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Research Article

Scientometric Insights into Social Media Analytics: Trends and Impact in Communication Studies

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ABSTRACT

This study provides an in-depth bibliometric view of social media analytics studies trends in communication science from 2011 to 2024 using data from the Web of Science citation index. Using bibliophily and VOSviewer as a visualization tool of our dataset, we examined the evolution trajectories of publication volume, citation performance and research networking. Out of 285 documents analyzed, it was found that the growth rate was at an average of 33.06% with a noticeable upward skew of the volume of publications after 2017. Findings indicate that the buoyant nature of research in this area can be attributed to cross-border collaboration of scholars, 38.6% of the papers were international co-authored and the average number of co-authors per document was 4.11. The field is considered to be well developed and intellectually safe with the average number of citations to papers amounting to 34.68 and the number of references used in the work being 17474. The study also looks into the research in this discipline represented through 1,093 author keywords underscoring the changing trends of research areas within social media analytics. These results contribute to ongoing communication studies, regarding the use of digital social media, by indicating the vast and increasing need for social media analytics.

Keywords: Social media Analytics, Communication Studies, Scientometric, Web of Science, VOSViewer.

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INTRODUCTION

Social media has, over the last decade or so, changed forever how people or agencies communicate, disseminate information and even reach out to audiences. It is for that reason that social media analysis has become an important area of study within the communication discipline. Social media analytics is concerned with the methods of gathering data from social networks to identify users' activities and engagement levels with various communications and their results. Studies in these areas take advantage of the huge content that users provide and identify the emerging trends and patterns that exist in the online communication space.

As a quantitative research tool, Scientometric mapping plays a crucial role in tracking the development and impact of academic research across various disciplines. In the context of social media analytics, scientometric methods allow researchers to map the growth of scholarly publications, identify influential studies and highlight emerging areas of research. A comprehensive understanding of the research landscape in this domain can be developed through the analysis of citation patterns, co-authorship networks and keyword trends. This study aims to provide a scientometric mapping of research trends and patterns in social media analytics within the field of communication studies. By examining the scholarly output, key areas of focus and influential contributors, the study seeks to offer insights into the evolution of this rapidly expanding field and its implications for future research.

REVIEW OF RELATED LITERATURE

In recent years, Social, Media Analytics (SMA) has gained significant traction, particularly within communication studies, due to the increasing relevance of social platforms in influencing public discourse, brand interactions and media consumption. Over the past five years, research in this area has focused on several key trends.

There has been an increasing focus on the examination of sentiment dynamics, particularly during significant events such as political campaigns, fluctuations in the stock market and public health emergencies like COVID-19. Research has utilized sophisticated Natural Language Processing (NLP) models to monitor emotional changes in real-time across platforms such as Twitter and Facebook (Yu *et al.*, 2021; Park *et al.*, 2021).

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Notable advancements in methodologies for conducting social media analytics have emerged, including multi-source domain adaptation techniques for cross-domain sentiment classification and tools like BERT (Bidirectional Encoder Representations from Transformers) that enhance text analysis capabilities. These developments have significantly improved the capacity to analyze varied data from multiple domains, leading to more precise sentiment predictions and content evaluations. Scholars have also investigated the convergence of big data analytics and communication studies, underscoring the global relevance of social media analytics across various sectors. Data mining methods have been employed to comprehend how digital interactions on platforms like Twitter and Facebook influence communication patterns. This trend has yielded valuable insights into consumer behavior, public relations strategies and media consumption trends. Recent scientometric reviews in communication studies have aimed to map the landscape of social media analytics research, identifying the most influential authors, papers and themes. Co-citation analysis and author network mapping reveal a robust interdisciplinary foundation that encompasses sociology, psychology and information science. Furthermore, recent investigations have examined the correlation between traditional citation metrics and social media indicators, such as altmetrics, which are increasingly recognized as alternatives to conventional citation counts. For example, Shuai *et al*. (2012) identified correlations between tweets and early citations of pre-print articles, indicating that social media exposure may enhance academic visibility. Nonetheless, concerns remain Concerns have been raised regarding the potential for manipulation through automated accounts and the disproportionate influence of certain social media users, including politicians and major organizations, which may distort these metrics. Nevertheless, social media is increasingly recognized as a vital instrument for the dissemination of academic research. An expanding array of studies investigates how social media data has transformed research methodologies within communication studies. The emergence of extensive social data, enabled by platforms such as Twitter and Facebook, has resulted in the creation of innovative interdisciplinary methods that integrate both quantitative and qualitative techniques. Research conducted by Tulkens *et al*. (2016) examined how Natural Language Processing (NLP) and network analysis have facilitated large-scale investigations of bibliometric data in communication research, yielding an enhanced understanding of knowledge production and dissemination patterns across various fields. Additionally, a study published in Behavior Research Methods (2021) emphasized the role of computational models in supporting qualitative text analysis within large datasets. The findings indicated that algorithms provide a comprehensive perspective on communication patterns and meanings within vast social media datasets, such as Twitter feeds. This methodology can aid in interpreting the complex and evolving interactions on social media, offering significant insights into topics such as public discourse surrounding climate change.

METHODOLOGY

The present research takes a scientometric approach and employs data from the Web of Science database with the search term TS=(Social Media Analytics AND Communication Studies). Accordingly, this generated a search containing 285 papers published, 9,882 citations, an h index of 44 and a mean of 34.67 citations per article. For purposes of analysis, bibliographic details such as the titles, authors and keywords were collected. For data analysis and visualization, biblioshiny and VOSviewer were employed. Using biblioshiny, it was possible to examine the dynamics of the growth of publications, citations and keywords, while using VOSviewer enabled the generation of co-authorship and keyword co-occurrence charts and diagrams. The analysis included the use of descriptive statistics to detail the existing research trends and assess existing collaboration networks and the changing focus of research themes over time.

Overall summary of the study

Table 1 and Figure 1 analysis provides spanning from 2011 to 2024, includes a total of 285 documents drawn from 195 sources (journals, books, etc.,) and showcases an impressive annual growth rate of 33.06%**.** This indicates rapid expansion in the field of social media analytics in communication studies. The average age of documents is 3.41 years, pointing to the recency of most research, while each document is cited 34.68 times on average, reflecting the significant impact and relevance of these studies within academia. The dataset contains a substantial number of 17,474 references, reinforcing the depth and richness of the literature being cited. It includes 724 Keywords Plus and 1,093 Author's Keywords, demonstrating a wide array of topics and themes explored in the research. On the authorship front, 1,091 authors have contributed to the field, but only 14 documents were single-authored, underlining the collaborative nature of this domain. The average number of co-authors per document is 4.11, with a notable 38.6% of papers involving international collaborations, further underscoring the global and cooperative approach to research in this area. In terms of document types, the vast majority (256 documents) are articles, followed by 16 review papers, with a small number of early-access and proceedings papers. Overall, this dataset reveals a thriving, collaborative and impactful research landscape in the field of social media analytics within communication studies, with considerable global cooperation and a focus on cutting-edge themes and trends.

Growth and Distribution of Publications and citations trend

Table 2 and Figure 2 show that research output in this field started slow, with just one document each in 2011 and 2013, but experienced a significant increase in subsequent years. By 2020 and 2021, the number of publications reached a peak of

45 documents each year. This sharp rise is likely driven by the increasing importance of social media in communication and the need for analytics to understand its impact. The percentage of total publications also aligns with this growth. Between 2017 and 2024, research activity constituted more than 60% of the total records, underscoring a boom in scholarly interest during this period. The Total Citations (TC) reflect the impact of research over time, with significant citations in 2012 (2998 citations) and 2020 (1389 citations). This demonstrates that earlier publications have been highly influential, particularly in shaping later research directions. However, it's important to note that more recent years, such as 2023 and 2024, show fewer total citations due to the recency of publications, which have had less time to accumulate citations. The Average Citations Per paper (ACP) show a declining trend as the year's progress, from 96 ACP in 2011 to 0.7 ACP in 2024. This is expected, as older papers tend to accumulate more citations over time compared to newer ones. However, this does not diminish the relevance of newer papers, which may accrue citations in the future. The h-index is a critical indicator of both productivity and citation impact. It ranges from 1 in 2011 and 2012 to a high of 22 in 2020, suggesting that 2020 was a particularly impactful year for the field. Even in recent years like 2023, the h-index remains notable at 8, showing sustained influence.

Leading Authors

Table 3 and Figure 3 provide research metrics for authors from various subjects and institutions, focusing on Computer Science, Engineering and related disciplines. Arpan K. Kor from, the Indian Institute of Technology (IIT, Delhi), Delhi, stands out with the highest number of articles (7), the most citations, (520) and the highest h-h-index (6), making him the most influential author in the group. Grover Purva, also from the Indian Institute of Technology, IIT, Delhi), Delhi, follows with 4 articles and 378 citations. The remaining authors, from Institutions such as the University of Sheffield, Delft University of Technology and the University of Potsdam, have moderate research output and impact, with publications ranging from 2 to 3 citations count between 33 and 262 and h-indices from 2 to 3, overall, the group exhibits solid but varying levels of research influence across different fields.

Leading Journals

Table 4 provides a detailed overview of the top 20 academic journals, highlighting key metrics such as total articles published, citations and impact factors. The *International Journal of Information Management Stands* out with the highest number of papers (10), accounting for 3.509% of the total papers analysed. It also boasts a high average citation per paper (87.2), demonstrating its strong academic influence. Regarding total citations, the *Information Communication Society* leads with 3,048 citations, showcasing its impact, while its h-index is also notably high. Several other journals are recognized for their impact, including Technological Forecasting and Social Change, which has the highest impact factor (12.9). Major publishers such as Elsevier, SAGE and Springer are prominently represented, with multiple journals from these publishers included in the analysis. Geographically, the UK and the US are dominant, hosting many high-impact journals.

Top Institutions

Table 5 shows data from the top institutions contributing to research or publications, computed and broken down by different metrics across different countries. In the paragraphs below is an analysis of the table: the University of Washington in the USA ranked first 6 Total Publications (TP), 228 Total Citations (TC) and 36 Total Link Strength (TLS). Hong Kong Polytechnic University from China follows next with 6 total publications but much fewer citations 86 and link strength of 24. Purdue University, a US-based university, has also attained 6 publications but only 45 citations with link strength of 19. The University of Texas Austin, USA, occupies the fourth position with 6 publications, 151 citations and 8 link strengths. Among the top five is Swansea University from

Table 1: Data Description.

Description	Results
Timespan	2011:2024
Sources (Journals, Books, etc)	195
Documents	285
Annual Growth Rate %	33.06
Document Average Age	3.41
Average citations per doc	34.68
References	17474
Document Contents	
Keywords Plus (ID)	724
Author's Keywords (DE)	1093
Authors	
Authors	1091
Authors of single-authored docs	14
Authors Collaboration	
Single-authored docs	14
Co-Authors per Doc	4.11
International co-authorships %	38.6
Document Types	
article	256
article; early access	11
article; proceedings paper	1
review	16
review; early access	1

Table 2: **Year-wise publications performance with citation count.**

Sl. No.	Year	TP	% of 285	TC	ACP	h index
1	2011	1	0.351	96	96	1
2	2012	2	0.702	2,998	1,499	1
3	2013	1	0.351	142	142	1
4	2014	2	0.702	119	59.5	2
5	2015	6	2.105	272	45.33	5
6	2016	10	3.509	819	81.9	8
7	2017	11	3.86	578	52.55	9
8	2018	26	9.123	802	30.85	15
9	2019	32	11.228	1,088	34	17
10	2020	45	15.789	1,389	30.87	22
11	2021	45	15.789	1,095	24.33	17
12	2022	31	10.877	309	9.97	10
13	2023	41	14.386	165	4.02	8
14	2024	32	11.228	23	0.7	3
		285	100%	9895		

TP: Total Publications, **TC:** Total Citation, **ACP:** Average citations per Paper.

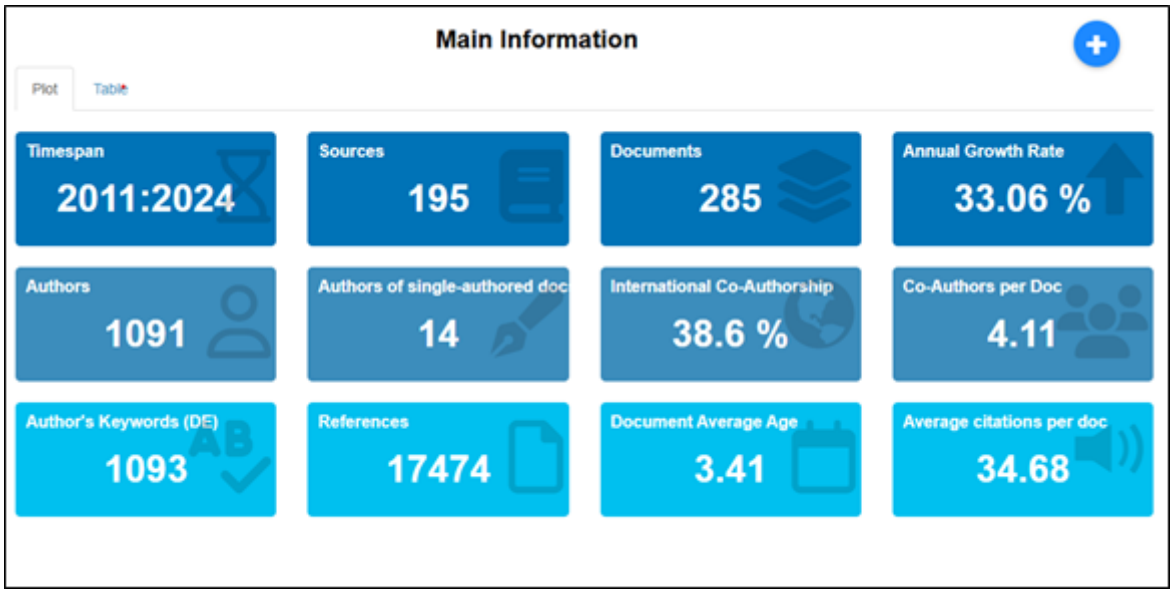

Figure 1: Main Information of the Study.

the UK with fewer publications at 5 but has 243 citations and link strength of 20. Beyond, the University of Toronto from Canada ties in total publications with 5 but records a lower citation count of 61 and link strength of 18. Other organizations in this league include Caroline University (USA) with 5 publications and 333 citations and the University of Bristol (UK) with 238 citations. Of great interest is the Indian Institute of Technology Delhi of India with 5 publications but leading with 389 citations and low link strength of 4. The USA-based Oklahoma State University is the next tier of ranks, with a show of 4 publications and 71 citations with link strength of 21.

The VOSviewer map Figure 3 represents a global collaboration among major academic institutions. Larger nodes like the University of Washington, Hong Kong Polytechnic University and

Table 3: Top 10 leading authors.

Authors	Department	Affiliation	TP	TC	h index
Arpan K.Kar,	Computer Science	Indian Institute of Technology (IIT)-Delhi.	7	520	6
Grover Purva	Information Science and Library Science.	Indian Institute of Technology (IIT)-Delhi.	4	378	4
Yichuan Wang	Business and Economics	University of Sheffield.	3	84	3
Janssen M	Computer Science	Delft University of Technology.	3	44	3
Stieglitz S	Computer Science	University of Potsdam.	3	34	3
Wang XJ	Engineering	University of Birmingham.	3	191	3
Kumar Abhishek	Environmental Sciences and Ecology	University of Massachusetts. Amherst	2	262	2
Lee Jianxin	Computer Science.	Nanjing University of Posts and Telecommunications.	2	63	2
Wang YC	Engineering	TJU-NUS Joint Institute.	2	162	2
Widowati R	Computer Science.	Universitas Muhammadiyah Yogyakarta.	3	33	3
Abrahams AS	Computer Science	Virginia Polytechnic Institute and State University.	2	166	2

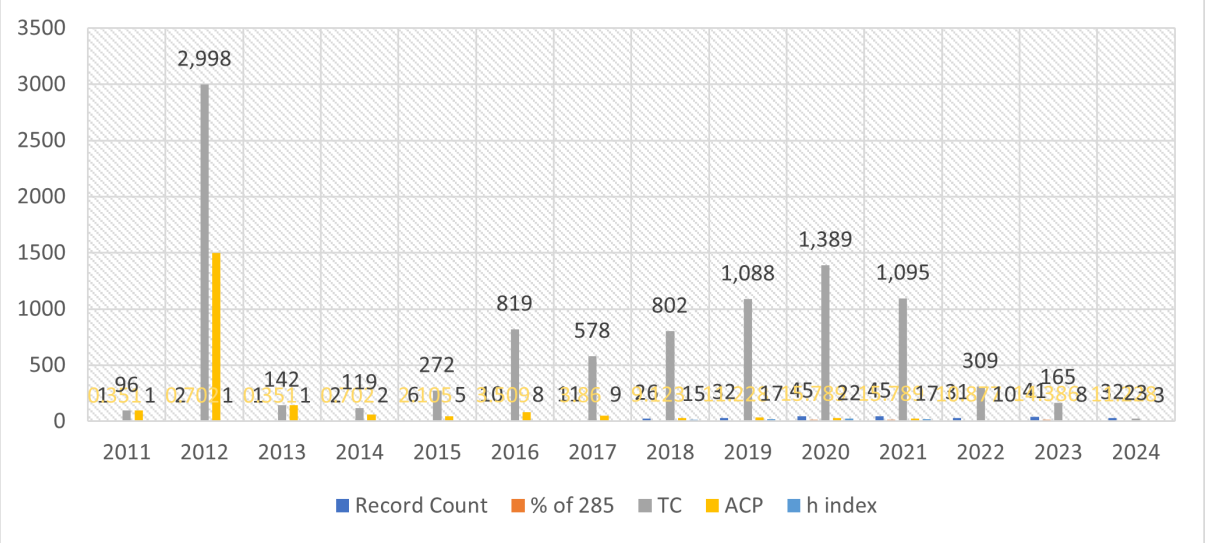

Figure 2: Publications and citation trend.

Purdue University appear to take over the map and are more likely to have an output or volume of collaborations. Institutions group by the strength of their collaboration; some institutions form key hubs, such as IIT and University of Toronto or Delft University of Technology. The lines connecting them depict inter-institutional connections, where smaller nodes such as Mayo Clinic or Ege University may represent more niche or specific partnerships.

Keywords Co-occurrence analysis

Figure 4 represents the keyword co-occurrence network was also visualized to reveal the relationships of how frequently the keywords co-occur in social media research. Central terms include social media, big data and COVID-19, which occupy the majority of the networks, thereby showing their positions in recent studies. The numerous keywords that are highly connected signify the studies about crisis communication, health communication, as well as social media analytics; however, it reflects the wide application of social media within studies mainly in public health, online behavior and technology. The map reflects the multidisciplinary nature of studies in social media and also makes linkages to emerging areas such as artificial intelligence, innovation and sustainability.

Table 4: Highly productive Journals.

Sl. No.	Journals	TP	% of 285	TC	ACP	H Index	Publisher	IF	Country
1	International Journal of Information Management.	10	3.509	872	87.2	10	Elsevier Ltd	9.24	UK
2	Sustainability.	7	2.456	35	5	3	Elsevier Ltd	3.3	Switzerland
3	IEEE Access.	6	2.105	91	15.17	4	IEEE	3.9	US
4	Journal of Medical Internet Research.	6	2.105	236	39.33	5	JMIR	5.8	Canada
5	Frontiers In Public Health.	5	1.754	22	3.67	3	Frontiers Media SA	3.0	Switzerland
6	Government Information Quarterly.	5	1.754	230	46	5	Elsevier Ltd	7.8	UK
7	Information Systems Frontiers.	5	1.754	85	17	4	Springer	6.9	Netherlands
8	PLOS One.	5	1.754	123	24.6	4	Public Lib. of Sci.	2.9	US
9	International Journal of Disaster Risk Reduction.	4	1.404	296	74	4	Elsevier Ltd	4.2	UK
10	Technological Forecasting and Social Change.	4	1.404	181	45.25	3	Elsevier Inc.	12.9	US
11	IEEE Transactions on Computational Social Systems.	3	1.053	37	12.33	2	IEEE Systems,	4.5	US
12	Information Communication Society.	3	1.053	3,048	1,016	2	Routledge	4.12	UK
13	Information Technology People.	3	1.053	31	10.33	2	Emerald.	1.24	UK
14	International Journal of Environmental Research and Pub. Health.	3	1.053	60	20	2	(MDPI)	0.81	Switzerland
15	MIS Quarterly.	3	1.053	150	50	2	MISRC	5.43	US
16	Public Relations Review.	3	1.053	37	12.33	2	Elsevier B.V.	1.38	Netherlands
17	Social Media Society.	3	1.053	18	6	2	SAGE	2.16	UK
18	Social Science Computer Review.	3	1.053	32	10.67	2	SAGE	1.7	UK
19	American Journal of Infection Control.	2	0.702	155	77.5	2	Elsevier Inc.	0.96	US
20	Big Data Society.	2	0.702	41	20.5	2	SAGE	2.45	UK

TP: Total Publications, TC: Total Citations, ACP: Average Citations per Paper, IF: Impact Factor.

Leading collaborative countries

Figure 5 Network Visualization of Country Collaboration World research ties between countries. The USA and China have emerged as central hubs because of greater relations with other countries. Comparing the ties of collaboration between the USA and China, both collaborate significantly with countries like Spain, Australia and China. However, China also has close collaborations with Australia, France and Germany. Other collective networks of nations are Germany, Italy and Switzerland, all in Europe and South Korea. There is also Australia that interacts with India, Pakistan and the USA. Other smaller nodes include Spain, Iran and Taiwan, each holding a few but still crucial connections.

Table 5: Top 20 institutions.

Sl. No.	Institutions	Country	TP	TC	TLS
1	University of Washington.	USA	6	228	36
2	Hong Kong Polytech University.	China	6	86	24
3	Purdue University.	USA	6	45	19
4	University of Texas Austin.	USA	6	151	8
5	Swansea University.	UK	5	243	20
6	University of Toronto.	Canada	5	61	18
7	Caroline University.	USA	5	333	12
8	University of Bristol.	UK	5	238	9
9	Indian Institute of Technology, Delhi.	India	5	389	4
10	Oklahoma State University.	USA	4	71	21
11	McMaster University.	Canda	4	81	16
12	University of North Texas.	UK	4	221	9
13	University Sheffield.	USA	4	82	9
14	University of Florida.	USA	4	107	8
15	University of Melbourne.	Australia	4	10	8
16	University of Alabama.	USA	4	110	7
17	University of Minnesota.	USA	4	176	7
18	University of Minnesota.	USA	4	176	7
19	Delft University of Technology (TU Delft).	Netherland	4	290	6
20	Tamkang University.	Taiwan	4	48	3

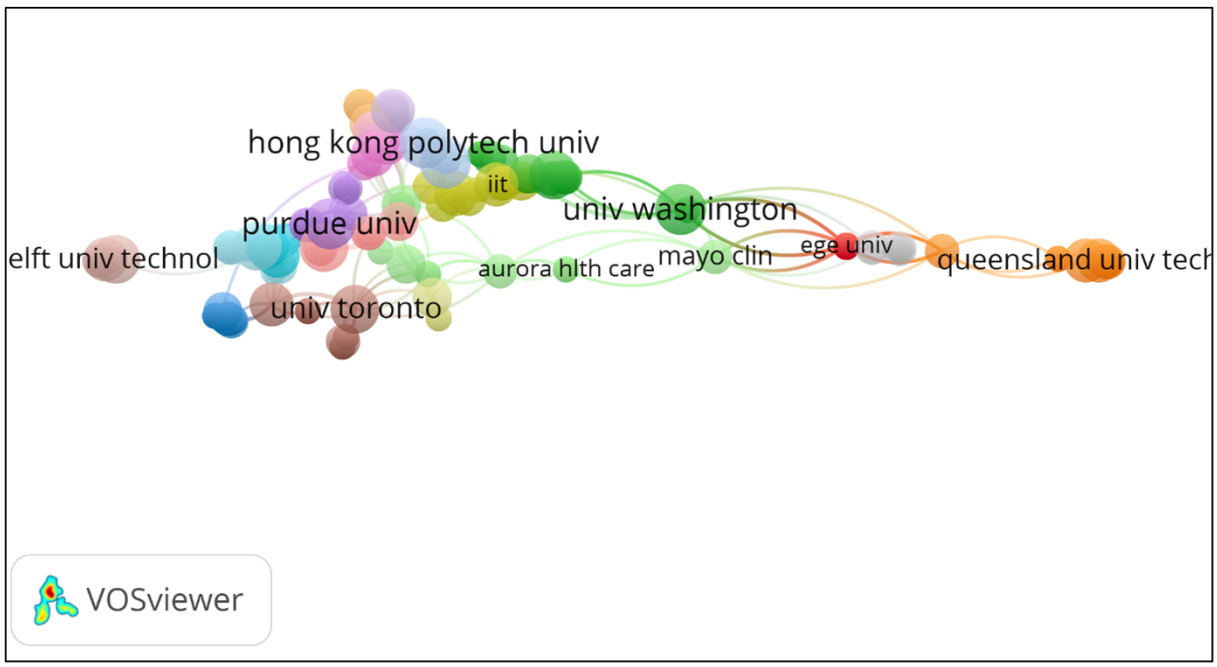

Figure 3: Institutions Collaboration Network.

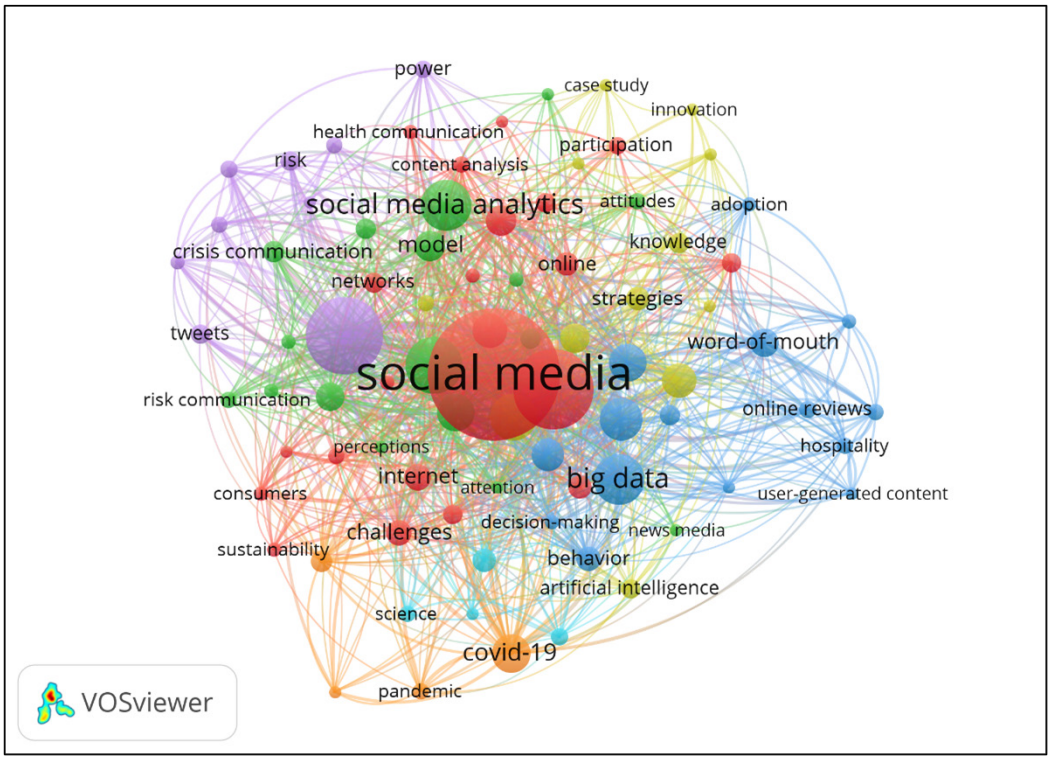

Figure 4: Network visualization of co-occurrence of keywords.

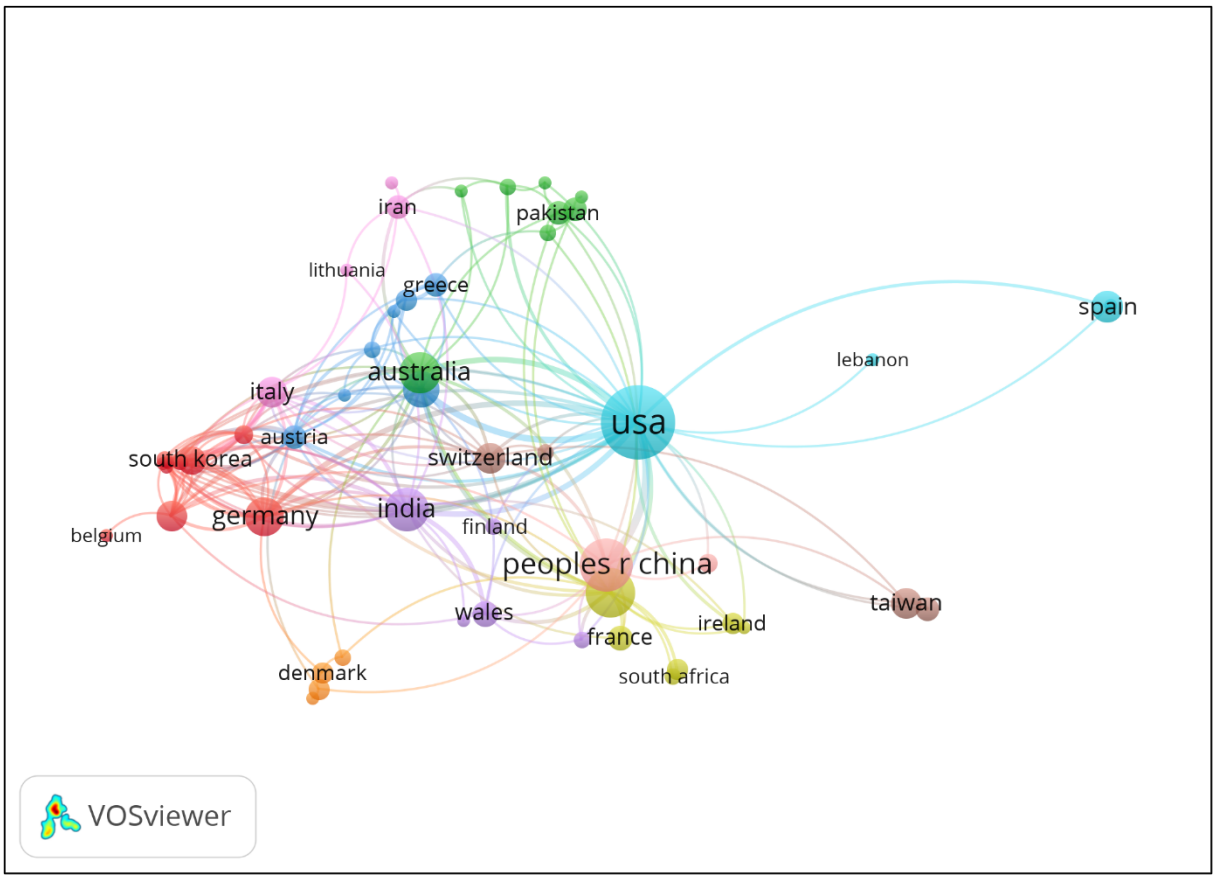

Figure 5: Network Visualization of Country Collaboration

CONCLUSION

This Scientometric Study on Social Media Analytics in Communication Studies gives really rich patterns of and trends over the last decade, showing intensive growth and importance in this area of study. With the period of research set between 2011 and 2024, it registered an astonishing annual growth rate at 33.06%, pointing out a robust increase in scholarly interest. This field has become highly collaborative and seen international partnerships, making up 38.6% of the documents, meaning that the area is highly relevant globally. The analysis reveals that although the documents are relatively young average of 3.41 years studies have already contributed to the body of scholarly discourse with a mean citation rate per document of 34.68. This indicates the relevance of the area and the increasing demand for tools and insights that social media analytics can provide in communication studies. Moreover, the keyword analysis-1,093 unique author-assigned keywords-represent how research topics and approaches are changing. Thus, in conclusion, the findings point to an important area in communication studies media analytics-and is deserving of such because the necessities and demands of understanding complex digital dynamics of communication constitute much of the impetus for the need. As fresh research emerges and forms a part of the landscape, it is hoped that newer publications will slowly see a shift in gaining more citations and thereby propelling this interdisciplinary field further. The essence of insights from this study can be used as a basis for further directions for research and can thereby consolidate the rising impact of social media analytics both within the framework of academic communication as well as the practical application frameworks.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

TP: Total Publications; **TC:** Total Citations; **ACP:** Average Citations per Publications; **TLS:** Total Links Strength.

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