

Scientometric Mapping of Scholarly Publications on Library and Information Science in ASEAN Nations

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Abstract

This study employs scientometric techniques to identify Library and Information Science documents published by Southeast Asian countries. The required data for the study were gathered from the Scopus database. The study observed that the most productive year was 2021, which produced 15.14% of documents, with journal articles being the major form of publication. The median value of doubling time was 2.415. Malaysia emerged as the top collaborative country among the ASEAN nations, with a total of 923 publications and collaborations with 62 countries globally.

Keywords: Scientometrics, ASEAN, Citations, Co-authorship, Keyword Co-occurrence.

1. Introduction

A comprehensive evaluation of publications has been conducted in Library and Information Science (LIS) across the Association of Southeast Asian Nations (ASEAN) using scientometric indicators. Scholarly research plays a vital role in advancing knowledge, practices, and innovations within the field of LIS. Scientometrics, a quantitative approach, explores trends in scientific publications, citations, and collaboration to understand the development and impact of research. In the 21st century, there has been a consistent trend towards increased collaboration across all scientific disciplines. LIS has a long history of cooperation, and library networking serves as a model for library development. Networking facilitates the sharing of information, ideas, and resources, allowing for interaction with individuals in the field to benefit from their knowledge, gain insightful perspectives, discover new information, and contribute knowledge and experiences. Networking makes it easier to achieve the common objective of improving research output, caliber, and significance (Sacchanand, 2022). As a result, scientific collaboration has increasingly moved towards globalization. ASEAN is a global organization comprising ten countries in the Southeast Asia region, including Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The ASEAN nations are a suitable subject for this study as they share a common sense of identity and have similar geographical characteristics and scientific aspirations.

2. Literature Review

In a study, Purnell (2021) examined ten Southeast Asian countries to uncover conspicuous publishing patterns obscured by global average figures. They found out that Indonesia alone has made a recent and remarkable shift towards conference proceedings publishing. In their findings, Ibrahim et al. (2021) indicated that Malaysia is the most producing nation and the source of most sponsored publications. The Malaysian Journal of Library and Information Science (MJLIS) is a well-known international journal in Southeast Asia for publishing Library & Information Science articles. Singapore, with 4.922 citations, has the highest impact factor for citations. In their study, Sukoco et al. (2023) outlined productivity, citation impact and economic impact indicators to analyze the literature over the previous ten years. Study results show that Malaysia leads in the quantity of scientific research, but Singapore is superior in publication quality (citations) and patents. Surprisingly, Indonesia has the highest proportion of growth in scientific publications. Furthermore, the two sectors of research productivity that contributed significantly to ASEAN nations are Engineering & Technology and Life Sciences & Medicine. In their study, Afia et al. (2021) analyzed 75 scientific documents published between 1977 and 2020. The research revealed that Universiti Sains Malaysia, Loan, and N.T.T. were the most active ASEAN-associated institutions and scientists regarding TESOL publication. The TESOL research sources in ASEAN received the most attention and dissemination. Nguyen & Pham (2011) conducted a study on scientific output and its relationship to the knowledge economy of ASEAN countries. They revealed that the highest number of publications in the area was from Singapore. In those nations, the number of scientific papers has grown by 13% annually, with Thailand and Malaysia seeing the highest growth rates and Indonesia and the Philippines experiencing the lowest. The knowledge economy index and the production of science have 0.94 country-level cooperation. Khoo (2013) analyzed collaboration in LIS education in the ASEAN region and discovered that the networks and connections made via planning and participating in conferences and workshops serve as the foundation for local collaborations. The main advantages of regional cooperation have been in training PhD students and exposing them to other countries and cultures. Internationalizing LIS education requires ongoing work, as does promote research partnerships and the development of research hubs in the area. Patra & Chand (2009) studied the South Asian Association for Regional Cooperation (SAARC) and the ASEAN region from 1967 to 2005. In ASEAN, it was discovered that Malaysia and Singapore were leading the way in LIS research. It is also included that SAARC and ASEAN member nations should work together more. It was noted that both regional associations' member nations should develop and execute information policies analogous to Singapore's.

3. Scope and Limitations of the Study

The scope of the study is limited to scholarly publications on Library & Information Science among ASEAN nations. To assess recent trends in the LIS domain among ASEAN nations, the publication trends of a decade have been selected from the year 2013 to 2022. Thus, using the Scopus database, the study is confined to a 10-year period.

4. Objectives of the Study

The study aims to analyze scholarly publications on Library and Information Science in ASEAN nations using a scientometric approach. The following scientometric parameters have been considered in the study:

- 1) Scholarly publications and citations,
- 2) Forms of scholarly publications,

- 3) Relative growth rate of publications and doubling time,
- 4) Sources of scholarly publications,
- 5) Co-authorship network,
- 6) Co-occurrence of keywords, and
- 7) Geographical distribution of scholarly publications.

5. Research Methodology

The required data have been retrieved from the Scopus database for the period 2013-2022. Following search query (string) was used to retrieve the data from the Scopus:

((("Library and Information Science") AND (LIMIT-TO (AFFILCOUNTRY,"Indonesia") OR LIMIT-TO (AFFILCOUNTRY,"Thailand") OR LIMIT-TO (AFFILCOUNTRY,"Laos") OR LIMIT-TO (AFFILCOUNTRY,"Singapore") OR LIMIT-TO (AFFILCOUNTRY,"Viet Nam") OR LIMIT-TO (AFFILCOUNTRY,"Malaysia") OR LIMIT-TO (AFFILCOUNTRY,"Cambodia") OR LIMIT-TO (AFFILCOUNTRY,"Myanmar") OR LIMIT-TO (AFFILCOUNTRY,"Brunei Darussalam") OR LIMIT-TO (AFFILCOUNTRY,"Philippines")) AND (LIMIT-TO (PUBYEAR,2022) OR LIMIT-TO (PUBYEAR,2021) OR LIMIT-TO (PUBYEAR,2020) OR LIMIT-TO (PUBYEAR,2019) OR LIMIT-TO (PUBYEAR,2018) OR LIMIT-TO (PUBYEAR,2017) OR LIMIT-TO (PUBYEAR,2016) OR LIMIT-TO (PUBYEAR,2015) OR LIMIT-TO (PUBYEAR,2014) OR LIMIT-TO (PUBYEAR,2013)) AND (LIMIT-TO (LANGUAGE,"English"))) AND (LIMIT-TO (PUBSTAGE,"final"))))

A total of 1901 documents were retrieved from the Scopus database. The data obtained were tabulated, organized, and analyzed using Microsoft Excel, Biblioshiny, and VOSviewer in accordance with the study's objectives.

6. Data Analysis and Results

a) Scholarly Publications and Citations

The ten ASEAN countries produced 1901 documents as found in the Scopus database during 2013-2022 in the field of Library and Information Science.

Table 1: Year-wise distribution of publications and citations

Year of Publication	Number of Publications	Percentage of Publication	Citations	Percentage of Citations
2013	113	5.94	1745	11.15
2014	112	5.89	1392	8.9
2015	129	6.78	1667	10.65
2016	136	7.15	1450	9.27
2017	123	6.47	1347	8.61
2018	224	11.78	2251	14.39
2019	266	13.99	1502	9.6
2020	224	11.78	1452	9.28
2021	288	15.14	2353	15.04
2022	286	15.04	481	3.07
Total	1901	100	15640	100

Table 1 indicates a tendency towards an increased annual publishing rate from 5.94% to 15.04%; however, the growth is inconsistent. The most prosperous years were 2021 and 2022, highlighting the rise of ASEAN researchers' publications. In 2021, there was the highest citation rate (15.04% citations from 15.14% articles). The overall average citation per document is 8.22.

b) Forms of Scholarly Publications

In Table 2, documents are arranged by their forms of publication. The most prevalent form of publication is Journal Articles, accounting for 69.59% of the total. Conference papers rank second (22.67%), followed by Reviews (3.62%), Book Chapters (3.05%), Books (0.47%), Editorials (0.15%), Erratum (0.15%), Notes (0.15%), and Letters (0.1%).

Table 2: Forms of scholarly publications

Document Type (Forms of Pub.)	No. of Pub.	Percentage
Journals Articles	1323	69.59
Conference Paper	431	22.67
Review	69	3.62
Book Chapter	58	3.05
Book	9	0.47
Editorial	3	0.15
Erratum	3	0.15
Note	3	0.15
Letter	2	0.1
Total	1901	100

c) Relative Growth Rate of Publications and Doubling Time

The number of articles that increase in number per unit of time is known as the Relative Growth Rate. One aspect of the overall expansion of scientific communication can be observed in the excess of articles.

Table 3: Year-wise relative growth rate of publications and doubling time

Year	No. of pub.	Cumulative no. of Pub.	W1	W2	RGR	DT Dt=0.693/R	Mean
2013	113	113	0	4.73	0.00	0	2.415
2014	112	225	4.73	5.42	0.69	1.01	
2015	129	354	5.42	5.87	0.45	1.54	
2016	136	490	5.87	6.19	0.32	2.14	
2017	123	613	6.19	6.42	0.23	3.03	
2018	224	837	6.42	6.73	0.31	2.24	
2019	266	1103	6.73	7.01	0.28	2.51	
2020	224	1327	7.01	7.19	0.18	3.84	
2021	288	1615	7.19	7.39	0.20	3.52	
2022	286	1901	7.39	7.55	0.16	4.33	
Total	1901		56.95		2.81		

Table 3 shows that the annual relative growth rate of publications during 2013-2022 has been found to range between 0.69 and 0.16. The highest growth rate was 0.69 in 2014, followed by 0.45 in 2015 and 0.32 in 2016. The mean relative growth across the entire study period is 2.81. On the other hand, the doubling time for the publications of all sources of Library and Information Science (LIS) research output has increased from 1.01 in 2014 to 4.33 in 2022. The median value of the doubling time is 2.415.

d) Sources of Scholarly Publications on LIS Research on ASEAN Nations

The most beneficial sources for publications on Library and Information Science literature in ASEAN nations are listed in Table 4. A total of 1901 publications and 15640 citations were located in 831 different sources. Table 4 displays the top 10 sources by ranking. It demonstrates that *Library Philosophy and Practice* on LIS research publications (with a 5.47% publishing share) is the top source item for publications, followed by the *Journal of Physics: Conference Series* (3.57%), *Malaysian Journal of Library and Information Science* (3.47%), and *Scientometrics* (1.42%). Among the top-listed sources, *Scientometrics* contains the highest number of citations (4.11%), while the least was observed for *Advanced Science Letters* (0.05%).

Table 4: Sources of scholarly publications

Source Title	No. of Pub.	% of Pub.	Citations	% of Cit.
Library Philosophy and Practice	104	5.47	159	1.01
Journal of Physics: Conference Series	68	3.57	151	0.96
Malaysian Journal of Library and Information Science	66	3.47	348	2.22
Scientometrics	27	1.42	644	4.11
ACM International Conference Proceeding Series	25	1.31	30	0.19
Lecture Notes in Computer Science	24	1.26	45	0.28
AIP Conference Proceedings	20	1.05	77	0.49
Information Development	17	0.89	141	0.90
IOP Conference Series: Earth & Environmental Science	17	0.89	18	0.11
Sustainability	17	0.89	187	1.19
Journal of Theoretical and Applied Information Tech.	17	0.89	41	0.26
International Journal of Engineering and Technology	16	0.84	163	1.04
Journal of Academic Librarianship	16	0.84	479	3.06
Advanced Science Letters	13	0.68	8	0.05
Journal of Librarianship and Information Science	13	0.68	172	1.09

e) Co-authorship Network

Co-authorship trends indicate a significant growth in scientific collaboration over the past few decades, driven by the expansion of communication networks, technological development, and multidisciplinary research. These trends in collaboration have undergone substantial changes. A considerable number of authors have collaborated more than twice. Out of the total 1901 publications in the study, 149 were single-authored, while a total of 4589 authors have co-authored scholarly works. Figure 1 illustrates the networking of co-authorship, displaying five clusters, each uniquely colored. Cluster 1 comprises 11 items,

colored in red. Cluster 2 is green and consists of nine items, while Cluster 3 is blue with seven items. Cluster 4 is yellow and includes six items, and Cluster 5 is violet with five items. The larger nodes represent co-authorship, reflecting the highest rate of collaboration. The influence of the nodes increases with the number of linkages connecting them. Abrizah A. & Noorhidawati A. from Universiti Malaya, Malaysia, and Masrek M. N. from Universiti Teknologi MARA, Malaysia, are the nodes with the most influence, as indicated by the magnitude of the nodes in the VOSviewer visualization.

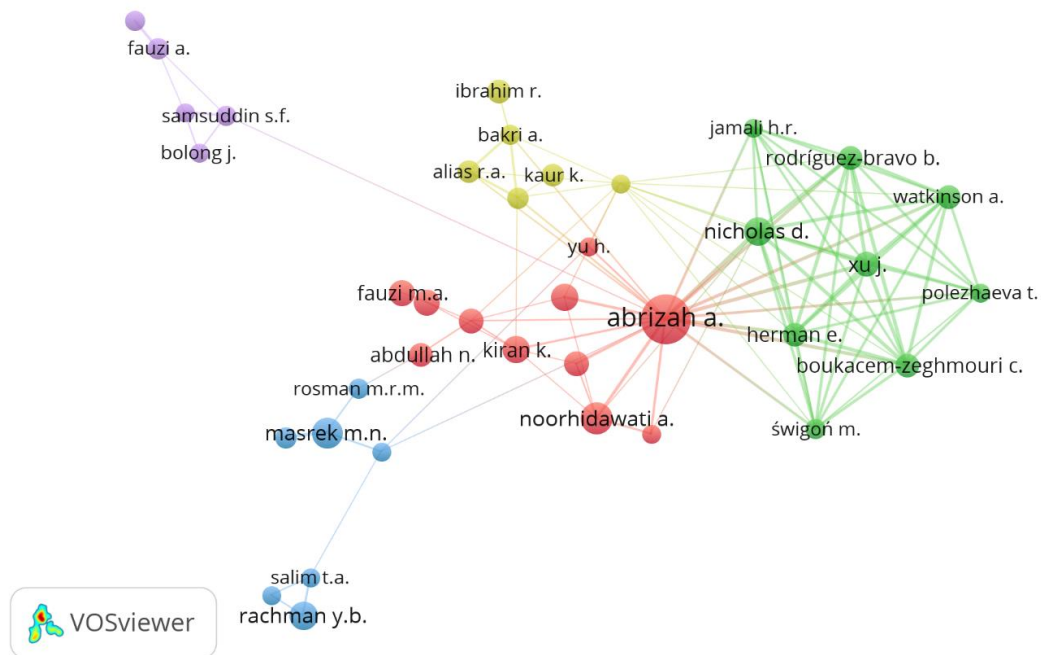


Fig. 1: Co-authorship Network in Southeast Asia

f) Co-occurrence of Keywords

It was created using a word cloud to better visualize how authors' keywords co-occurred, displaying widespread keywords. A keyword is a word that helps the reader grasp the document's topic. It should describe the document's purpose or central theme, as it provides the most concise overview of the material; keywords are helpful tools. Table 5 represents the top 25 most frequently occurring keywords used by Library and Information Science (LIS) researchers of ASEAN nations, along with the number of times they occur. For the 1901 documents, a total of 5119 keywords have been found. Figure 2 shows a keyword cloud of keyword co-occurrences. The keyword cloud depicts the occurrence of keywords with their size. Figure 2 shows that the keyword "Malaysia" occurred most frequently (82 times), followed by "Social Media" (56 times) and "Knowledge Sharing" (49 times).

Table 5: Top 25 author keywords

S.N.	Keywords	Occurrence	S.N.	Keywords	Occurrence
1	Malaysia	82	14	Scholarly Communication	20
2	Social Media	56	15	Library	19
3	Knowledge Sharing	49	16	Citation Analysis	18
4	Information Literacy	44	17	Philippines	18

5	Academic Libraries	42	18	Bibliometric	17
6	Higher Education	39	19	Information Retrieval	17
7	Indonesia	39	20	Information Seeking	17
8	E-Learning	32	21	Scopus	17
9	Bibliometrics	31	22	Singapore	17
10	Knowledge Management	31	23	Vosviewer	16
11	Bibliometric Analysis	28	24	Attitude	15
12	Covid-19	24	25	Education	15
13	Digital Library	22			

g) Geographical Distribution of Scholarly Publications

Figure 3 illustrates the global scientific collaboration among ASEAN researchers with major nations. A total of 77 different countries have collaborated on Library and Information Science (LIS) research. Malaysia leads among ASEAN nations, having published the highest number of publications in the field of LIS research (923 publications & 9844 citations) and collaborated with 62 other nations, including Indonesia (50 times), Nigeria (39 times), the United Kingdom (37 times), Saudi Arabia (35 times), and Pakistan (34 times). Singapore holds the second position in terms of collaborations, having partnered with countries such as China (23 times), the USA (21 times), Australia (9 times), and Korea (7 times). They published 167 articles and received 2749 citations. In terms of the number of partnerships, Indonesia ranks third among the ASEAN nations, collaborating with Australia (13 times), China (11 times), the United States (7 times), and India (6 times). Thailand has partnerships with China, South Korea, the United States, and the United Kingdom. The Philippines collaborated three times each with the United States, the United Kingdom, and China. Vietnam collaborated with Australia (9 times), India (8 times), and Taiwan (6 times). Cambodia collaborated once each with Hong Kong, Japan, and Slovenia. Brunei Darussalam cooperated with Bangladesh and Costa Rica. Myanmar collaborated with Australia, publishing only one paper. Laos exclusively cooperated with other ASEAN countries.



Fig. 2: Author Keywords

Country Collaboration Map

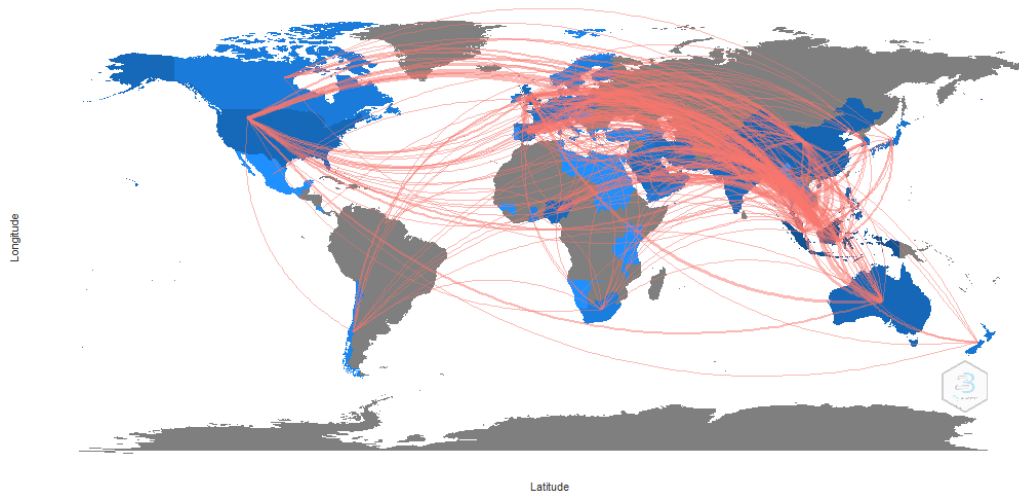


Fig. 3: Geographical Collaboration of Authors

7. Conclusion

The study focuses on scholarly publications on Library and Information Science (LIS) among ASEAN nations during the period 2013-2022. It observed 1901 scholarly documents from the Scopus database. There is an exponential increase in the publications from ASEAN nations in Library and Information Science on the Scopus database, indicating a tendency towards a higher annual publishing rate, rising from 5.94% to 15.04% between 2013 and 2022. Journal Articles are prevalent at 69.59%, followed by Conference Proceedings. In line with the forms of publishing, a study by Purnell (2021) noted that Indonesia has notably shifted towards publishing conference proceedings. The annual relative growth rate of publications from 2013 to 2022 falls within the range of 0.69 to 0.16, while the doubling time has a median value of 2.415. Among 831 sources of publications, Library Philosophy and Practice has contributed the highest share of publications. Additionally, Ibrahim et al. (2021) identified the Malaysian Journal of Library and Information Science as the top LIS journal in their study.

In terms of the co-authorship network, Abrizah A. and Noorhidawati A. from the University of Malaya in Malaysia led the way. The keyword "Malaysia" occurred most frequently (82 times) in the Library and Information Science (LIS) papers, and globally, 77 nations have contributed to support LIS research. Concerning the number of partnerships, Malaysia has the highest collaboration with other countries among the ASEAN nations. Research conducted by Patra & Chand (2009) and Ibrahim et al. (2021) reveals that Malaysia is the most productive nation in LIS research, while Sukoco et al. (2023) found it to be highly productive in other domains as well.

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