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Mapping the Research Publications Pattern of Faculties of Library and Information Science Department, Mizoram University, Aizawl From 2008-2017: A Bibliometric Study

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Mapping the Research Publications Pattern of Faculties of Library and Information Science Department, Mizoram University, Aizawl From 2008-2017: A Bibliometric Study

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Abstract

The paper focuses on the mapping of library and information science research publication output of the faculty member of the department of library and information science (DLIS), Mizoram University (MZU) during the period of ten years i.e. (2008-2017). The detailed curriculum vitae of faculty members of DLIS were obtained and bibliographic information of their papers was recorded. The study deals with 279 publications of DLIS, MZU. The present study examines and analysis that the DLIS output by different patterns such as the form of publication, the relative growth rate of publications, doubling time for publications, annual growth rate (AGR) of the publications and compound AGR of publications during the period of study.

Keyword: Mizoram University (MZU), Bibliometrics, Annual Growth Rate (AGR), Compound Annual Growth Rate (CAGR) of total publications, Relative Growth Rate (RGR) and Doubling time (Dt.)

1. Introduction

The history of bibliometrics has been traced to Alan Pritchard. He was credited to be the first person to use the word, and gave a mathematical definition as "the application of mathematics and statistical methods to books and other media of communication". Mizoram University played a vital role in the shaping of India and they continue to contribute to the Indian Society in different aspects.

1.1. Mizoram University: Introduction

Mizoram University was established as a Central University by an Act, 2000, it enacted by Parliament in the Fifty-first Year of the Republic of India. But it started functioning from 2nd July 2001. Prior to this; the University inherited from North-Eastern Hill University (NEHU) had functioned as Mizoram Campus for 24 years since 1979. At present Mizoram University comprises with 8 schools of studies and 33 academic departments. There is a total of 208 teaching faculties as on 31st March 2018. "The objects of the University shall be to disseminate and advance knowledge by providing instructional and research facilities in such branches of learning as it may seem fit, to make provisions for integrated courses in

humanities, natural and physical sciences, social sciences, forestry and other allied disciplines in the educational programmes in the University." (http://mzu.edu.in/index.php/downloads/forms/finish/10-office-orders-notifications/10079-university-act-2000)

1.2. Department of Library and Information Science

The Department of Library & Information Science with a view to equipping the libraries with technical manpower in the State was established during the academic session 2002-2003. The Department was established on 20th August 2002 at the Central Library of Mizoram University. The Department offered one year BLIS Course in 2002 followed by one year MLIS course in 2003. In the year of 2011-12 the integrated MLIS Course was revised and implemented with effect and the same year PhD program in Library and Information Science also started. In present (2017), the department is equipped with 8 faculties (Professor- 4 and Asst. Professor- 4), 1 – Technical Assistant, 1 – LDC, and 1 – Peon. (http://www.mzu.edu.in/index.php/academics/2013-09-19-20-59-55/lib-science)

Table1: Details of Faculties
(As on 10th December, 2017)

Designation	Number Of Faculty Members
Professor	4
Assistant Professor	4

2. Literature Review

Choudhari and T.R. Borse (2015)[1] .conducted the study on the research productivity of faculty members in the School of Mathematical Sciences, NMU Jalgaon. The analysis examines that 167 research papers are contributed by 8 faculty members in the School of Mathematical Sciences. The overall publication published in the English language by the faculty members. The male faculty members published more publication than female faculty. The highest publication published by the faculty members in the year 2010. The study has test the applicability of Bradford law and Lotka's law.

Govindaradjou and John (2014)[2] studied the Quantitative Analysis of Research Trends in a leading Ecological Journal from the period of 10 years i.e. (2003-2012). During the period of study, a total number of 3359 of research papers were published from ten volumes in which 120 issues came. The study examined and analysed the different bibliometric parameters i.e. authorship pattern, growth rate pattern, author productivity, most productive countries and institutions and found that the out of 3359 contributions, 410 research papers were published by the single-author and the remaining collaborate authors with a collaboration coefficient of 0.21. The University of California at Davis was the most active Institution with 183 contributions. The maximum number 2188 of research papers were contributed by The United States of America and secured top position.

Kumar and Kaliyaperumal (2015)[3] conducted a study on Scientometric analysis of mobile technology publications from (2000-2013). The total number 10,638 of articles were

published on the Web of Science database. In the present paper focus on the growth and development of mobile technology and the average contributions were (759.86) yearly. The maximum number (1495) of research papers were contributed in the year 2013 and 9037 articles were published by joint authors while 1601 research papers were published by the single author. The maximum number 243 of articles were contributed by the USA. The S. Kim was the most prolific author with 42 (0.39%) contributions, followed by H. Kim with 36, constituting (0.34%) contributions.

Kar and Mondal (2014)[4] conducted a bibliometric study of research publications of UGC-DAE Consortium for Scientific Research, Kolkata during the period (2006-2010). The total 265 research publications were published by Centre, out of which there are 145 journal publications and the remaining 120 are published in the form of a conference, workshop, seminar, symposia. The analyses of this study include distribution of publications by year, by country, in SCI and Non-SCI journals, in journals and proceedings, in different Normalized Impact Factor (NIF) ranges, total NIF, average NIF of each division, collaborative pattern etc.

Baskaran (2013)[5] analysed the publication pattern, relative growth rate (RGR), Doubling time (Dt), and Country-wise distribution of research papers from the period (2000-2011). Web of Science (WOS) is the main source for data collection. The total 6610 records were retrieved to access the research productivity and distribution of research diversity of Cryptography. The four major countries – China, Taiwan, USE and Japan contribute more papers in cryptography and the related field of researches. The maximum RGR was 0.44 in the year 2002 and Dt is 21.656 in 2008 measured during the period of study. China was the most prolific and the most frequent partners among the collaborative papers at the global level.

Okiki (2013)[6] conducted the research productivity of teaching faculty members in Nigerian Federal Universities. The mean score of information resources availability indicates that the information resources are readily available to teaching faculty members in NFU. The barriers to research productivity by teaching faculty members in the universities included low Internet bandwidth and financial constraint besides; the study has shown the strengths and weaknesses of the teaching faculty members in NFU in terms of their research output.

Nongrang and Tariang (2013)[7] analysed the research performance of botany faculties in North Eastern Hill University (NEHU), Meghalaya during the period (2000-2010). The data used for the study were retrieved from two citation index database ISI Web of Science and Google Scholar. During the period of study a total 1218 research papers published in 263 journals were collected from WoS via Science Citation Index and the maximum number of contribution was in the year 2009-10, the highest number 61 (39.61%) of papers were published by three authors. The relationship between the zones in the present study is contradictory which does not fit into Bradford's distribution.

3. Objectives of the Study

The objectives of the study are to:

1. Find out the form of distribution of articles
2. Growth of Publications and Most Productive Authorship pattern

3. Annual Growth Rate (AGR) and Compound Annual Growth Rate (CAGR) of faculties publications
4. Identify the RGR and Doubling Time for contributions.
5. Ranked the authors on the basis of author productivity

4. Scope of the Study

The scope of the present study is limited to the publications of working faculty members of the department and excluded the faculties those who have retired/left department during the study period. The study is also confined to 10 years (2008-2017) period.

5. Methodology

The present study is a bibliometric analysis of research publications of faculties of library and Information Science Department. A survey and observation method of research was used in this study. The primary data was collected from the biodata of faculties available on university website between 10th -15th December, 2017 and also cross verified from Mizoram University annual report. The total 279 of research papers (Journal articles, Conferences Proceedings and Books /Book chapters) were published in the marked period of study. The collected data were analyzed with manually, Microsoft excel sheet and presented in the form of tables.

6. Data Analysis
6.1. Forms of Publications

Table 2 and figure 1 depict the forms of the publications of DLIS, Mizoram University (MZU) from the marked period of study. On the observation of table 2, it has been found that out of total publications, 119 Journal Articles, 93 Conferences Proceedings, and Book/Book chapters are 67 are published during the period of study. The full distribution of publication was shown in below table 2.

Table 2: Forms of Publications

Year	Journal Articles	Conferences Proceedings	Book Chapters /Books	Total
2008	1	2	1	**4**
2009	2	1	0	**3**
2010	6	7	1	**14**
2011	8	10	3	**21**
2012	4	7	16	**27**
2013	10	2	5	**17**
2014	12	13	10	**35**
2015	25	16	10	**51**

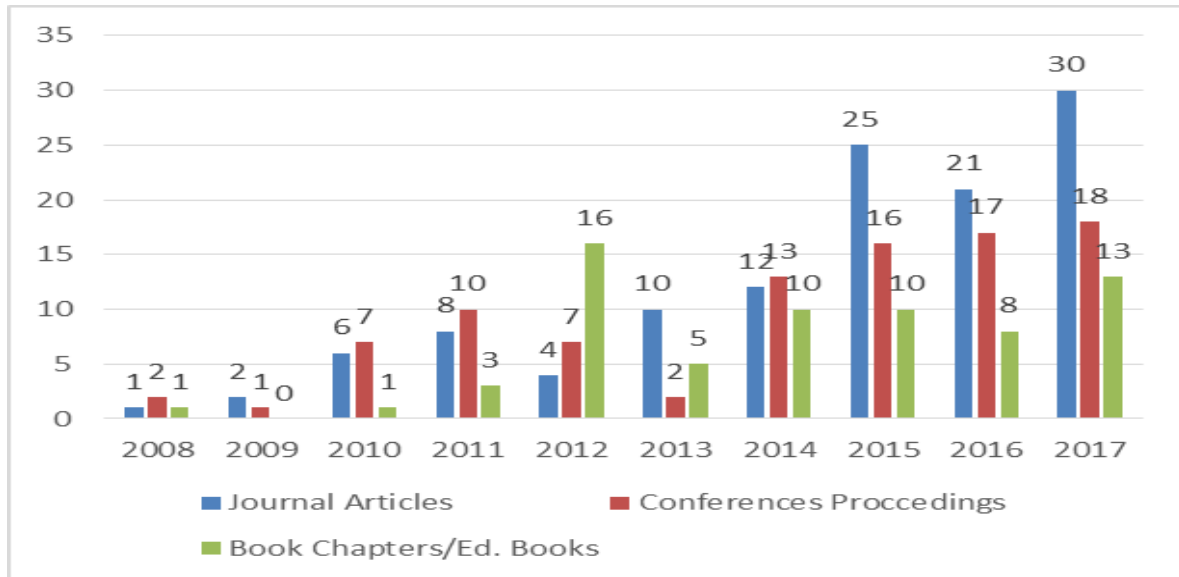|				
2016	21	17	8	**46**
2017	30	18	13	**61**
Total	**119**	**93**	**67**	**279**

Figure 1: Forms of Publications

6.2. Growth of Publications

Table 3 and figure 2 indicated that the growth of publications of research papers published by the faculty members of LIS in Mizoram University during the period (2008-2017). The year wise analysis showed that the maximum number 61 (21.86%) of research papers were published in the year 2017, followed by 51 (18.28%) contribution in the year 2015. Overall data show in the below table 3.

Table 3: Growth of Publications

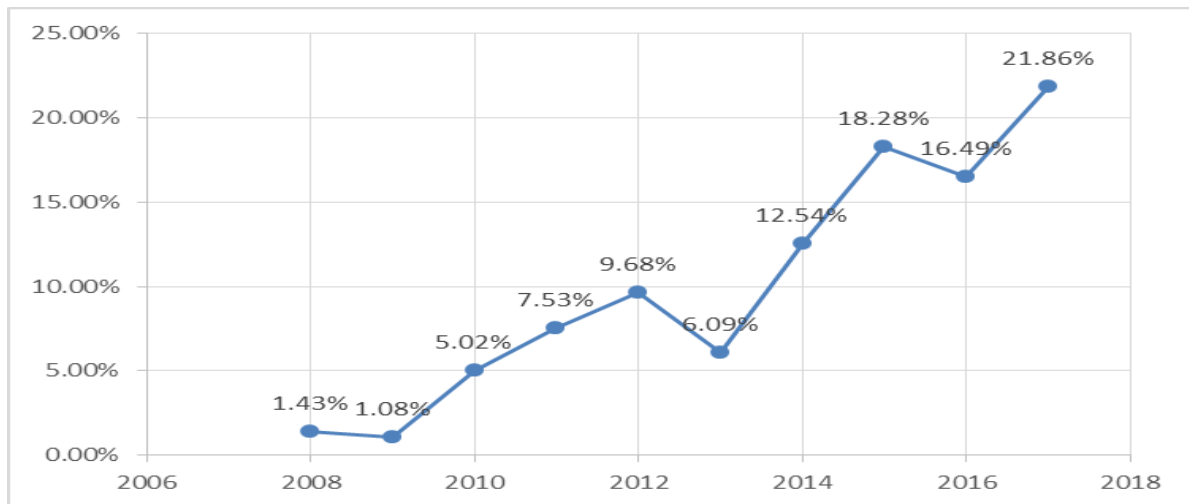| Year	Number of Publications	Percentage
2008	4	1.43
2009	3	1.08
2010	14	5.02
2011	21	7.53
2012	27	9.68
2013	17	6.09
2014	35	12.54
2015	51	18.28
2016	46	16.49
2017	61	21.86
Total	**279**	**100.00**

Figure 2: Growth of Publications

6.3. Annual Growth Rate (AGR) of the Publications

Table 4 and figure 3 shows the annual growth rate of the total research papers published by DLIS, Mizoram University from the marked period of study. It is has been observed that the fluctuation are there because there is no constant growth of publications every year during the period of study. The highest growth rate is 366.67 in the year 2010, followed by 105.88 recorded in the year 2014. The overall data of AGR of the publication was shown in table 4.

The Annual Growth Rate (AGR) is calculated on the formula given by Kumar and Kaliyaperumal, 2015[3] and mention below:

$$AGR = \frac{EndValue - FirstValue}{FirstValue} \times 100$$

Table 4: Annual Growth Rate of Publications

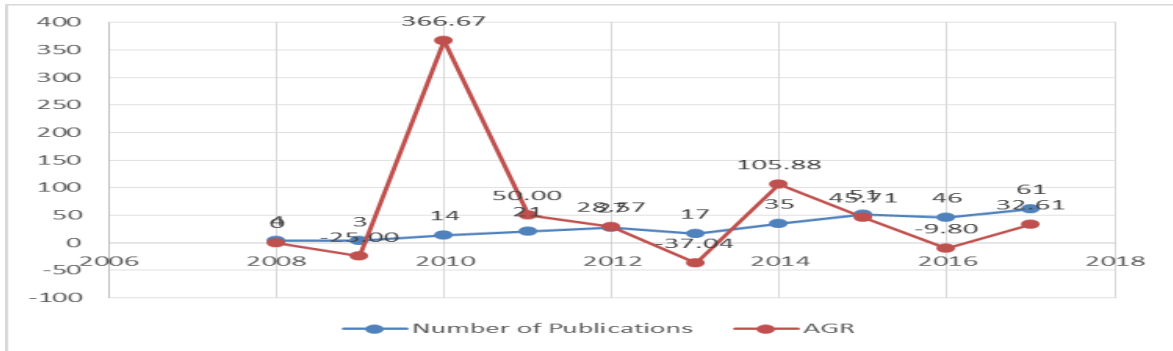| Year	Number of Publications	AGR
2008	4	0
2009	3	-25.00
2010	14	366.67
2011	21	50.00
2012	27	28.57
2013	17	-37.04
2014	35	105.88
2015	51	45.71
2016	46	-9.80
2017	61	32.61

Figure 3: Annual Growth Rate of Publications

6.4. Compound Annual Growth Rate (CAGR) of Publications

Table 5 and figure 4 reveals a compound annual growth rate of the total publications of DLIS, Mizoram University during the period of (2008-2017). The compound annual growth rate (CAGR) is calculated by taking the nth root of the total percentage growth rate, where n is the number of years in the period being considered. The yearly output is increasing year after year but the compound annual growth rate is in fluctuation trend. The compound annual growth rate was calculated by the following formula available on https://www.investopedia.com/terms /c/cagr.asp)

$$CAGR = [(EndingValue / BeginningValue)^{1/n} - 1]$$

Table 5: Compound Annual Growth Rate of Publications

Year	Number of Publications	Cumulative Frequency	CAGR (%)
2008	4	4	0
2009	3	7	-13.39
2010	14	21	67.11
2011	21	42	10.67
2012	27	69	5.15
2013	17	86	-7.42
2014	35	121	10.87
2015	51	172	4.82
2016	46	218	-1.14
2017	61	279	2.86

Figure 4: Compound Annual Growth Rate of Publications

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6.5. Relative Growth Rate and Doubling Time of Publications of Mizoram University

Table 6 and figure 5 shows that the relative growth rate and doubling time of publications contributed by the faculty members of DLIS, Mizoram University. The growth rate of overall publications has been measured on the basis of relative growth rate (RGR) and doubling time (Dt) model, which is developed by Mahapatra, 1985[8]. The growth of DLIS, Mizoram is identified by RGR and Dt is calculated to analyse the increase in the number of contribution on time and the Dt is directly related to RGR. The RGR of DLIS, Mizoram University research output is maximum recorded in 2010 i.e. 1.099.

The mathematical representation of the mean relative growth rate of articles over a specific period is derived from the following formula:

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

Where,
        RGR = Growth Rate over the specific period of the interval,
        W1 = Log_e (natural log of the initial number of contributions)
        W2 = Log_e (natural log of the final number of contributions)
        T1 = the unit of initial time
        T2 = the unit of final time

Doubling Time

Form the calculation, it is identifying that there is a direct equivalence existing between the Relative Growth Rate and doubling time. If the number of contributions of a subject double during a given period, then the difference between the logarithm of the numbers at the beginning and at the end of the period must be the logarithms of the number 2. If one uses a natural logarithm, this difference has a value of 0.693 (Beaie and Acol, 2009)[9]. The maximum RGR was recorded in the year 2010 which was 1.099 and the highest 3.150 doubling time recorded in the year 2013.
The formula of corresponding Dt for contributions and pages measurement.

$$Doubling\,Time(Dt) = \frac{0.693}{R}$$

Table 6: Relative Growth Rate and Doubling Time of Publication

Year	Number of Publications	Cumulative Sum	W1	W2	RGR	Dt
2008	4	4	0	1.386	0	0.000
2009	3	7	1.386	1.946	0.56	1.238
2010	14	21	1.946	3.045	1.099	0.631
2011	21	42	3.045	3.738	0.693	1.000
2012	27	69	3.738	4.234	0.496	1.397

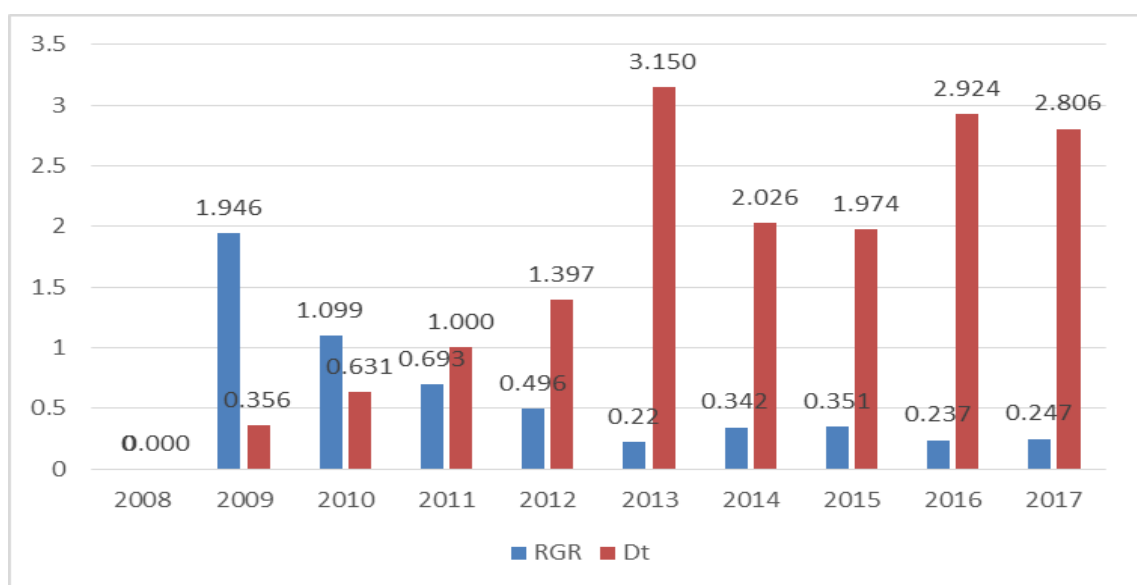| 2013	17	86	4.234	4.454	0.22	3.150
2014	35	121	4.454	4.796	0.342	2.026
2015	51	172	4.796	5.147	0.351	1.974
2016	46	218	5.147	5.384	0.237	2.924
2017	61	279	5.384	5.631	0.247	2.806

Figure 5: Relative Growth Rate and Doubling Time of Publication

6.6. Most Prolific Authorship Pattern

Table 7 shows that the most prolific author in the department of library and information science of Mizoram University during the period (2008-2017). On the observation of the table 7, it has been clearly shown that the Dr Manoj Kumar Verma is most productive author and got the first rank with 90 (32.26%) of publications, followed by Dr Akhandanand Shukla with 57, constituting (20.43%) of publications and secured the second rank, third rank occupied by Prof. R.N. Mishra with 40 (14.33%) publications. Dr Amit Kumar secure fourth place with 25 (8.96%) contributions, Prof. Pravakar Rath got the fifth rank with 24 (8.60%) publications, Prof. R. K. Ngutinkhuma and Prof. S. N. Singh secured sixth and seventh places with 21 (7.53) and 15 (5.38) of publication respectively and Dr Lalngaizuali occupied 8th place with 7, constituting (2.51%) of publications.

Table 7: Most Productive Authors

Authors Name	Total Contributions & (%)	Rank
Dr Manoj Kumar Verma	96 (34.41)	1
Dr Akhandanand Shukla	51 (18.28)	2
Prof. R. N. Mishra	40 (14.33)	3

Dr Amit Kumar	25 (8.96)	4
Prof. Pravakar Rath	24 (8.60)	5
Prof. R. K. Ngutinkhuma	21 (7.53)	6
Prof. S.N. Singh	15 (5.38)	7
Dr Lalngaizuali	7 (2.51)	8
Total	**279 (100)**	

7. Conclusion

The present study aims to analyse the publications trend of the faculty members of the DLIS, Mizoram University from the marked period (2008-2017) on the basis of bibliometric parameters. The total number 279 of contribution by the faculty members of DLIS, MZU during the period of study and published research papers were examined and analysed that the out of 279 publications, the highest 61 of research papers were published in the year 2017. The Growth of publication was increased every year and in the annual growth rate fluctuated because there is no constant growth of publications in every year, the yearly output is increasing year after year but the compound annual growth rate is in fluctuation trend. The RGR of DLIS, Mizoram University research output is maximum recorded in 2010 i.e. 1.099.

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