	72	1423	5.059%	100%

Table No. 3 and Figure 2 indicates that majority of contributions 11 i.e. 0.77% is on HRD Practices by management faculties. This is followed by Biometric palm prints features 7 i.e. 0.49% and Globalization, Urbanization & development & Performance Appraisal & Industrial Development 6 each i.e. 0.42%. New Economic Policy and Micro-Finance 5 each i.e. 0.35% followed by Women empowerment and Role of NABARD in Agricultural Development 3 each i.e. 0.21%. Wavelet & Multiwavlet based synthetic aperture, Speech recognition, GIS & remote sensing, Exploitation of Human Rights, Data structure, Morphological & segmentation techniques, Insilico structural annotation 2 each i.e. 0.14% and remaining 12 articles in various subjects 1 each i.e. 0.07%. This study reveals that faculties likely to publish their work in different subject disciplines.

Figure 2: Subject wise Research productivity of Journal articles

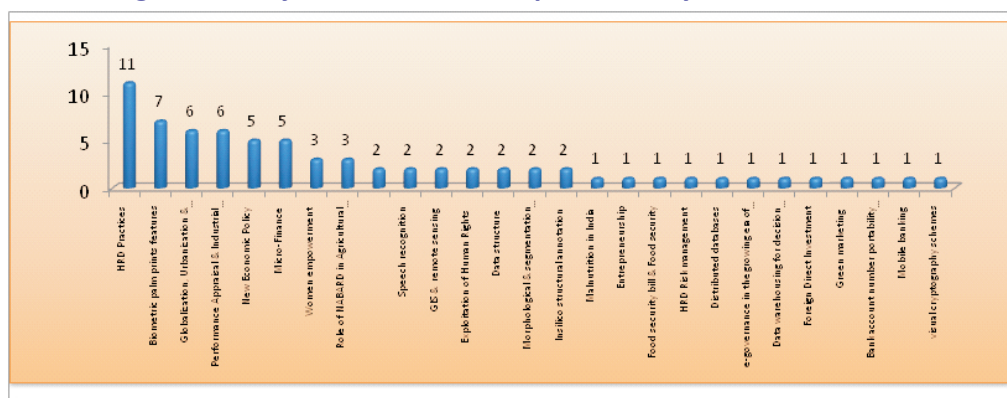


Table No. 4: Year wise Authorship Pattern of Publications

Authorship Pattern	2010	2011	2012	2013	2014	2015	Total
Single	6	5	1	11	4	9	36 (50%)
Two	0	1	4	8	5	3	21(29.16%)
Three	2	2	3	3	1	0	11 (15.27%)
More than Three	3	1	0	0	0	0	4 (5.55%)
Total	11 (15.28%)	9 (12.5%)	8 (11.11%)	22 (30.56%)	10 (13.89%)	12 (16.67%)	72 (100%)

Table No. 4 and Figure 3 shows out of 72 contributions (journal articles) there are 36 (50%) contributions by single author, 21(29.16%) contributions by two authors, 11 (15.27%) contributions by three authors and only 4 (5.55%) contributions by more than three authors. This analysis reveals that more number of authors desires to write separately thus, the trend towards multiple authorship or collaborative research compared with single authorship is likely to be similar or parallel.

Figure 3: Year wise Authorship Pattern of Publications

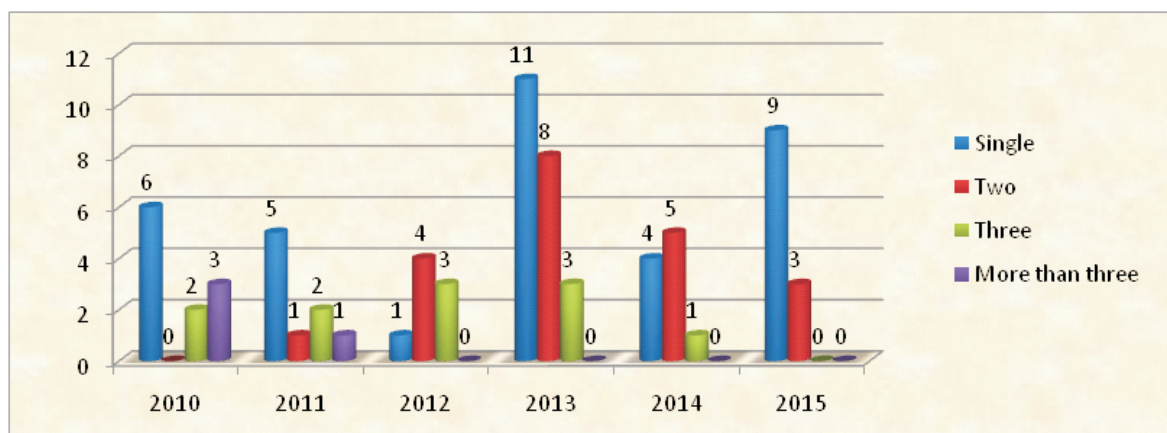


Table No. 5: Most Prolific Author having Largest No. of Publications

Rank	Name of the Author	Experience In years	Journal Articles	Book/Book chapters published	Conf. proceeding	Total
I	Dr. Saudagar A. H.	16	21	2	32	55(25.46%)
II	Dr. Mane S. V.		12	8	18	38(17.59%)
III	Dr. Humbe V. T.		13	1	12	26(12.03%)
IV	Dr. Patil H. S.		9	2	14	25(11.57%)
V	Prof. Kondekar S. S.		3	0	9	12(5.55%)
VI	Dr. Kadekar S. H.		0	0	11	11(5.09%)
VI	Prof. Warbhuwan N.C.		4	0	7	11(5.09%)
VI	Dr. Patil P. H.		4	1	6	11(5.09%)

VII	Prof. Jaybhaye A. V.		0	4	5	9(4.16%)
VIII	Prof. Agnihotri P. P.		3	0	4	7(3.24%)
IX	Prof. Shrikhande S. P.	3	3	0	1	4(1.85%)
IX	Prof. Gulwe A. B.	6	0	0	4	4 (1.85%)
X	Prof. Bionwad D. L.		0	0	3	3(1.38%)
Total			72	18	126	216 (100%)

Table No. 5 and Figure 4 shows that Dr. Saudagar A. H. is the prolific author among the faculties of Sub-centre, latur, having the largest publications i.e. 55 (25.46%) during 2010 to 2015. Dr. Mane S. V. is 2nd having 38(17.59%) publications followed by Dr. Humbe V. T. and Dr. Patil H. S. having 26 (12.03%) and 25(11.57%) publications respectively. The study depicts that faculty having Doctoral degrees and large experiences were more involved in the research activities.

Figure 4: Most Prolific Author having Largest No. of Publications

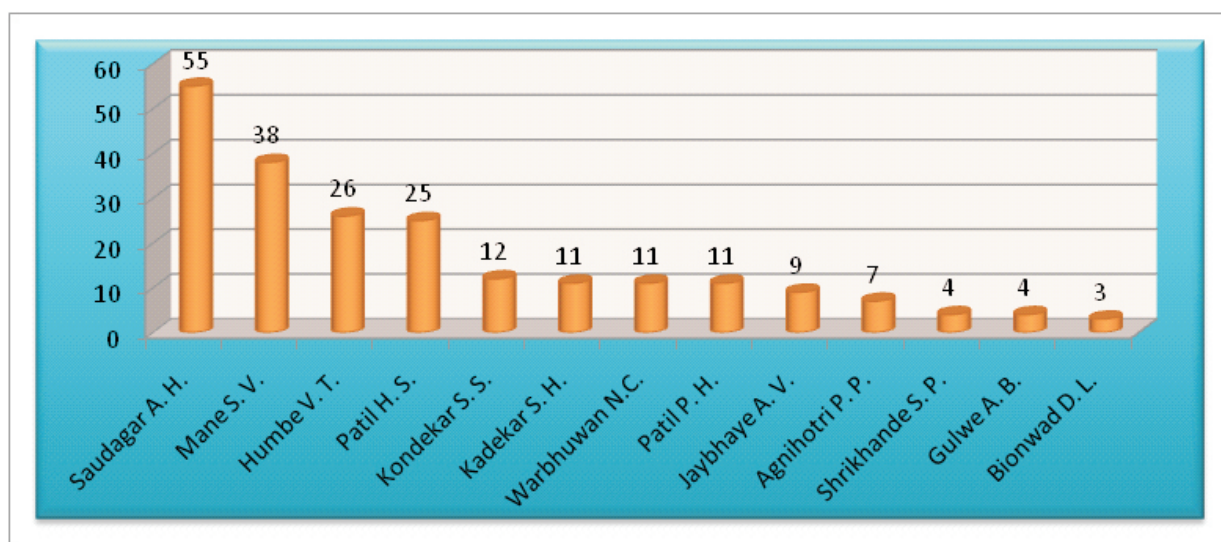


Table No. 6: Relative Growth Rate [R(P)] And Doubling Time [Dt(p)]

Year	No. of Publications	Cumulative no. of Publications	Loge 1p	Loge 2p	[R(P)]	Mean [R(P)]	[Dt(P)]	Mean [(Dt(P)]
2010	37	37	-	3.610	-	0.32	-	2.18
2011	37	74	3.610	4.304	0.694		0.998	
2012	53	127	4.304	4.844	0.54		1.283	
2013	69	196	4.844	5.278	0.434		1.596	
2014	31	227	5.278	5.424	0.146		4.746	
2015	38	265	5.424	5.579	0.155		4.470	

Table No. 6 and Figure 5 indicates The Relative Growth Rate [R(P)] and Doubling Time [Dt (P)] of publications. It can be noticed that Relative Growth Rate of publication [R (P)] decreased from the rate 0.694 in 2010 to 0.155 in 2015. The mean Relative Growth for the six years (i.e. 2010 to 2015) showed a growth rate of 0.32. The corresponding Doubling Time for different year [Dt (P)] gradually increased

from 0.998 in 2010 to 4.470 in 2015. The mean Doubling Time for the six years (i.e. 2010 to 2015) was increased i.e. 2.18. Thus as the rate of growth of publication was decreased, the corresponding Doubling Time was increased.

Figure 5: Relative Growth Rate [R(P)] And Doubling Time [Dt(p)]

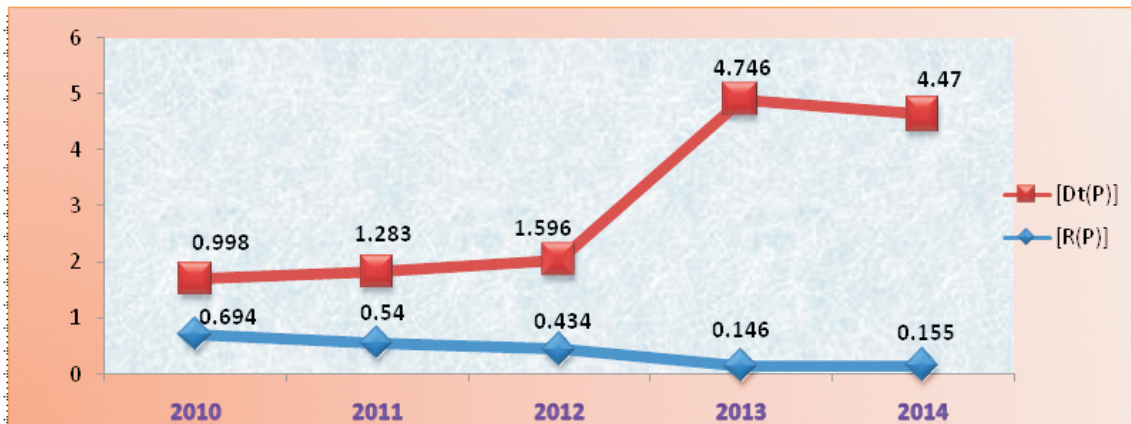


Table No. 7: Degree of collaboration

YEAR	NS = No. of Single authored papers	NM= No. of Multi authored papers	TOTAL	Degree of Collaboration C=NM/(NM+NS)
2010	6	5	11	0.45%
2011	5	4	9	0.44%
2012	1	7	8	0.87%
2013	11	11	22	0.5%
2014	4	6	10	0.6%
2015	9	3	12	0.25%
Total	36	36	72	0.5%

As per the formula given by K. Subramanyam (1983) is useful for determining the degree of collaboration in quantitative terms. The study followed the given formula to determine the DC- Degree of Collaboration of publications as follows:

$$C = \frac{NM}{(NM+NS)}$$

Where, C = Degree of Collaboration

NM= Number of Multi authored papers

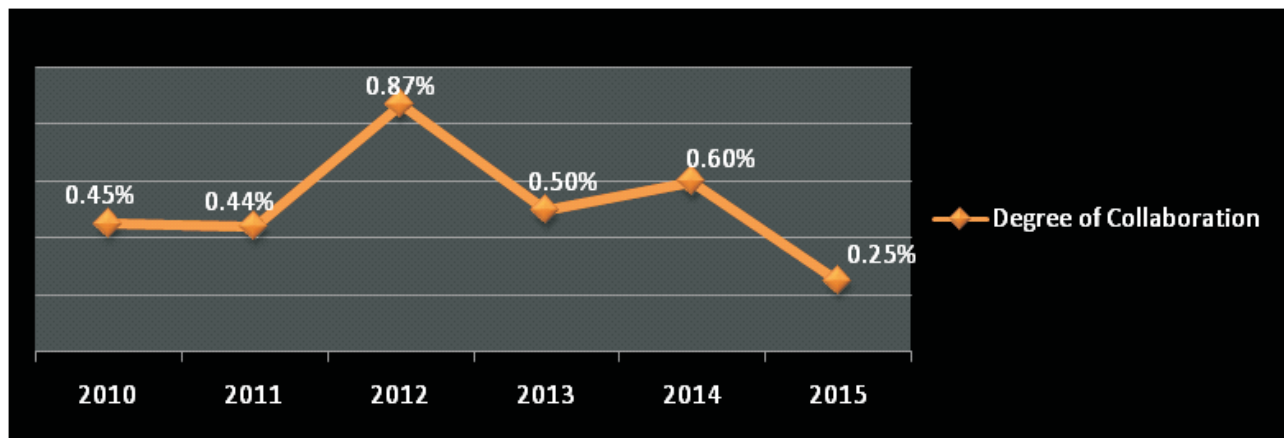
NS= Number of Single authored papers

Here,

$$C = \frac{36}{72}$$

$$C = 0.5\%$$

Figure 6: Degree of collaboration



8. FINDINGS AND CONCLUSIONS:

Present study was undertaken to study the Research productivity of the faculty members. In all there were 3 schools and 13 core faculty members in SRTMUN Sub-centre, Latur. Conference and Seminar proceedings is the most popular channel of publication preferred by the faculties with highest 126 (47.54%) followed by journal articles with 72(27.71%), workshop with 49(18.49%) and books/book chapters with 18 (6.79%). The reason behind this is as Conferences and seminars at state, national or international level gives platform to the professionals to share their ideas and update their knowledge.

- Majority of the research publications were published in the year 2013 with 69 (26.03%) followed by 2012 with 53 (20.00%) and the lowest publications in the year 2014 with 31 (11.69%) publications respectively.
- There is a paradigm shift to research productivity in Inter-disciplinary and multi-disciplinary areas results. However, the most preferred journal by faculties is Inter. Jrl. Of Multi-disciplinary Research with 4 contributions (0.168 %) in 1st position.
- Majority of contributions were on HRD Practices by management faculties with 11 (0.77%). This indicates that faculties likely to publish their work in their area of interest.
- Out of 72 contributions (journal articles) there are 36 (50%) contributions by single author,
- Dr. Saudagar A. H. is the prolific author among the faculties of Sub-centre, Latur, having the largest publications i.e. 55 (25.46%) during 2010 to 2015.
- The mean Relative Growth rate of publications for the six years from 2010 to 2015 is 0.32 and the mean Doubling Time for the same years was increased to 2.18.
- The Degree of Collaboration (C) of publications for the present study is 0.5%

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