



Authorship Productivity and Collaboration Pattern in MIS Quarterly Journal during 2013-2017: a Bibliometric analysis

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The article highlights the significance of different bibliometric parameters in the Journal of MIS Quarterly from (2013-2017) in which total 260 of publications were published from the marked period of study in the particular journal. The article examines the authorship pattern, distribution of articles, authors productivity, the degree of collaboration and Lotka's law of scientific productivity and found that the highest 111 contributions by three authors, followed by two authors with 73 contributions. Out of total 260 articles, 60 (23.08%) research papers were published in the year 2017. The publication average each author and average degree of collaboration was 0.34 and 0.95 respectively. During the period of study the Lotka's law of scientific productivity found that the numbers of authors observed are somehow different with the numbers of authors expected.

Keywords: MIS Quarterly, Bibliometric, Lotka's Law of Scientific Productivity, Author Productivity, Degree of Collaboration, Annual Growth Rate of Publication

1. Introduction

The term bibliometrics was first coined by Alan Pritchard in the year 1969 and he defined bibliometrics as "the application of mathematical and statistical methods to book and other media of communication."

Bonitz (1982) defined it as "Bibliometrics is a methodological sub-discipline of library science, including the complex of mathematical and statistical methods, used for analysis of scientific and non-scientific documents, library networks, indexing languages, information systems, communication systems, etc."

1.1. The Journal of MIS Quarterly

The MIS Quarterly is a peer-reviewed scholarly journal published in the months of (March, June, September, and December) and the journal published by the Management Information Systems Research



Center, Carlson School of Management, University of Minnesota. The objectives of the MIS Quarterly are the upgrade and correspondence of information concerning its improvement based services, the management of IT resources, and the utilization, effect, and financial matters of IT with managerial, institutional, and societal implications. The ISI impact factor of this journal for 2016: 7.268

2. Literature Review

Snaith (2013) conducted a study on An Evaluation of Author Productivity in International Radiography Journals during the period of (2004-2011) in which total 835 articles were published in the particular journal. The study was examined and found that the 1306 unique authors published 835 articles in the particular journal from the marked period of study. Out of the total, 1012 constituting 77.5% of publications only single article in the journals studied, with an inverse power relationship of author productivity

Barik and Jena (2014) conducted A Bibliometric study and analysis of the growth of LIS research articles in India seen through Scopus during the period of (2013-2017) in which total 385 articles were indexed by Scopus database from the marked period in the particular journal. The study examined various bibliometric pattern such as the growth of LIS research articles in India, authorship pattern, authors' productivity, Lotka's law of scientific productivity and found that In India range was from 7-80 articles with a yearly average growth of (16.49%). The maximum with 169, constituting 43.89% of publications have been contributed by joint author's collaboration. The average author per articles was 1.96 and productivity per author as (0.5).

Singh and Bebi (2014) investigated a bibliometric analysis on Library Herald from the marked period which was (2003-2012). A total number of 234 articles were published during the marked period of study in the journal. The study examines the different bibliometrics parameters i.e. authorship wise distribution pattern, geographical pattern, most prolific authors pattern, and length of articles pattern and found that the highest numbers of 11, constituting 48.72% articles were published by the single author, followed by joint authors with 90 (38.5%) research papers. The major portion (81.6%) of the publication originated in India.

Naheem and Shibu (2015) analysed a bibliometric study on Authorship Patterns and Collaborative Research in the Journal of Knowledge and Communication Management (JKCM) from the marked period (2011-2014), analysed and found that the maximum research papers 14 (30.43%) published in the year 2014, the highest number of publications from single authors 22, constituting 47.83%, and the second highest publication published by two authors 19, constituting 41.30%, the average 0.52 degree of author collaboration recorded in the JKCM.



Sa and Barik (2016) revealed in their study of contributions of Indian authors to Library Philosophy and Practice (e-Journal) during the period (2001-2015) and analysed that the different bibliometrics pattern i.e. publications of papers, geographical distributions, most active authors, documents distribution of papers, most productive institutions and found that the the highest number of articles contributed by Saudi Arabia with 2 papers, followed by Antigua and Barbuda with 1 paper. Tamilnadu is the most productive state and India is most contributing country. 94.5% of document was in article type contribution. Annamalai University, Tamil Nadu was the productive library and information science institution in India with 8.5% out of whole articles

Mondal, Kanamadi and Das (2017) studied a Scientometrics analysis on Contribution by Indian Authors in Foreign Origin Library and Information Science Journal from the marked period of (2006-2015) in which Indian authors published a total 234 articles during the period of study. The study examined the trend according to year, authorship pattern, research publication productivity, and most active authors etc. and found that in the year 2010 maximum 45 research papers were published in the particular journal. The highest 97 constituting 41.45% of research papers were contributed by joint authors, followed by a single author with 79 (33.76%) publications. B. M. Gupta was a most active author with 9 contributions from the marked period of study, followed by Preeti Mahajan with 7 publications.

Shukla and Verma (2018) investigated a bibliometric analysis on the Journal of Library Herald during the period of ten years i.e. (2008-2017). Library Herald has a quarterly published, peer-reviewed online journal. 222 research papers were published in the particular journal during the period of study. The study was analysed and observed that the highest 97 (43.68%) of research papers were published by the single author, followed by joint authors with 87 constituting 39.18% articles contributions. Dr K P Singh is the most active contributor with a large number 11 of research papers contributions and got the first rank, followed by B K Sen with 6 (17.14%) publications and secured second position during the period of study.

3. Objectives

1. To find out the Distribution of Articles in MIS Quarterly journal during 2013-2017
2. To examine the Authorship Pattern of Journal
3. To analyse the Annual Growth Rate of Publication during 2013-2017
4. To find out the Authors Productivity and Degree of Collaborations.
5. To analyse the Lotka's Law of Scientific Productivity in MIS Journal



4. Scope

The journal of MIS Quarterly is one of the famous journals in the field of management’s science, ICT etc. The scope of the analysis is limited to the publication trends of an online journal MIS Quarterly. The scope is further limited to five years i.e. (2013-2017). During the period of study a total of 260 research papers published in the particular journal.

5. Methodology

The study is based on the abstracts published in the Journal of MIS Quarterly during the period of (2013-2017). The data was collected from the website of IMS Quarterly (<https://misq.org/archive/>). A total of 260 research papers were published in a particular journal during the period of study and data was coded in MS-Excel sheet for observing and analysis and statistical inferences.

6. Data Analysis

6.1 Volume Wise Distribution of Articles

Table 1 and Figure 1 depicts the distribution of articles (Volume wise) in the MIS Quarterly during the period of (2013-2017). It is clearly shown that the highest average article per issue is 15 in the year 2017 in (Vol. 41), followed by 14 average article per issue in the year 2013 in (Vol. 37) and the lowest average article per issue 10.5 in the year 2015 in (Vol. 39).

Table 1
Volume wise Distribution of Articles

Distribution of Articles Issue wise								
Year	Vol. No.	Issues	Issue No. 1	Issue No. 2	Issue No. 3	Issue No. 4	Total Publications & (%)	Average Articles per Issue
2013	37	4	14	14	13	15	56 (21.54)	14
2014	38	4	14	13	13	13	53 (20.38)	13.25
2015	39	4	11	10	11	10	42 (16.15)	10.5
2016	40	4	11	14	13	11	49 (18.85)	12.25
2017	41	4	16	14	15	15	60 (23.08)	15
Total		20	66	65	65	64	260	

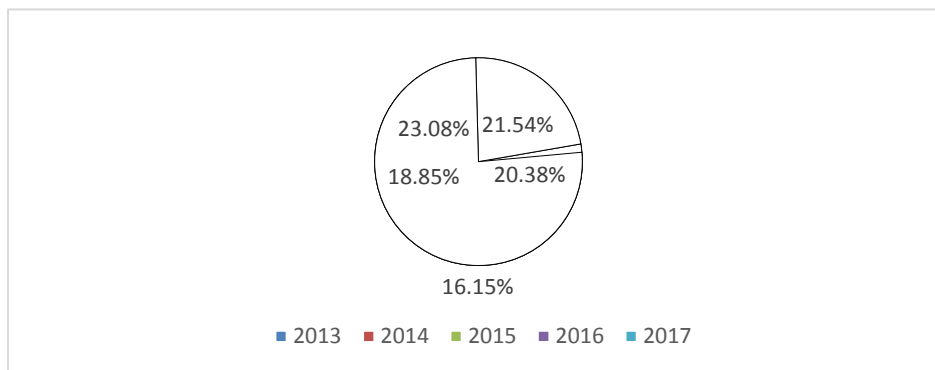


Figure 1: Distribution of Articles

6.2 Annual Growth Rate of Publication

Table 2 and Figure 2 clearly shows that the annual growth rate of publication in the particular journal during the period of study (2013-2017). A total of 260 research papers were published in the journal with an annual growth rate of 2.96 %. In the years of 2014 and 2015 growth rate were negative but in the year of 2016 and 2017 growth rate was positive. The highest growth rate was recorded in the year 2017 which is 30%, followed by 16.67% in the year 2016. The formula applied to measure the Annual Growth Rate (AGR) is -

$$r = \frac{P_1 - P_0}{P_0} \times 100$$

Where, r = Publication Growth in Percentage

P0 = Number of Publication in the Base Year

P1 = Number of Publication in Present Year

Table 2
Annual Growth Rate of Publication

Year	Publications	Growth Rate	Average Growth Rate percent (%)
2013	56	0	0
2014	53	-3	-5.66
2015	42	-11	-26.19
2016	49	7	16.67
2017	60	11	30
Total	260	4	Average=2.96

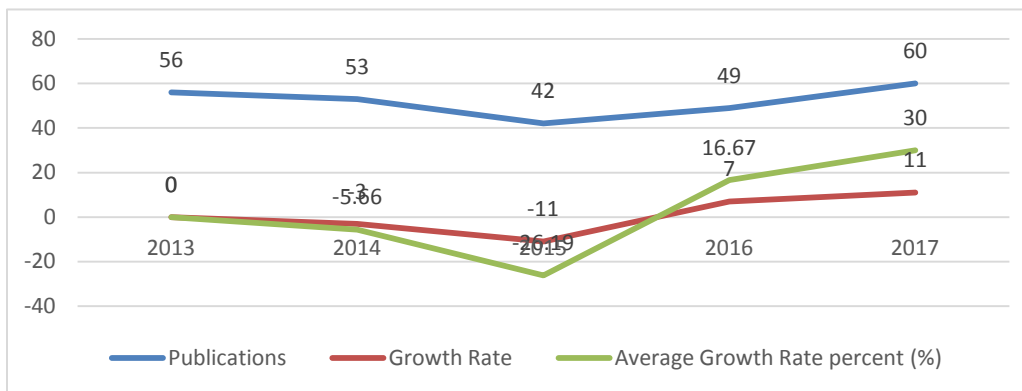


Figure 2: Annual Growth Rate of Publication

6.3 Volume Wise Authorship Pattern of Articles

Table 2 and Figure 3 illustrate the authorship pattern of articles (Volume wise) in the journal from the marked period (2013-2017). Out of a total 260 articles, 111 publications were published by three authors, followed by joint authors with 73 publications. The lowest 1 articles contributed by seven authors.

Table 3
Volume wise Authorship Pattern of Articles

Year	Vol. No.	Single Author	Two Authors	Three Authors	Four Authors	Five Authors	Six Authors	Seven Authors	Total
2013	37	6	21	19	7	2	0	1	56
2014	38	1	18	25	7	0	2	0	53
2015	39	3	13	19	6	1	0	0	42
2016	40	2	12	23	11	1	0	0	49
2017	41	2	9	25	19	5	0	0	60
Total		14	73	111	50	9	2	1	260

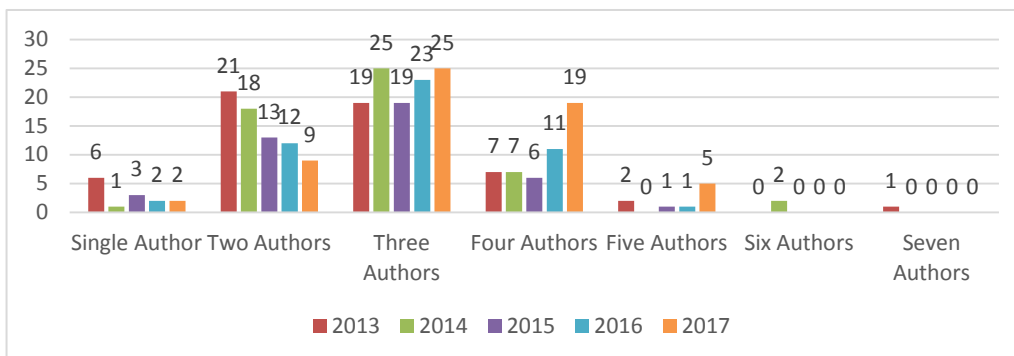


Figure 3: Authorship Pattern of Articles



6.4 Issue Wise Article Distribution & Pattern of Authors

Table 4 presents the article distribution and pattern of authors (Issue wise) during the period of (2013-2017) in the particular journal. Out of total 260 articles, 66 research papers were published in issue no 1, followed by issue no. 2 and 3 respectively 65 publications each and 64 articles were published in issue no. 4.

Table 4
Issue wise Article Distribution Pattern of Authors

Sl. No.	Author Type	Distribution Issue wise				Total Articles & (%)	Cumulative Articles & (%)
		Issue No. 1	Issue No. 2	Issue No. 3	Issue No. 4		
1	Single	2	3	4	5	14 (5.38)	14 (1.06)
2	Two	22	18	18	15	73 (28.08)	87 (6.58)
3	Three	28	30	26	27	111 (42.69)	198 (14.97)
4	Four	13	10	16	11	50 (19.23)	248 (18.75)
5	Five	1	3	1	4	9 (3.46)	257 (19.43)
6	Six	0	1	0	1	2 (0.77)	259 (19.58)
7	Seven	0	0	0	1	1 (0.38)	260 (19.65)
Total		66	65	65	64	260 (100)	1323 (100)

6.5 Author Productivity

Table 4 and Figure4 illustrate the author productivity of published articles in MIS Quarterly Journals. Total 260 publications were contributed by 756 authors during the period of (2013-2017) and the average publication per author is (0.34). The maximum average publication per author recorded in the years 2013 and 2015 are (0.37) each and the lowest (0.31) average publication per author recorded in the year 2017.

Table 5
Author Productivity

Year of Publication	Number of Publication	Number of Authors	Average Publication Per Author
2013	56	150	0.37
2014	53	152	0.35
2015	42	115	0.37



2016	49	144	0.34
2017	60	195	0.31
Total	260	756	0.34

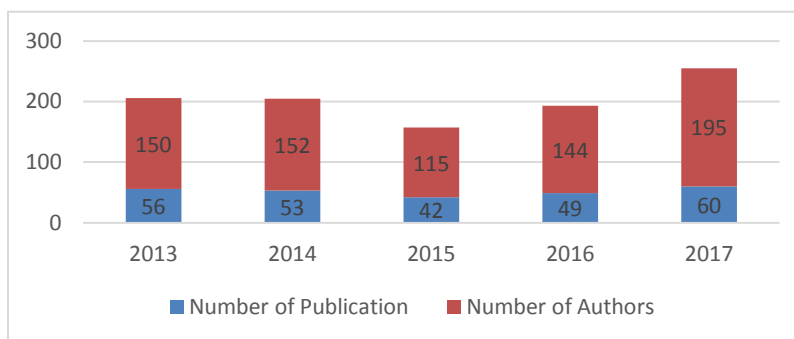


Figure 4: Author Productivity

6.6 Degree of Collaboration

Table 5 and Figure 5 reveal the degree of collaboration in the Journal of MIS Quarterly during the period of (2013-2017). It is observed that out of total 260 contributions, 14 publications were contributed by a single author and 246 multiple authored publications. The highest (0.98) degree of collaboration in the year of 2014, followed by (0.97) degree of collaboration in the year 2017.

$$DC = \frac{Nm}{Nm + Ns}$$

Where,

DC = Degree of Collaboration,

Nm = Multiple Authored Publications

Ns = Single Authored Publications

Table 6

Degree of Collaboration

Sl. No.	Year	Single Authored Publications (Ns)	Multiple Authored Publications (Nm)	Nm+Ns	Degree of Collaboration DC=Nm/(Nm+Ns)
1	2013	6	50	56	0.89
2	2014	1	52	53	0.98
3	2015	3	39	42	0.93
4	2016	2	47	49	0.96
5	2017	2	58	60	0.97
Total		14	246	260	0.95

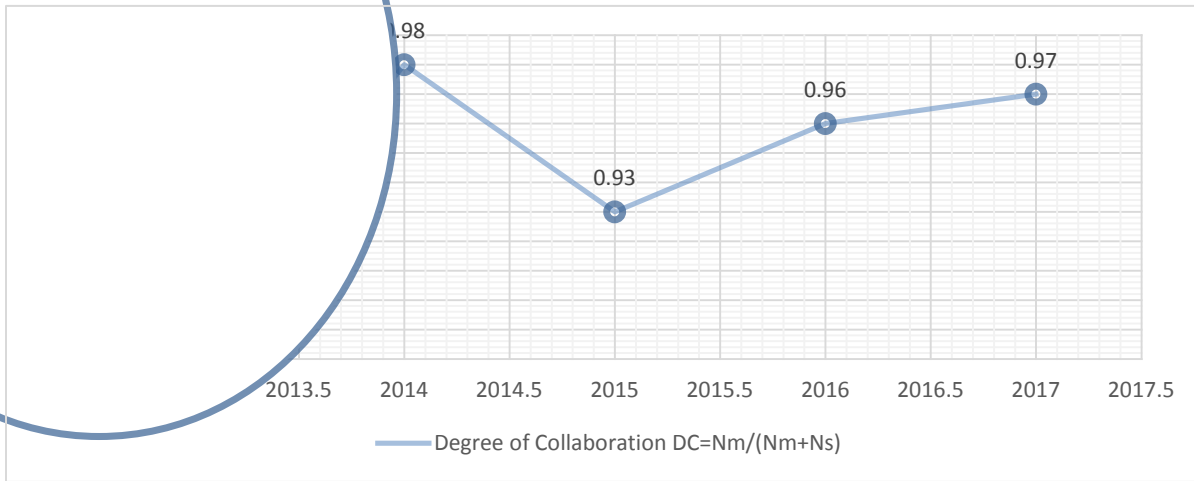


Figure 5: Degree of Collaboration

6.7 Lotka's Law of Scientific Productivity

Table 6 and Figure 6 clearly show that the Lotka's law of scientific productivity of published articles in the Journal of MIS Quarterly from the marked period (2013-2017). One article contributed by 14 authors constituting 5.38% and the same authors expected. Two articles published by 73 (28.08%) authors and expected 3 constituting 13.64% authors. The complete distribution of this pattern is depicted in a below-mentioned Table 7.

$$Y = \frac{C}{X^n}$$

Where,

X = Number of Publications

Y = Relative Frequency of Authors with X publications

C = Constants depending on the specified field

Putting the value in above equation,

X = 1, Y = 14 then,

We get, $14 = C / 1^n$

$$C = 14 \times 1^n$$

$$C = 14$$

Again putting the value of

X = 2, Y = 73, and

$$C = 14$$

$$73 = 14 \times 2^n$$

$$2^n = 14 / 73, \quad = 0.192$$

Taking Log on both sides,

$$n \log 2 = \log 0.192$$

$$n = 2.4$$

Table 7

Lotka's Law of Scientific Productivity

No. of Articles (x)	No. of Authors Observed (y)	Percentage (%) Observed	No. of Authors Expected (n= 2.4)	Percentage (%) (Expected)
1	14	5.38	14	5.38
2	73	28.08	3	13.64
3	111	42.69	1	4.55
4	50	19.23	1	4.55
5	9	3.46	1	4.55
6	2	0.77	1	4.55
7	1	0.38	1	4.55
(More than) 8	0	0	1	4.55

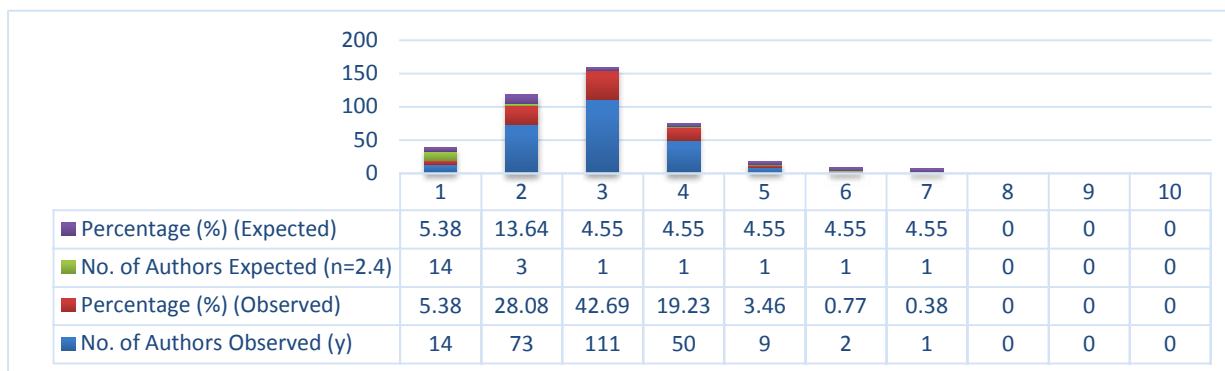


Figure 6: Lotka's Law of Scientific Productivity

7. Findings and Conclusion

Mapping of publication trend shows the analysis of the publication pattern; bibliometrics is one of the quantitative techniques used by library and information professionals to evaluate written communication. The MIS Quarterly is a peer-reviewed online journal published by MIS Research Center, Carlson School of Management, University of Minnesota. A total of 260 research papers were published during the period of study which is five years (2013-2017) and the maximum of 111 research papers was contributed by three authors, followed by joint authors with 73 contributions. The average publication per author productivity is 0.34 and the degree of collaborations is 0.95. The Lotka's law of scientific productivity has been applied to find out the observed and expected numbers of authors which are clearly shown in



table 5, and it is found that the numbers of authors observed are somehow different with the numbers of authors expected.

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