Government Social Media research over a decade: Bibliometric Analysis
Investigación sobre redes sociales gubernamentales durante una década: análisis bibliométrico

Diana Dominic[1], Imelda Albert Gisip[2], Tajuddin Ahmad[3]

Abstract: This paper presents a bibliometric analysis of the publications on government social media research from the Scopus database from the period of 1998-2021.Based on the keywords used,482 documents related to government social media were retrieved and analysed using various tools. Microsoft Excel was used to conduct the frequency analysis, VOSviewer for data visualization and Harzig's Publish or Perish for citation metrics and analysis. There is a continuous growth of publications on government social media research since 1998. The USA was found to be the largest contributor to government social media, followed by China. In addition, the role of social media in communication technology may take over most of the government services in delivering the information and services to the people. This paper provides a comprehensive compilation of articles offering a general overview of the leading trends and researchers to the development of government social media. This paper reports using standard bibliometric indicators such as the growth of publications, authorship patterns, collaboration and prolific authors, country contribution, most active institutions preferred journals and top-cited articles.

Keywords: Government; Social media; Bibliometric analysis; Research pattern.

Resumen: En este artículo se presenta un análisis bibliométrico de las publicaciones sobre investigación en redes sociales gubernamentales de la base de datos Scopus del período 1998-2021, en base a las palabras clave utilizadas, se recuperaron y analizaron 482 documentos relacionados con las redes sociales gubernamentales mediante diversas herramientas. Se utilizó Microsoft Excel para realizar el análisis de frecuencia, VOSviewer para la visualización de datos y Harzig's Publish or Perish para las métricas y el análisis de citas. Hay un crecimiento continuo de publicaciones sobre la investigación de las redes sociales gubernamentales desde 1998. Se descubrió que EE. UU. Es el mayor contribuyente a las redes sociales gubernamentales, seguido de China. Además, el papel de las redes sociales en la tecnología de la comunicación puede hacerse cargo de la mayoría de los servicios gubernamentales en la entrega de información y servicios a las personas. Este documento proporciona una compilación completa de artículos que ofrecen una descripción general de las principales tendencias e investigadores para el desarrollo de las redes sociales gubernamentales. Este artículo informa utilizando indicadores bibliométricos estándar como el crecimiento de las publicaciones, los patrones de autoría, la colaboración y los autores prolíficos, la contribución de los países, las revistas preferidas de las instituciones más activas y los artículos más citados.

Palabras clave: Gobierno; Medios de comunicación social; Análisis bibliométrico; Patrón de investigación.

1. UNIVERSITI TEKNOLOGI MARA, SABAH BRANCH, MALAYSIA. diana0773dba@gmail.com
2. UNIVERSITI TEKNOLOGI MARA, SABAH BRANCH, MALAYSIA. imeldag@uitm.edu.my
3. UNIVERSITI TEKNOLOGI MARA, SABAH BRANCH, MALAYSIA. ahmadtj.phd@gmail.com

1. Introduction

Social media enable the government to disseminate important information, outspread government services and gain feedback on government programs and initiatives. The open government eliminates red tape and barriers in public communication and it can be more interactive between government and the public (Jaeger & Bertot, 2010). The massive used of social media globally force government to utilise the same medium to reach people. Government social media is different from business or individual social media; therefore, the government use social media for non-profit objective and no personal interest involved. Government needs to be careful in delivering the information as it may have the impact to the government image.

Government social media is used in a recent government communication reform trend to promote transparency, participation and collaboration that vary from business as usual or bureaucracy that stigma the government (Mergel, 2013b).Social media's role is to connect people and help to bring information that they need. However, although users are masters in social media technology for their leisure, they are not using government social media platforms to get information or communicate with the public (Oliveira & Garcia, 2019). This is among the challenges that the researchers have highlighted.

Previously, there are studies on social media have been conducted but not specifically government social media analysis. The fast advancements over the last decade should be taken necessary action to analyse how contextual changes have influenced the researchers and practitioners think about government social media. However, comprehensive evaluations are lacking in the existing literature. Most of the evaluations of literature prefer to concentrate on the benefits of government social media rather than tackling government social media is a broad idea that might result in perspectives that are multidimensional with some dimensions that have less emphasis.

This paper seeks to examine the scientific literature on government social media by conducting a bibliometric analysis and looking into three main research questions including the evolution, main area and country into research of government social media. The objectives of this study is to investigate the evolution of the government social media, to determine the main areas that have been debated on government social media and to identify which country into the government social media research.

One of the earlier authors who conceptualized government social media was Meijerin 1998.Some authors demand on a less bureaucratic model for the information society. The empirical analysis results using the Dutch police department showed that Twitter communication takes place through decentralized channels and is mostly used for external communication. The study shades the earlier idea of the transformation change in the organization of social media communications. The study of government social media starting the obvious in 2010, twelve years later.

In 2010, starting with the revolution in government using social media to reach the public goals and the exploratory of social media adoption in government (Gharawi et al., 2010).Using social media technology together with transparency was also the emergence of studies as a field of research (Bertot et al., 2010). Another study in that starting year also includes the rise of using government social media during a disaster (Liu, 2010).

As a set of Web 2.0 technologies that enable interactive engagements between users, social media in government may be characterized as a platform for governments to connect with the public. (Criado et al., 2013; Song & Lee, 2016). Basically, social media is a convenient tool and effortless, easy access to government information through technology devices like Smartphones, tablets, laptops and computer everywhere and anytime (Kaplan & Haenlein, 2010). In line with the tech-

nology advancement, government uses this platform to reach more people for more audiences and better engagement with the public.

In line with evolving social media applications worldwide, we can observe the growing importance of social media particularly in government usage. This has drawn various interests and triggers varying issues on government social media. There have been a number of research carried out by researchers to explore in subject area such as social science, computer science and business, management and accounting. In other respect, researchers also using across countries use of government social media.

Past studies have revealed how the link between public use of information and use government websites to do their transaction (Morgeson et al., 2011; Tolbert. Caroline & Mossberger, 2006). Many studies see effectiveness and satisfaction in using government social media through such as Facebook, Twitter, Instagram, blogs, YouTube and relate it with an open-government policy initiated by former US President Barrack Obama (Mergel, 2013a; Reddick & Norris, 2013). Government social media enhance the public's insights on government mainly on transparency that enabling public access more on up-to-date government information and transparency in data provided. Thus, social media in government making more accessible to anyone and the potential of the platform to reinforce role in transparency and building trust of the public.

With the increasing numbers of government social media-related studies, it is, therefore, useful to observe the general patterns revealed by those studies. A Bibliometric analysis grows popularity as one of the approaches in revealing research trends or patterns in a study. Bibliometric studies also referred as scientometrics study employs statistical tools as it approaches in evaluating the quantity and quality of the published materials to observe trends or patterns of a specific area (Sweileh et al., 2017). In addition, extensive bibliometric analysis helps to make predictions and growth of research in a particular research (Cherng et al., 2015). The most common aspects being observed using bibliometrics analysis include publication classification, citations, authorship details, publication impact and country of focus.

Despite growing interest in the study of government social media, there have been relatively limited attempts to report the pattern of prior works particularly using bibliometric approach. In spite of meaningful output reported in the analysis, extending the scope of publication types extend its value. Other studies also focus on IT-related such as e-learning (Tibaná-Herrera et al., 2018), e-government (Dias, 2014) and ICT (Cherng et al., 2015). The linkage of the study revealed that government social media are predominantly published under the social sciences category followed by computer science.

In such rapid development over the past decade, there is a need to consider how the contextual changes have impacted the way scholars and practitioners think about the government social media. Unfortunately, the holistic assessments are limited focusing on trends and patterns. The majority of the prior studies tend to focus on the issue of using government social media as a tool of communication instead of looking at the trend of evolution—this paper attempts to address this gap by using bibliometric analysis.

2. Methodology

Bibliometric analysis was performed using Scopus database as of Jan 2021. Considering that Scopus is the largest scholarly database the study employed this database as a basis to extract past studies on web accessibility. The search term "government social media" contained in the title of the article. The Boolean strings were selected "social media" AND "GOVERNMENT" OR "public sector" or "government social media" contained in the title of the article in Scopus search engine

to find for relevant articles published on government social media. The title is important element to attract readers to observe (Jamali & Nikzad, 2011). The title represents the subjects of this study and it is important in the field of this study. At first there was no date limit to set for starting the search thus enable the search engine to find the earliest publication in the literature. The assessment has decided to follow the PRISMA guidelines for conducting systematic reviews of this research. As Shown in figure 1 the initial search found 4,975 documents.

The documents exclude the undefined documents and taking up the document up to 2021. The subject was included in this study social sciences, medical, accounting, and other areas are eliminated. The focus of this study on documents types of journal articles and conference papers and after reviewing all of the abstracts, no further filtering was done because the list was relevant to the topic and the final data base included for this study is 482 documents on government social media.
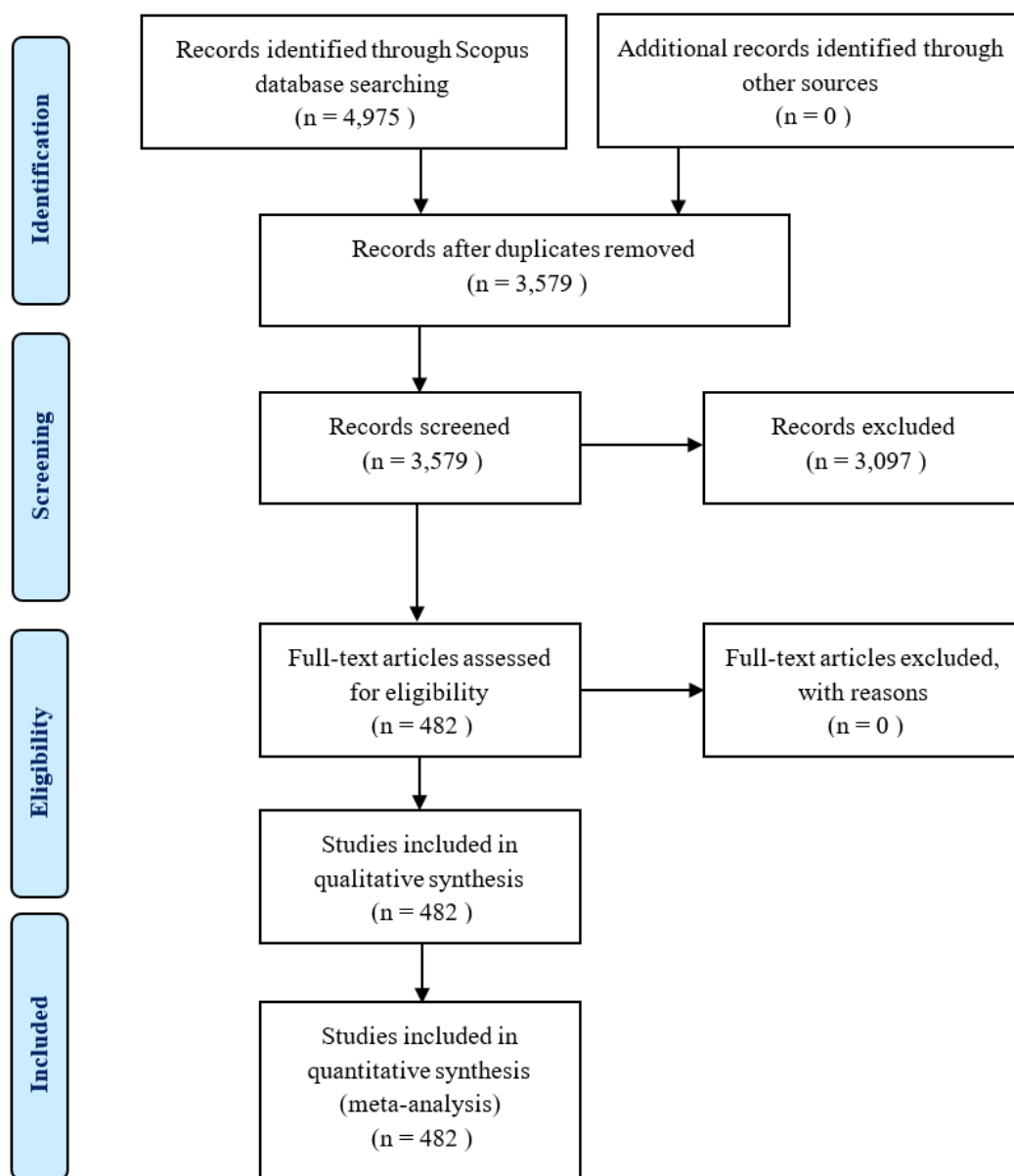

Figure 1. PRISMA Flow Diagram

Source: (Liberati et al., 2009)

Analysis of retrieved literature

The information analysed in the analysis consists of the bibliographic material that describes the 482 Scopus-indexed documents. This information contained author's names, titles, dates of publication, affiliations of authors to documents and also extensive citation details. Descriptive statistics were used to perform trend of analyses on government social media.

The study was conducted using a few software such as Microsoft Excel 2021, Harzing's Publish and Perish and VOS-viewer (version 1.6.15) to assist in produce extensive analysis and creating graphs as well as visualize the pattern analysis. The Microsoft Excel is used to measure the frequencies and percentages of published content and to produce the related charts and graphs. Harzing's Publish and Perish were used to calculate the citation metrics and VOS-viewer helps to construct and visualize the biblio metric networks and synthesize the patterns of information output in the format chosen.

3. Results and Discussion

This segment provides results from the bibliometric analysis pertinent to the research questions. Therefore, the details of evolution in government social media, the key areas, major players and collaboration of government social media research will be discussed.

Evolution and distribution of government social media

The published documents in the data sets were evaluated based on the "document types" and "source types". The "documents types" are based on the originality of the documents. This study focuses on most of the paper since there are limited sources of this study being conducted. Out of 482 documents type being published 224 journal articles or 46.47% published documents and for conference paper is 149 equivalents to 30.91% followed by Book chapter 76 documents or 15.77%. Other type of documents represented less than 5% of the total publication, respectively as shown in Table 1.

Table 1

Document Type

Document Type	Total Publications (TP)	Percentage (%)
Article	224	46.47%
Conference Paper	149	30.91%
Book Chapter	76	15.77%
Review	9	1.87%
Conference Review	6	1.24%
Editorial	6	1.24%
Book	5	1.04%
Note	4	0.83%
Data Paper	1	0.21%
Letter	1	0.21%
Short Survey	1	0.21%
Total	**482**	**100.00**

Analysis of the Document and source types

Meanwhile, Table 2 shows the documents classified into five different source types, journal represents the highest source with 240 publications (49.79%), followed by conference proceedings of 144 documents (29.88%). Book also contributed a significant number at 64 documents (13.28%) followed by book series 33 documents (6.85%) and trade journal only 1 publication (0.221%).

Table 2

Source Type

Source Type	Total Publications (TP)	Percentage (%)
Journal	240	49.79%
Conference Proceeding	144	29.88%
Book	64	13.28%
Book Series	33	6.85%
Trade Journal	1	0.21%
Total	**482**	**100.00**

Language of Documents

The types of language used for publication in government social media research are shown in Table 3. English is a common language used in the publications which comprising of 99.17% of the total publications, and other languages also published in the documents include Spanish 2 documents 0.41% followed by Arabic and Catalanwhich were 1 document respectively with 0.21%.

Table 3

Languages

Language	Total Publications (TP)*	Percentage (%)
English	478	99.17%
Spanish	2	0.41%
Arabic	1	0.21%
Catalan	1	0.21%
Total	**482**	**100.00**

Analysis of subject area

The study next classifies the categories of publications are summarised based on subject areas that has shown in table 4. Government social media involved with numerous subjects' areas ranging from social sciences, computer science, business, management and accounting, decision sciences, engineering, economics, econometrics and finance, medicine, mathematics, environmental science, arts and humanities, psychology, energy, biochemistry, genetic and molecular biology, earth and planetary science and physics and astronomy. As reported, about half of the documents are in social sciences area (53.11%) and followed by computer science (51.87%).

Table 4

Subject Area

Subject Area	Total Publications (TP)	Percentage (%)
Social Sciences	256	53.11%
Computer Science	250	51.87%
Business, Management and Accounting	109	22.61%
Decision Sciences	53	11.00%
Engineering	43	8.92%
Economics, Econometrics and Finance	22	4.56%
Medicine	18	3.73%
Mathematics	16	3.32%
Environmental Science	15	3.11%
Arts and Humanities	12	2.49%
Psychology	7	1.45%
Energy	5	1.04%
Biochemistry, Genetics and Molecular Biology	4	0.83%
Earth and Planetary Sciences	4	0.83%
Physics and Astronomy	4	0.83%

Research Trends

Table 5 summarizes the detailed statistic of annual publication on web accessibility from 1998 to 2021. As per Scopus records, the first published research on web accessibility in 1998 was by (Meijer & Torenvlied, 1998). The growth on related publications slows after 1998 somewhat slow in the next twelve years until it picking in 2010. The highest number of publications is observed in 2018, with a total of 69 documents.

Table 5

Year of Publication

Year	TP	NCP	TC	C/P	C/CP	h	g
1998	1	1	53	53.00	53.00	1	1
2010	6	4	1301	216.83	325.25	3	6
2011	13	12	130	10.00	10.83	7	11
2012	37	31	3013	81.43	97.19	14	37
2013	38	32	1763	46.39	55.09	14	38
2014	50	43	846	16.92	19.67	15	28
2015	51	40	551	10.80	13.78	11	22
2016	61	52	727	11.92	13.98	15	25
2017	36	31	517	14.36	16.68	10	22
2018	69	39	312	4.52	8.00	8	16
2019	63	32	113	1.79	3.53	6	7
2020	50	15	91	1.82	6.07	5	9
2021	7	2	7	1.00	3.50	2	2
Total	**482**						

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Geographical Distribution of Publication

Taken as a whole, researchers from 68 different countries have contributed to the publication in the government social media area. All countries contributing to the productivity of publications in this research area are listed in Table 6. Top on the list is United States of America (USA) with a total of 138 documents, followed by China 42 documents and Australia 40 documents.

Table 6

Top 10 Countries contributed to the publications

Country	TP	NCP	TC	C/P	C/CP	h	g
United States	138	114	6098	44.19	53.49	31	77
China	42	25	404	9.62	16.16	10	19
Australia	40	34	615	15.38	18.09	10	24
Indonesia	36	16	60	1.67	3.75	5	6
United Kingdom	35	24	435	12.43	18.13	11	20
Spain	26	19	932	35.85	49.05	7	26
South Korea	20	18	457	22.85	25.39	11	20
Canada	19	17	188	9.89	11.06	6	13
Malaysia	13	6	30	2.31	5.00	3	5
Mexico	13	11	569	43.77	51.73	6	13

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.
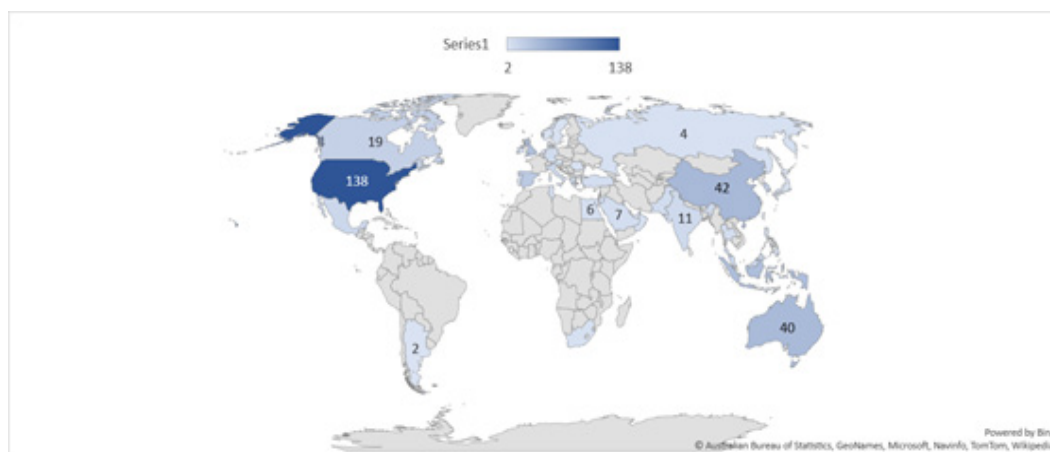
Figure 2. *Countries contributed to the publication*

Number of Author

Table 7 shows the number of author (s) per document. For single-authored documents, there are 117 (9.26%) and for the remaining documents (1,147; 90.74%) are reported as multi-authored publications with the number of authors ranging two and 20.

Table 7

Number of Author (s) per document

Author Count	Total Publications (TP)	Percentage (%)
1	117	9.26%
2	268	21%
3	354	28%
4	252	19.94%
5	130	10%
6	66	5%
7	21	2%
8	8	1%
9	18	1%
10	10	1%
20	20	2%
Total	**1264**	**100.00**

Number of Most Productive Authors

Meanwhile, Table 8 shows the most productive authors who contributed to government social media scholars. The number of publications published by the authors can be used to determine an author's productivity in a particular research area. There are sixteen authors have published the most in government social media with five or more publication each. The top three most productive authors publication produces by Mergel, I with nine publications from the University of Konstanz, Germany, followed by Bertot, J.C with eight publications affiliated with University of Maryland, United States and the third most productive author was Jaeger P.T with eight publication also from University of Maryland. However, documents produced by Bertot and Jaeger are the most highly cited (251.63 cited per paper).

Table 8

Most Productive Authors

Author's Name	Affiliation	Country	TP	NCP	TC	C/P	C/CP	h	g
Mergel, I.	Universität Konstanz	Germany	9	8	855	95.00	106.88	7	9
Bertot, J.C.	University of Maryland	United States	8	8	2013	251.63	251.63	6	8
Jaeger, P.T.	University of Maryland	United States	8	8	2013	251.63	251.63	6	8
Madyatmadja, E.D.	Bina Nusantara University	Indonesia	8	2	4	0.50	2.00	1	2
Charalabidis, Y.	University of the Aegean	Greece	7	7	143	20.43	20.43	5	7
Criado, J.I.	Universidad Autónoma de Madrid	Spain	7	5	261	37.29	52.20	3	7
Medaglia, R.	Copenhagen Business School	Denmark	7	6	78	11.14	13.00	3	7
Davidson, R.	The University of Adelaide	Australia	6	4	50	8.33	12.50	3	6
Paris, C.	Sydney	Australia	6	6	55	9.17	9.17	4	6
Troshani, I.	The Adelaide Business School	Australia	6	4	50	8.33	12.50	3	6
Villodre, J.	Universidad Autónoma de Madrid	Spain	6	4	11	1.83	2.75	2	3
Chun, S.A.	New York University	United States	5	4	77	15.40	19.25	3	5
Hidayanto, A.N.	Universitas Indonesia	Indonesia	5	2	7	1.40	3.50	1	2
Loukis, E.	University of the Aegean	Greece	5	7	143	28.60	20.43	5	7
Sharif, M.H.M.	Universiti Utara Malaysia	Malaysia	5	3	45	9.00	15.00	2	5
Zheng, L.	Fudan University	China	5	5	212	42.40	42.40	4	5

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Analysis of the Source title

Journal of Information systems contributed the highest number of publications on government social media which consists of 19 documents, followed by the International Journal of Accounting Information Systems recorded 17 documents. However, the most quality and reputation source with higher rank of cite score, SJR 2018 and SNIP 2018 is International Journal of Accounting and Information Management. The details of most active source title are shown in Table 9.

Table 9

Most Active Source Title

Source Title	TP	TC	Publisher	Cite Score	SJR 2018	SNIP 2018
Journal of Information Systems	19	856	American Accounting Association	N/A	N/A	N/A
International Journal of Accounting Information Systems	17	34	Elsevier B. V.	N/A	N/A	N/A
New Dimensions of Business Reporting and XBRL	11	69	Springer	2.44	0.9	1.252

	TP	TC				
International Journal of Digital Accounting Research	10	405	University of Huelva	1.78	0.464	1.099
Ceur Workshop Proceedings	9	1	Sun SITE Central Europe	N/A	N/A	N/A
International Journal of Disclosure and Governance	8	38	Palgrave Macmillan	1.06	0.283	0.713
Journal of Emerging Technologies in Accounting	8	332	American Accounting Association	3.53	1.085	1.995
Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics	8	210	Springer Nature	4.07	1.419	2.354
International Journal of Accounting and Information Management	7	492	Emerald Publishing Limited	7.72	2.323	3.797
Lecture Notes in Information Systems and Organization	7	43	Springer Nature	0.97	0.219	0.819
Issues in Accounting Education	6	0	American Accounting Association	0.51	0.221	0.454
Accounting Horizons	5	136	American Accounting Association	0.43	0.155	0.503
Decision Support Systems	5	10	Elsevier B. V.	N/A	N/A	N/A
International Journal of E Business Research	5	5	IGI Global	0.00	0.102	0.101

Notes: TP=total number of publications; TC=total citations

Citation Analysis

Overall, government social media research citation metrics in Scopus indexed on January 31, 2021 as shown in Table 10. The information provided states since 1998, there have been 484 citations reported in 23 years (1998-2021) in government social media. The citation metric generated from Harzing's Publish and Perish software by importing RIS formatted file from Scopus to the software has been developed by importing the Scopus RIS formatted file into the software.

Table 10

Citations Metrics

Metrics	Data
Publication years	1998-2021
Citation years	23 (1998-2021)
Papers	484
Citations	9417
Citations/year	409.43
Citations/paper	19.46
Citations/author	4524.75
Papers/author	2.61
h-index	44
g-index	91

Analysis of Top Keywords

The keyword frequency analysis is critical to finding current topics and developments. The top keyword appeared in government social media research such as "Social Media", "Social Networking (online)", "E-government", "Government Data Processing," and "Local Government".

Table 13

Top Keywords

| Author Keywords	Total Publications (TP)	Percentage (%)
Social Media	309	64.11%
Social Networking (online)	159	32.99%
E-government	64	13.28%
Government Data Processing	56	11.62%
Local Government	56	11.62%
Government	48	9.96%
Facebook	41	8.51%
Twitter	39	8.09%
E-Government	36	7.47%
E-governments	27	5.60%
Government Agencies	23	4.77%
Information Systems	23	4.77%
Public Sector	23	4.77%
Web 2.0	23	4.77%
Public Policy	20	4.15%
Social Media Platforms	19	3.94%
Public Administration	18	3.73%
Transparency	18	3.73%
Human	15	3.11%
Economic And Social Effects	14	2.90%

Visualisation Map
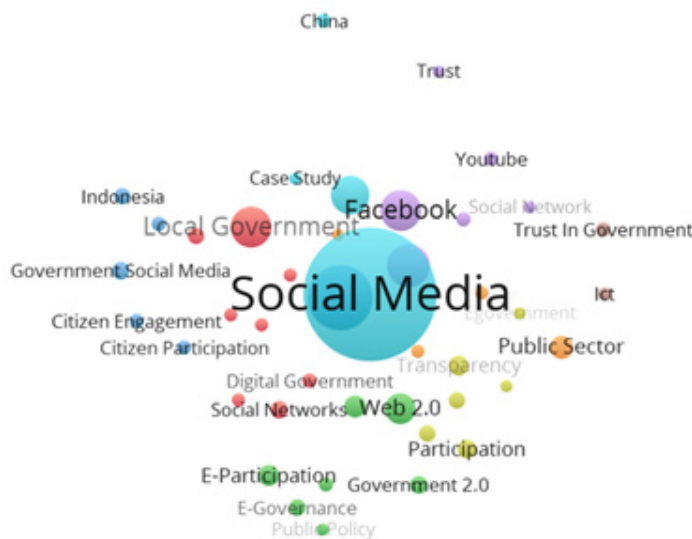
Figure 3. *Network visualisation map of the author keywords*

This paper employed bibliometric analysis to aim a comprehensive research review on the emergence of literature of government social media over the past of 20 years. In addition, the information from the bibliometric data analysis will be used to analyse the success of a particular research domain and beneficial of research-related. This paper has conducted an analysis based on the various publication in the Scopus database.

4. Conclusions

The government social media studies come hand in hand with the growing internet reliance by today's evolution. This attracted the attention of scholars worldwide to examine and recommend a possible remedy to deal with the issues with government social media. The study report on the trends of earlier studies using selected bibliometric indicators from Scopus database. Overall, 482 documents of bibliometrics were extracted from Scopus database. The results indicate that English becomes a primary language used. While about 9%of documents are single-author while about 50% of the documents have two or four authors. The data also shows a growing trend on a number of authorships per document over time. As for the contributing publication, USA reported the highest numbers, followed by China and Australia. However, South East Asia such as Indonesia and Malaysia also contribute the scholarly studies. Issues on government social media get the attention from diverse subject areas like Social Sciences, Computer Science as well as Business, Management and Accounting. In another regard, the number of publications on government social media is picking up since 2010. The increased number of frequencies of publication indicates a higher average number of authors per document over the years.

Despite significant insight offered by this article, there are several limitations that need to take into account. Firstly, this study employed specific queries or keywords of scholarly studies published as indexed by Scopus. Although Scopus is among the largest online databases that index all scholarly studies, it does not thoroughly cover all available sources. Therefore, some exclusions are expected from this study; furthermore, the search query is not fully captured in all the scholarly research in this study. Secondly, some authors and institutions presented in this study register more than one name in Scopus or spelled differently. Thus, the accuracy of the result on their productivity of authorship and affiliation details are not accurate. Despite of these limitations, this study was among the first to analyse bibliometric trends on government social media and also provides an important contribution to the publication pattern. Future research is suggested to explore the success factor in the context of government social media focussing on different practices in other countries.

Author contributions

Author 1: Diana Dominic – Designed the analysis, analysis the data, performed the analysis and wrote the paper.

Author 2: Imelda Albert Gisip – Checked and proofread the manuscript

Author 3: Ahmad Tajuddin – performed the analysis data

Competing interests

None

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