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Mapping of research papers in Malaysian journal of library and information science 2010-2019: A Bibliometric study

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Abstract

This current research aims to represent bibliometric mapping of research papers in Malaysia Journal of Library and Information Science between the time 2010 to 2019. Under this investigation, to determine articles published in a year, degree of collaboration (DC), Authorship Pattern and number of citations per article and Co-Authorship Network. A total number of 214 papers were evaluated and analyzed in thirty issues of ten volumes of this journal. Current study declares that maximum references 945(12.39%) are stated in 2019; papers of two authors is quite high at 80(37.38%); average productivity of per author is 0.39 and Malaysia is on the 1st rank with 30.48% of contributions.

Keywords: Bibliometric Mapping; Bibliometric Analysis; Author productivity; Degree of collaboration; Co- Authorship.

Introduction

The mixture of Two words ‘*Biblio*’ and ‘*Metrics*’ together form the word ‘bibliometrics’. Here Biblio means books & Metrics means measurement. In 1969 Pritchard (Pritchard 1969) considered bibliometrics as an application relation with mathematical and statistical methods of books & other form of communication (Rani 2014).

Bibliometrics is a analytical study of bibliographical data which helps the scholar’s to quantify the process of written communication for analyses and measurement of scattered literature output of a particular (Niruba 2015) subject based on the author pattern, language, geographical area, document type and distribution of institution wise.

Bibliometric studies are found mainly on different metadata components like author, title, subject, citations etc. (Mani 2014).

The bibliometric method explores the relationship between research collaboration and variables pertaining to the research problem. (Subramanyam 1983).

Journals are predominant resources of communication for research and development activities. They are primary source to explore the productivity and citation styles as well (Singh 2015). Journals bring the current growth of knowledge in researchers notice. (Bansal 2013).

Literature Review

A broad of studies is available on Bibliometric analysis. Yet, the study concerning the current viewpoint have considered over here. A few of them discussed below.

(Bapte & Gedam 2019) conducted bibliometric study of SRELS Journal of Information Management for the period 2010 to 2018 and analyzed that maximum number of research papers have been composed by two authors that specified the emerging trend towards the collaborative authorship. Karnataka state of India was highly productive. Average Modified Collaboration Coefficient for the authorship pattern was 0.36 while average Degree of Collaboration 0.65 was notice.

(Verma & Shukla 2018) discussed on bibliometric analysis of Library Herald journal during the period 2008 to 2017 and reported that most no. of papers has published in 2016. The average publication per authors is 0.58 from 222 papers with 377 authors; total degree of collaboration is 0.56 and highest no. of articles published by single author which was 43.68%.

(Khanna 2018) conducted a study on Journal of Academic Librarianship during 2007 to 2016 and concluded that maximum papers have been published by single author and 64.63% papers published between 6-10 pages. The Degree of Collaboration (DC) is between 0.41 and 6.69. In the form of country productivity ranking, USA on the top level.

(Ali, Mahadevamurty & Jagdeesha 2015) analyzed 1835 papers contributed to Journal of Academic Librarianship of the study during 1999-2014. In their study evaluation parameters included author's country, institution, journal's, growth rate, document types and language. The Degree of Collaboration was 0.27 and most of the articles published in 1999.

(Rattan & Gupta 2012) analyzed Malaysian Journal of Library and Information Science for the period of 2007 to 2011 and conclude that most prolific author contributed 13 research papers; 45% of the researchers were geographical associate with Malaysia & the publication of multiple authors is highest i.e. 73%.

Objectives

Following are the major objectives of the study.

- To investigation the papers published in study period.
- To show the volume and year-wise authorship patterns of articles.
- To point out Author Productivity.
- To recognize degree of collaboration.
- To find out the reference distribution and a number of references per article.

Methodology

Malaysian Journal of Library and Information Science journal selected for the current study during the period 2010 to 2019. Total 214 articles contributed to thirty issues of ten volumes (Volume 15-24) have taken for current research. Journal website has been used for gathering data for the study and data were entered into Microsoft Excel sheet which recognized variables like authorship pattern, year-wise distribution of articles, and degree of collaboration, author productivity, number of articles and references and geographical contribution of researchers etc. All essential information has arranged, organized, tabulated and assimilated in a logical sequence for analytical purpose.

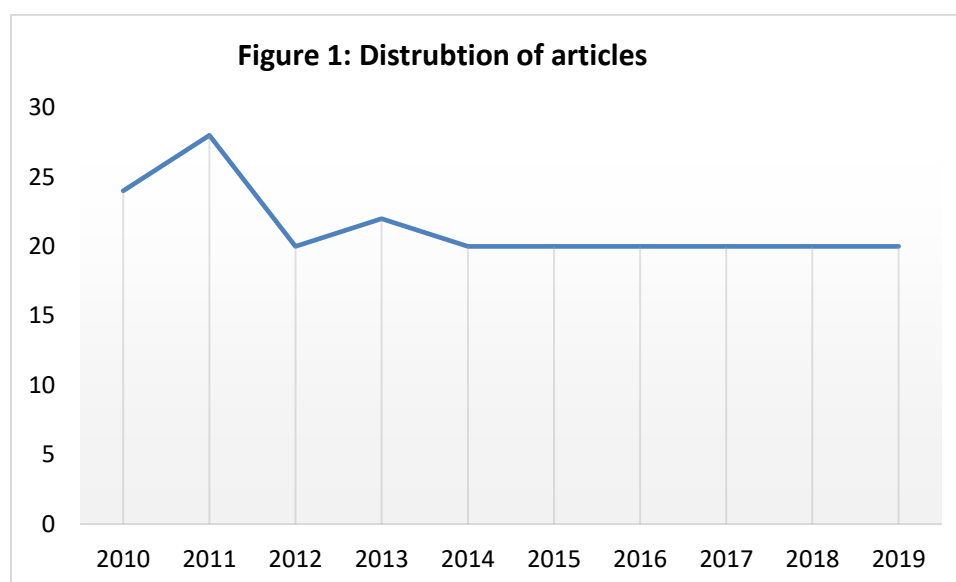
Analysis and Discussion

Distribution of Articles

Table 1: Distribution of Articles

Year	Total no. of articles	Cumulative no. of articles	% of articles
2010	24	24	11.21
2011	28	52	13.08
2012	20	72	9.34

2013	22	94	10.28
2014	20	114	9.34
2015	20	134	9.34
2016	20	154	9.34
2017	20	174	9.34
2018	20	194	9.34
2019	20	214	9.34



Year-wise distribution of articles in Malaysian journal of library and information science represent in table and figure 1. It clearly shows that 214 articles published during the research of ten years (2010-2019) and it's observed that maximum number of articles published in 2011 with 28 papers i.e.13.08% and per year range of published articles between 20 to 28. It also analyzed that 20 articles published in each year except the year of 2010, 2011 and 2013.

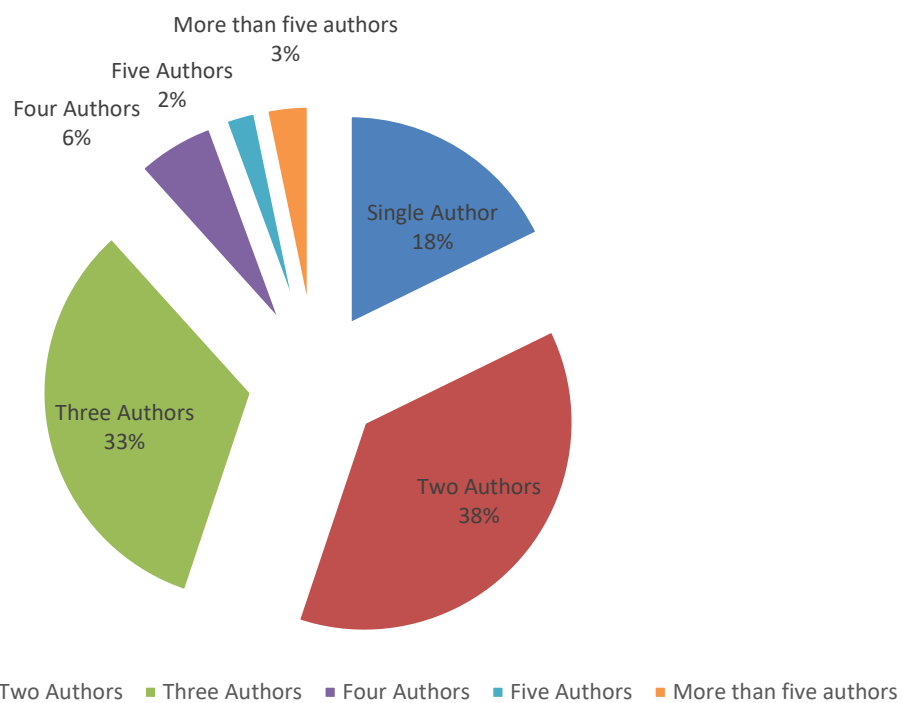
Authorship Pattern

Earlier authors commonly publish articles independently but now maximum research work being carry out in partnership and one or more number of authors together publish their article (Garg & Anjana 2014).

Table 2: Authorship Pattern

Year	Single author	Two authors	Three authors	Four authors	Five authors	More than five authors	No. of publication
2010	4	13	7	0	0	0	24
2011	3	15	7	1	1	1	28
2012	6	3	9	0	0	2	20
2013	3	9	7	1	1	1	22
2014	4	8	7	1	0	0	20
2015	2	8	8	0	1	1	20
2016	5	6	9	0	0	0	20
2017	1	9	6	2	1	1	20
2018	5	3	6	6	0	0	20
2019	5	6	5	2	1	1	20
Total	38	80	71	13	5	7	214
Percentage	17.75	37.38	33.17	6.07	2.33	3.27	100

Figure 2: Authorship Pattern



Authorship pattern examined in table and figure 2 of articles and it clearly demonstrated that total no. of publications i.e. 214, in which 38 (17.75%) single author publications, 80 (37.38%) two authors, 71 (33.17%) three authors, 13 (6.07%) four authors, 5 (2.33%) five authors and more than five authors publications are 7 (3.27%). In year 2011 maximum number of authors published their articles. Single author contributions are 17.75%, whereas 82.24% are multiple authors' contributions. It observed that article publication trend was towards the multiple authors' approach.

Author Productivity of MJLIS

Table 3: Author Productivity of MJLIS

Year	Volume	No. of Authors	No. of publication	AAPP	APA
2010	15	51	24	2.15	0.47
2011	16	70	28	2.5	0.4
2012	17	56	20	2.8	0.35
2013	18	58	22	2.63	0.37
2014	19	45	20	2.25	0.44
2015	20	53	20	2.65	0.37
2016	21	44	20	2.2	0.45
2017	22	56	20	2.8	0.35
2018	23	53	20	2.65	0.37
2019	24	52	20	2.6	0.38
Total		538	214	2.51	0.39

Table 4 reveals the data of author productivity. The table presents that the overall average of authors per paper is 2.51 for 214 articles. The average productivity per author is 0.39 during the year 2010-2019. Productivity calculated with the below formula.

Productivity per author = Number of articles / Number of Authors

Average authors per-paper = Number of Authors / Number of articles

Degree of Collaboration

Table-4: Degree of Collaboration

Year	Single Authored Publications (Ns)	Multiple Authored Publications (Nm)	Ns+Nm	Degree of Collaboration DC=Nm/(Nm+Ns)
2010	4	20	24	0.83
2011	3	25	28	0.89
2012	6	14	20	0.7
2013	3	19	22	0.86
2014	4	16	20	0.8
2015	2	18	20	0.9
2016	5	15	20	0.75
2017	1	19	20	0.95
2018	5	15	20	0.75
2019	5	15	20	0.75
Total	38	176	214	0.82

Degree of Collaboration

Table 4 and figure 3 express the degree of collaboration of the articles which represent the trend of author patterns in a publication either a single author or multiple authorship. Table shows that overall degree of collaboration was 0.82 in which 38 publication are from single author and 176 publications are from multiple author and 0.95 highest degree of collaboration was in 2017.

To calculate DC, a formula suggested by Subramanyam in 1983 was employed.

$$DC: Nm/Nm+Ns$$

Nm=Number of multiple authors publications

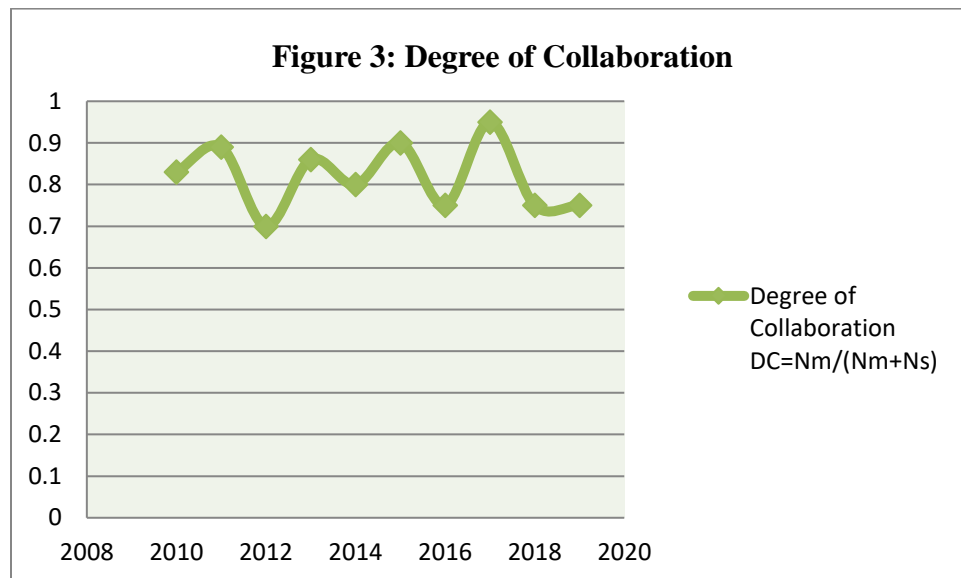
Ns=Single authors publications

$$DC: 176/ (38+176) =0.82$$

Where,

DC is the degree of collaboration,

Nm is the multiple authored publications and
Ns is the number of single authored publications.



5.5 Co-Authorship Network

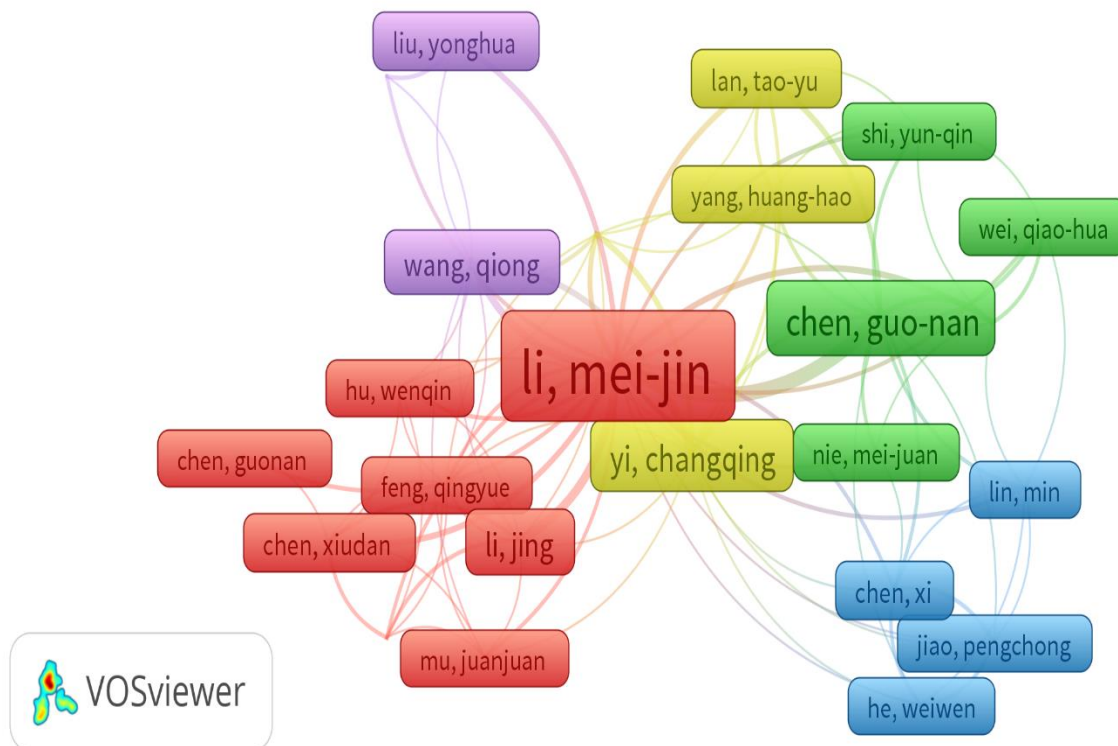


Figure 4 Co-Authorship Network

Source: <https://www.vosviewer.com>

Co-authorship is a collaboration between at least two authors (Larrosa2019). Figure 4 presents the Co-authorship network basis on the bibliographical data downloaded from (<https://app.dimensions.ai>) created with the help of VOSviewer software (<https://www.vosviewer.com/>). In the figure node is symbol of author, size is activity of the author, and the curved line between the two authors is the publication collaboration relationship between them. So also, the thickness of curve denotes the level of collaboration between the authors.

The software analyzes the manually defined criteria and of 440 such authors 54 meet threshold for every one of the 54 authors the total strength of the co-authorship link with other authors has been determined, the maximum number of authors found connected and from clusters were 24. Therefore, the co-authorship analysis of these 41 authors has been performed. The software separates these 24 authors into 5 clusters which from 90 links with a total strength of 156. Li, mei-jin, Chen,guo-nan and Yi, changqing are the leading authors who produced maximum paper in collaboration.

Number of Articles and References

Table 5: Number of Articles and References

Year	Volume	No. of articles	No. of Reference	Average number of references per articles	%age
2010	15	24	821	34.2	10.76
2011	16	28	805	28.75	10.55
2012	17	20	626	31.3	8.2
2013	18	22	582	26.45	7.63
2014	19	20	682	34.1	8.94
2015	20	20	792	39.6	10.38
2016	21	20	714	35.7	9.36
2017	22	20	834	41.7	10.93
2018	23	20	825	41.25	10.81
2019	24	20	945	47.25	12.39

Total		214	7626	35.63	100
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Table 5 represents the reference distribution of the publication and it shows 7626 references are cited in 214 articles. The highest number of references 945 have recorded in 2019 Volume no. 24. The volume no. 22 has recorded 834 references with 2nd highest position, Volume no. 17 recorded 626 references and volume no. 18 has recorded 582 references with the lower position. Overall, average no. of references is 35.63.

Geographical contributions of Authors

In table 7 many countries contributed to Malaysia Journal of Library and Information Science. In these journal different countries authors contributed together to article and separate the author's country and then study how many authors belong to their country. For example, in an article three different countries authors like USA, India and Malaysia contributed to an article and this authors country separate and calculate it.

Table 7: Geographical contributions of Authors

Rank	Country	Number of Contributions	%age
1	Malaysia	164	30.48
2	China	67	12.45
3	Iran	53	9.85
4	Taiwan	39	7.24
5	India	34	6.31
6	Thailand	24	4.46
6	Singapore	24	4.46
7	Pakistan	23	4.27
8	Belgium	15	2.78
9	USA	12	2.23
10	Kuwait	9	1.67
11	Korea	8	1.48
11	Nigeria	8	1.48
12	UK	7	1.3
13	Croatia	6	1.11

14	Bangladesh	5	0.92
14	Turkey	5	0.92
15	Jordan	4	0.73
16	Saudi Arabia	3	0.55
16	Spain	3	0.55
16	Romania	3	0.55
16	Germany	3	0.55
17	Indonesia	2	0.37
17	South Africa	2	0.37
17	Australia	2	0.37
17	Poland	2	0.37
17	Czech Republic	2	0.37
18	Sudan	1	0.18
18	Republic of Benin	1	0.18
18	UAE	1	0.18
18	Tanzania	1	0.18
18	Montenegro	1	0.18
18	Cuba	1	0.18
18	Slovakia	1	0.18
18	Hong Kong	1	0.18
18	New Zealand	1	0.18
Grand Total		538	100

Table 7 depicts that study of 538 contributions participate in the journal during the research and it observed that Malaysia is on the first position with 30.48, followed by 12.45% by China with second rank, 9.85% from Iran with third position, 7.24% of contributions are from Taiwan, 6.31% from India; 4.46% from Thailand and Singapore; 4.27 from Pakistan; 2.78% from Belgium; 2.23% from USA; 1.67% from Kuwait; 1.48% from Korea and Nigeria; 1.30% from UK, 1.11% from Croatia; 0.92% from Bangladesh and Turkey; 0.73% from Jordan; 0.55% from Saudi Arabia, Spain, Romania and Germany; 0.37% from Indonesia, South Africa, Australia, Poland and Czech Republic; 0.18% from Sudan, Republic of Benin, UAE, Tanzania, Montenegro, Cuba, Slovakia,

Hong Kong and New Zealand. However, it is concluded that out of 36 countries, Malaysia gives preference for research compared with other countries.

Findings and Conclusions

Publications are the broad form of communication by the researchers. Bibliometric and Scientometric method is used by many researchers to identify the various scientific measures and resolution of scientific results. (Velmurugan & Radhakrishnan 2014) executive the scientometric study on same journal and conclude that maximum number of publications in twodays era are based on collaborative authorship as in our research also same result analyzed the authorship trends towards multiple approach. The researchers further suggest that this type of bibliometric study may be helping to review and evaluate the impact of a journal.

The main findings of this study are:

- The maximum no. 13.08% of articles has published in 2011 and the range of articles published per year during the study was 20 to 28.
- It is analyzed from authorship pattern of papers that the highest contributions are from two authors. The numbers of two authored paper is quite higher at 80(37.38%), followed by three authored paper 71(33.17%), single authored 38(17.75%), four authored 13(6.07%), five authored 5(2.33%) and more than five authored 7(3.27%) in that order.
- The average number of authors per paper is 2.51 and the average productivity per author is 0.39.
- The Degree of collaboration was 0.82 during the study period.
- Total 7626 references of 214 papers occur in this research. Out of 7626 references maximum number of references 945 (12.39) are arise in the year 2019 and minimum references 582 (7.63%) are arise in the year 2013.
- Most of 30.84% contributions are from Malaysia which is the 1st rank, followed by 12.45% China at 2nd rank and 9.85% of from Iran at the 3rd rank.

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