Social media use for public policymaking cycle: a meta-analysis

Achmad Nurmandi, Herpita Wahyuni, Maria Dolores Guillamon, Salahudin, Isnaini Muallidin

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Achmad Nurmandi* and Herpita Wahyuni

Department of Government Affairs and Administration,
Jusuf Kalla School of Government,
Universitas Muhammadiyah Yogyakarta, Indonesia
Email: nurmandi_achmad@umy.ac.id
Email: herpita.w.psc20@mail.umy.ac.id
*Corresponding author

Maria Dolores Guillamon

Departamento de Economía Financiera y Contabilidad,
University of Murcia, Spain
Email: mdguillamon@um.es

Salahudin

Departement of Government,
Universitas Muhammadiyah Malang, Indonesia
and
Department of Political Islam-Political Science,
Universitas Muhammadiyah Yogyakarta, Indonesia
Email: udin.pemerintahan@gmail.com

Isnaini Muallidin

Department of Government Affairs and Administration,
Jusuf Kalla School of Government,
Universitas Muhammadiyah Yogyakarta, Indonesia
Email: isnainimuallidin@gmail.com

Abstract: This study aims to determine the role of social media in policymaking by reviewing journals from 2010 to 2020. This study is a meta-model for the role of social media in policymaking. The method combines the method with data from various data sources, including published documents. Vosviewer and Words were used to examine patterns of relationships or clusters in analysed journals. The data obtained from Scopus helps discuss findings and draw conclusions. The results of the study indicate that social media has a significant influence on public policymaking and governance through: 1) data acquisition and pre-processing; 2) the opinion tracking component addresses hot topics as well as the selection and tracking of sensitive issues; 3) the distributed processing component performs fast processing of data access; 4) public opinion analysis component; 5) public opinion measurement component. This study only compares the results of an analysis of scientific developments in social media and government policies.

Future research should examine approaches to making reliable policies and promoting transparency through social media. This study encourages the use of social media as an alternative approach in the policy cycle.

Keywords: social media; policy making; government; literature review; participation; transparency.

Reference to this paper should be made as follows: Nurmandi, A., Wahyuni, H., Guillamon, M.D., Salahudin and Muallidin, I. (2023) 'Social media use for public policymaking cycle: a meta-analysis', *Electronic Government*, Vol. 19, No. 2, pp.123–145.

Biographical notes: Achmad Nurmandi is a Professor at the Department of Government Affairs and Administration, Jusuf Kalla School of Government Universitas Muhammadiyah Yogyakarta, Indonesia. His research interests are on e-government, urban governance and strategic management in the public sector. He is currently the Secretary of the Asia Pacific Society for Public Affairs (APSPA). He is also the Editor-in-Chief of *Jurnal Studi Pemerintahan* (*Journal of Government and Politics*) and a guest editor of *International Journal of Sustainable Society*.

Herpita Wahyuni is a researcher at Jusuf Kalla School of Government, Universitas Muhammadiyah Yogyakarta.

Maria Dolores Guillamon is an Associate Professor at the University of Murcia, Spain. She participates as a member of the European Accounting Association, the Comparative International Governmental Accounting Research Network and the Spanish Association of University Professors of Accounting. Her research interests focus on transparency, e-disclosure and public sector accounting and management. She has published papers in journals such as *Government Information Quarterly*, *Cities*, *Local Government Studies*, *Regional Studies*, *International Review of Administrative Sciences* and *Accounting*, *Auditing & Accountability Journal*.

Salahudin is a Lecturer at Department of Government, Universitas Muhammadiyah Malang. His research interest is local government transformation, corruption and information communication technology for government.

Isnaini Muallidin completed his undergraduate of International Relation Study from the Universitas Muhammadiyah Yogyakarta, Indonesia, in 1996. He completed his Master's in Public Administration from the Gadja Mada Universitu, Indonesia, in 2011. And he completed his PhD in Brawijaya University, Indonesia in 2020. He is currently working as a Lecturer and researcher at the Department of Government Affairs and Administration, Jusuf Kalla School of Government Universitas Muhammadiyah Yogyakarta, Indonesia. His research interests are a local governance reform, public organisational reform, and institutional reform.

1   Introduction

The emergence of information technology has revolutionised the current communication model. Face-to-face interaction is no longer considered an ideal lifestyle in daily needs (Vu, 2019). This is because the internet network facilitates exchanging information, making communication more active and interactive (Adum, 2019). Social media is a technology with quick exchanges between individuals and offers the government a new approach for increasing transparency and accountability in managing information (Feeney and Welch, 2016; Hiqmah and Hiqmah, 2018). The government adopts social media in service delivery to involve citizens in decision-making because it provides a complementary platform for information dissemination, connectivity, and engagement for people to make informed decisions (Jansen et al., 2010). Furthermore, it helps the government balance accountability, accessibility, breadth of services, and competition from the private sector. Citizens' participation is essential for preserving democracy that represents their desires (Illingworth, 2017). Social networks provide precise information to reduce socio-political gaps (Brady et al., 2015).

The shift in the digital distribution has led to the collection and sharing of data with undetermined ethical consequences. The privacy policy practices of the 15 largest newspapers in the UAS disclose what is permitted for retrieval and newsreaders with advertising, affiliation, and social media efforts. This relates to journalism's democratic role and transitional support for citizenship, where social media enhances governance and modernisation of content (Adams, 2020; Jiang et al., 2020). Continuous policy failures have been examined in recent years, focusing on the political system. The USA growth policy proposes various approaches because of errors, unwanted consequences, or imbalances. There is a need for non-comparative partisan policymaking that will change institutional conditions and promote cooperation. This will help reduce the cost ratio adjusted for collaboration and be safe and attractive to policymakers (Peck et al., 2012). Psychological and economic factors influence consumers' decisions to protect privacy through individual actions or applicable regulations (Acquisti et al., 2020). Essentially, information technology influences individual, group, and organisational decision-making, while social media affect the policy cycle's rationality and effectiveness in various public sectors (Giacomini and Simonetto, 2020). There is a need to examine the role and influence of social media in policymaking.

This study aims to review and compare social media for policymaking from metadata of scientific publication from 2010 till 2020. The literature review focuses on various findings that can be considered in the policymaking process (Moleong, 2020). This study aims to analyse information about social media for policymaking and in government in the Scopus database from 2010 to 2020. This is achieved by analysing Scopus indexed journals using the search results analysis data text ('social media for policymaking') and ('media social in government'). The Scopus data finds the number of papers published in the last five years, the authors, the countries that published many documents, and the types of documents and the subject. Vosviewer was used with data taken from Scopus in the form of RIS on social media. There were 661 documents and 89 social media aspects with government data. This data shows the patterns of relationships in clusters in published papers, including whether they have been analysed and used. The NVivo 12 Plus application was used to classify the data. The most discussed sentences regarding social media in policymaking and government were determined for proper synchronisation.

2   Literature review on social media in policymaking and government

Strong public communication engages stakeholders using various platforms (Betsch et al., 2020). Internet-based technology can open up opportunities for internet users to quickly evaluate and link content (Wahyuni et al., 2021). Media is a technology suite that makes exchanges accessed fast, focusing on interactions between people who can manage the policy process (Feeney and Welch, 2016; Shwartz-Asher et al., 2017). For instance, Facebook can channel millions of personal consumer data. This application performs personality tests and channels millions of users who can influence presidential elections in various countries, including the USA (Acquisti et al., 2020). The digital distribution shift has changed newspapers' direction, explicitly collecting and sharing data with undermined ethical consequences. The privacy policy practices of the 15 largest newspapers in the USA disclose what is permitted for retrieval and newsreaders with advertising, affiliation, and social media efforts. This relates to journalism's democratic role and transitional support for citizenship (Adams, 2020).

Social media encourages the public to participate in the open system's sustainability (Wahyuni et al., 2021). Citizens' involvement in participation is a constructive and decisive factor in maximising participation, essential in conversation or discussion on public policies (Peck, 2011). Contribution and a good understanding of extrinsic and intrinsic drivers' are vital in adopting technology for social learning (Khechine et al., 2020). The development of information technology influences behaviours in determining and making decisions on individuals, groups, and organisations (Giacomini and Simonetto, 2020). The various influences that develop in society show social media's role in public policies (Selwyn, 2012). The emergence of the electronic field can expand individuals' and groups' participation in society (Roengtam et al., 2017).

Social media leads to various findings and discussions regarding the benefits and limitations of the government's means of interaction. Its implementation in the public policymaking process helps understand the network's impact on learning (Khechine et al., 2020). The data obtained from social media is often filtered in making public policies, leading to a maximum analysis (Adams, 2020). Social mediation enhances promotion and cooperation between communities and monitors the government (Bertot et al., 2018). The implementation of social media in making public policies has enhanced European citizens' participation in creating a sense of belonging to achieve goals or ideals (Karantzeni and Gouscos, 2017). Communication is an integral part of the policy process and helps involve the community in policymaking (Johannessen et al., 2016). The number of positive and negative comments is a common reaction in the policy response (Stefanou and Skouras, 2015). Governments worldwide are increasingly active and innovative in providing adequate public services to the community, where social media can also be used (Magro, 2012).

Social media can quickly exchange accurate data or information (Shwartz-Asher et al., 2017). American and Caribbean countries have increased education to enhance the policymaking process by promoting participation (Roengtam et al., 2017). Continuous policy failures have been examined in recent years, focusing on the political system. The USA growth policy proposes various approaches because of many errors, unwanted consequences, or imbalances. Non-comparative partisan policymaking that changes institutional conditions and promotes cooperation should reduce the cost ratio to be safe and attractive to policymakers (Spiliotopoulou et al., 2014). As a channel of information, the government involves citizens in quality public information (Nurmandi et al., 2018).

Social media without public space will create low power interests (Shwartz-Asher et al., 2017). The increasing use of social media encourages interaction between citizens and the government. This may change the direction of the government's internal bureaucracy through public spaces for accountable public participation (Roengtam et al., 2017). Internet-based social media has altered interaction without the constraints of distance and time (Shwartz-Asher et al., 2017). The current communication model has expanded with the emergence of information technology. Hence, face-to-face interaction is no longer considered an ideal lifestyle (Jones and McBeth, 2010). The internet network has connected people, facilitating information exchange more actively and interactively (Adum, 2019). It offers the government a new approach to increasing transparency and accountability in managing information and decision-making (Hiqmah and Hiqmah, 2018). Governments provide a complementary platform for information dissemination, connectivity, and engagement (Song and Lee, 2016).

The government adopts social media in service delivery for citizens to be involved in decision-making (Picazo-Vela et al., 2016). It balances accountability, accessibility, services, and competition from the private sector. Participation is essential for preserving democracy that represents the desires of citizens (Fraser and Moore, 2011). Social networks provide precise information to reduce socio-political gaps (Starke et al., 2020). Information technology influences individual, group, and organisational decision-making. However, social media can affect the policy cycle's rationality and effectiveness in various public sectors by revolutionising governance and modernisation of content (Giacomini and Simonetto, 2020; Jiang et al., 2020). Psychological and economic factors influence consumers in protecting privacy through individual actions or applicable regulations (Acquisti et al., 2020). Social media is a platform for internet-based communication interconnected publicly and privately (Avigur-Eshel and Berkovich, 2017). The government and citizens can quickly exchange accurate data or information (Sayogo et al., 2020). Communication is an integral part of the policy and stipulation process for community involvement (Sayogo et al., 2020). Development in social media involves promoting and collaborating with the community in monitoring policies implemented by the government for openness (Charalabidis and Loukis, 2012). This encourages the public to participate in various activities sustainably (Pinem et al., 2018).

Social media's implementation in the public policymaking process promotes learning and understanding, focusing on the impact that networks have on learning media and knowledge in various aspects (Basyal et al., 2018). The government and citizens can exchange accurate data or information between them very quickly and accurately (Panayiotou and Stavrou, 2019). Furthermore, its implementation in policymaking creates various intelligent communities and provides a broader understanding of issues (Shwartz-Asher et al., 2017). The different influences developed in society show social media's role during the policy process, including obtaining information and access to openness (Johannessen et al., 2016). The implementation of social media in public policymaking has promoted European citizens' participation in creating a sense of belonging to achieve common goals (Baym and Boyd, 2012). Participation is involved in good governance, essential in making joint decisions (Shwartz-Asher et al., 2017).

Governments worldwide are increasingly active and innovative in providing adequate public services for the community, necessitating social media use in the public service (Shwartz-Asher et al., 2017). Contribution and a good understanding of extrinsic and intrinsic drivers' are essential in adopting technology for the social learning process (Khechine et al., 2020). Social media plays a vital role in today's world and can be used

to obtain valuable information in the public policy process (Loukis et al., 2020). Public policymaking with social media influences the results of decisions determined with various considerations (Wang and Medaglia, 2017).

## 3   Research method

3.1   Inclusion and exclusion

On bibliometric search, studies unrelated to the goals, queries, and scopes were filtered using a systematic review method led by a collection of inclusion and exclusion criteria. As a result, a series of shortlisted policy research publications in various international journals (both subscribed and open access) was received. the year it was released (2010–2020). This covers book chapters, editorial material for reviews, conference proceedings, and so on. Reports, journal papers, and trade journals are all examples of business studies. Letters, book reviews, reprints, and articles, on the other hand. Only journals that were specifically focused on policy analysis and clearly regarded were identified.

The research used mixed research methods, namely the stages of research, by combining two qualitative and quantitative research approaches, by presenting data in numerical form and equipped with narrative data (Moleong, 2020). This study analyses information on social media for policymaking based on the Scopus database from 2010 to 2020, as shown in Figure 1. This is achieved by analysing Scopus indexed journals using search results analysis data text ('social media for policymaking' AND 'government social media data Scopus is used to:

1   classify data in the form of the last number of papers published for five years

2   check who published the document

3   classify countries that publish many documents

4   determine the type of document

5   the subject.

Vosviewer is used with the form of Scopus data (RIS) on social media for public policy. In general, there were 744 documents and 276 in government from 2010 to 2020. Data taken from 2010 to 2020 brought novelty to the public policy process and contributed to the public policy process. Data analysis uses Vosviewer and Wordstat, which can see patterns of relationships in the policymaking process in general and comprehensively see the development of various public process policies. Those tools are very useful to look at content analysis, particularly on both quantitative and qualitative topics and themes and its relationships. Research documents and data classification with the NVivo 12 Plus application show Scopus sentences related to social media in policymaking and governance for the right approach. This study examines the development of social media-based science in public policy and government. The data obtained from Scopus helps gather findings and generate relevant information.
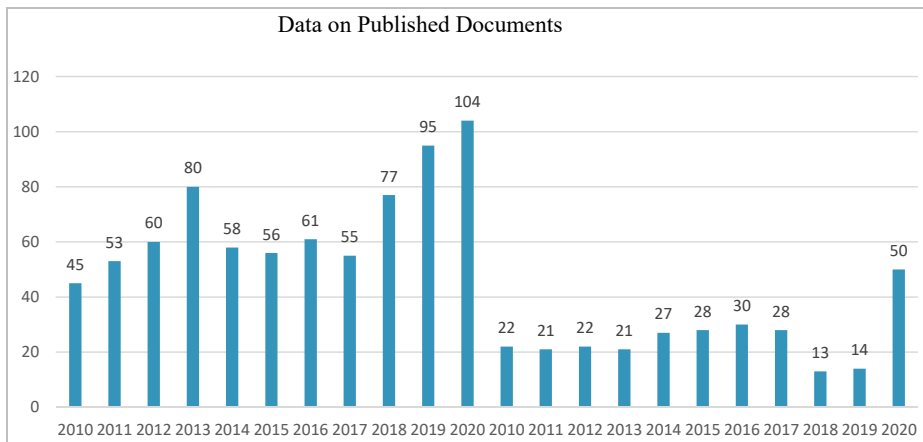
Figure 1 The article review process (see online version for colours)
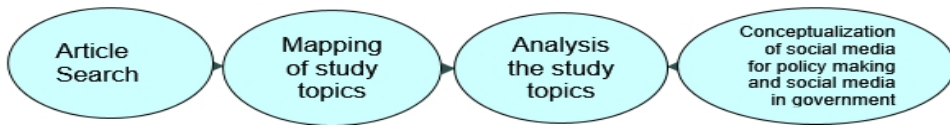
4 Analysis of study topics

This study examines social media for policymaking and governance by comparing two secret journals from 2010 to 2020. Figure 2 shows the data on the published documents.

Figure 2 Social media for policymaking (see online version for colours)

Data from 2010 to 2020, the number of documents published on social media for policymaking was 744. The highest number of documents in 2020 was 104 documents, while the lowest was in 2020 as many as 45 documents. Furthermore, as many as 276 documents on the theme of social media in government were published by TGPPP in the last ten years. Most documents in 2020 were 50 papers, while the lowest record in 2011 was only 21. Therefore, social media for policymaking obtained more documents from 2010 to 2020 than the Government, to be precise 744.

There are five source documents, including *Sustainability Switzerland*, *Social Indicators Research*, *Policy Sciences*, *Social Science and Medicine*, and *Environmental Development and Sustainability*. These sources discussed social media for policymaking and determined that the most significant source was *Sustainability Switzerland*, with 28 papers. Social media in government only comes from TGPPP, with 276 documents.

Five journal sources, including *Sustainability Switzerland*, *Social Indicators Research*, *Policy Sciences*, *Social Science and Medicine*, and *Environmental Development and Sustainability*, with 28, 13, 12, 11, and 10, for a total of 276 documents. The highest source document is from *Sustainability Switzerland*. The analysis of the Scopus journal discusses social media in government with 276 papers published by TGPPP. Both sources of this document provide information on the importance of social media in governance and policy processes.

Table 1   Social media for policymaking and governance matrix

Social media for policy making and governance analytics matrix

Author	Year	Policy making and governance	Participation	Communication	Transparency
Charalabidis, Y.	2010	Governance and policy modelling			✓
Charalabidis, Y.	2012	The holistic approach to sustainable policy decision making	✓	✓	
Charalabidis, Y.	2012	Simplistic conceptual decision making		✓	
Charalabidis, Y.	2018	Informatics of public policy policies	✓	✓	✓
McCallum, K.	2012	Reporting the findings of the news media and policymaking			✓
McCallum, K.	2015	Policy agenda	✓	✓	
McCallum, K.	2017	The role of the news media in policy development	✓		
Waller, L.	2016	Data access		✓	
Waller, L.	2017	Data analysis			✓
Waller, L.	2019	Social media technology	✓		
Bakarjieva, M.	2012	Mediated communication		✓	
Bakarjieva, M.	2016	Social media			✓
Birkin, M.	2014	Open government			✓
Birkin, M.	2017	Data collaboratives	✓	✓	
Chan, E.H.W.	2017	Public policy policies		✓	
Chan, E.H.W.	2018	Data analysis			✓
Delmont, T.	2014	Public policy and administration	✓		
Delmont, T.	2017	Policy analysis data	✓		
Dreher, T.	2017	Data responsibility		✓	
Dreher, T.	2010	Analysis data		✓	
Ellner, S.	2012	Integral projection models	✓		
Ellner, S.	2016	Environmental stochasticity	✓		
Felt, M	2013	Policy analysis data		✓	✓
Felt, M	2018	Data analysis		✓	

Table 1 Social media for policymaking and governance matrix (continued)

Social media for policy making and governance analytics matrix

Author	Year	Policy making and governance	Participation	Communication	Transparency
Janssen, M.	2010	Arguments and simulations in assisting transformation and reengineering	✓	✓	
Janssen, M.	2010	Comparing strategic intentions and motives	✓		
Janssen, M.	2012	Open data and transformational government	✓		✓
Janssen, M.	2012	Development project	✓		
Janssen, M.	2014	Improving the process of publishing open data	✓		
Janssen, M.	2015	User engagement with open data		✓	
Janssen, M.	2017	Transforming government			✓
Janssen, M.	2017	Data collaboratives		✓	
Janssen, M.	2017	Design transparency for open government	✓		
Dwivedi, Y.K.	2015	Telemedicine		✓	
Dwivedi, Y.K.	2016	Common services centre		✓	✓
Dwivedi, Y.K.	2020	Data collaboration	✓		
Dwivedi, Y.K.	2020	Digital health innovation	✓		
Dwivedi, Y.K.	2020	A study context	✓		✓
Gupta, M.P.	2011	A critical survey	✓		
Gupta, M.P.	2012	A Study context	✓	✓	
Gupta, M.P.	2012	Citizen participation and effectiveness	✓		
Gupta, M.P.	2013	Effect of organisational		✓	✓
Gupta, M.P.	2014	Analyses of issues of information security			✓
Irani, Z.	2010	E-government and technological innovation		✓	
Irani, Z.	2010	Delivering professional projects		✓	
Irani, Z.	2012	Exploring the application of Web 2.0 in e-government		✓	
Irani, Z.	2013	A reference process model	✓	✓	✓
Irani, Z.	2014	Innovative public governance	✓	✓	✓
Abu-Shanab, E.	2014	Trust in e-government services	✓		

**Table 1**   Social media for policymaking and governance matrix (continued)

Social media for policy making and governance analytics matrix

Author	Year	Policy making and governance	Participation	Communication	Transparency
Abu-Shanab, E.	2016	Use e-government websites	✓	✓	
Abu-Shanab, E.	2018	Knowledge management on e-government success	✓		✓
Abu-Shanab, E.	2020	Empirical evaluation			✓
Andersen, K.N.	2012	Information systems in the public sector		✓	
Andersen, K.N.	2013	Website quality in government	✓	✓	✓
Andersen, K.N.	2016	Navigating troubled waters		✓	
Andersen, K.N.	2019	Public healthcare	✓	✓	
Hidayanto, A.N.	2018	Trust in government to business services	✓	✓	✓
Hidayanto, A.N.	2018	Open access to the public to government data	✓		✓
Hidayanto, A.N.	2019	Systematic literature	✓	✓	✓
Hidayanto, A.N.	2019	Factors that shape the attitude of internet users		✓	✓
Melin, U.	2013	A comparative study	✓		
Melin, U.	2015	Public organisation	✓	✓	
Melin, U.	2016	E-service context	✓	✓	
Melin, U.	2016	A comparative legal study	✓		
Weerakkody, V	2012	Contexts' basic knowledge related to policymaking	✓		✓
Weerakkody, V	2012	Technology of public policymaking	✓		
Weerakkody, V	2016	Towards changes in policy	✓	✓	
Weerakkody, V	2017	Critical analysis		✓	
Nurmandi, A.	2017	Adopting local e-government transformation	✓	✓	✓
Nurmandi, A.	2017	Social media in the city government	✓	✓	✓
Nurmandi, A.	2018	The use of social media in policymaking	✓	✓	✓

The author's analysis shows Charalabidis, Y., McCallum, K., and Waller, L. (authors 4, 3, and 3, respectively). For policymaking, they were followed by Janssen, M., Dwivedi, Y.K., Gupta, M.P., and Irani, Z. (Documents 9, 5, 5, and 5, respectively). Table 4 shows the comparison of the number of authors.

The data above shows that the ten authors produced the most documents; the highest and the lowest were 9, 5, 4, and 3. The authors who published the most articles (3) on social media in government were Janssen, M., Dwivedi, Y.K. Abu-Shanab, E. and Nurmandi, A. Figure 4 shows a comparison between countries that produced many documents.

Authors who have contributed to the development of science about social media make public policies and social media for the government in the last ten years of data, namely 2010 to 2020. Discussion on social media for policymaking with the authors: Charalabidis, Y., McCallum, K., Waller, L. with many documents 4, 3, 3 and other authors Bakarjieva, M., Birkin, M., Chan, EHW with two papers each. In the discussion about social media for governance with the author Janssen, M. produced nine documents, Dwivedi, Y.K. with five articles, Abu-Shanab, E. 4 Nurmandi, A. with three papers. Figure 4 shows a comparison between countries that produced many documents. The social media matrix for policymaking and the governance matrix can be seen in Table 1.

Figure 3   Documents by country social media for policymaking of other relevant journals and social media in government of TGPPP journal (see online version for colours)
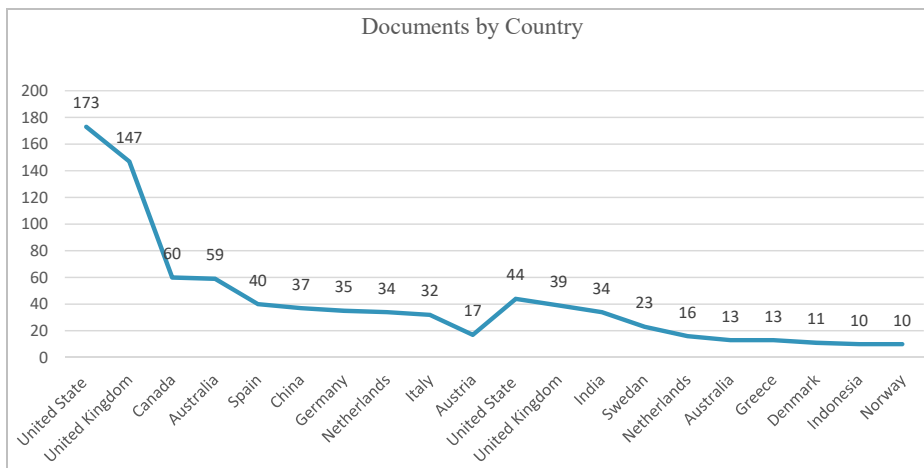
Discussions based on themes cooperate to determine a policy – a good collaboration between the government and the community in implementing procedures. The themes discussed in public policymaking provide a comprehensive understanding of the screening process for policymaking. A good process leads to the creation of a policy that can give maximum results for society. Sound policymaking requires the existence of principles in making a policy. These principles must provide aspects of openness of participation, communication, and transparency that are interconnected in discussions of social media and government in making public policies. The openness of data with various themes provides an understanding of the public policy process and the public's trust in the government. Document data by country can be seen in Figure 4.

Figure 4   Visualisation of social media for policymaking (see online version for colours)
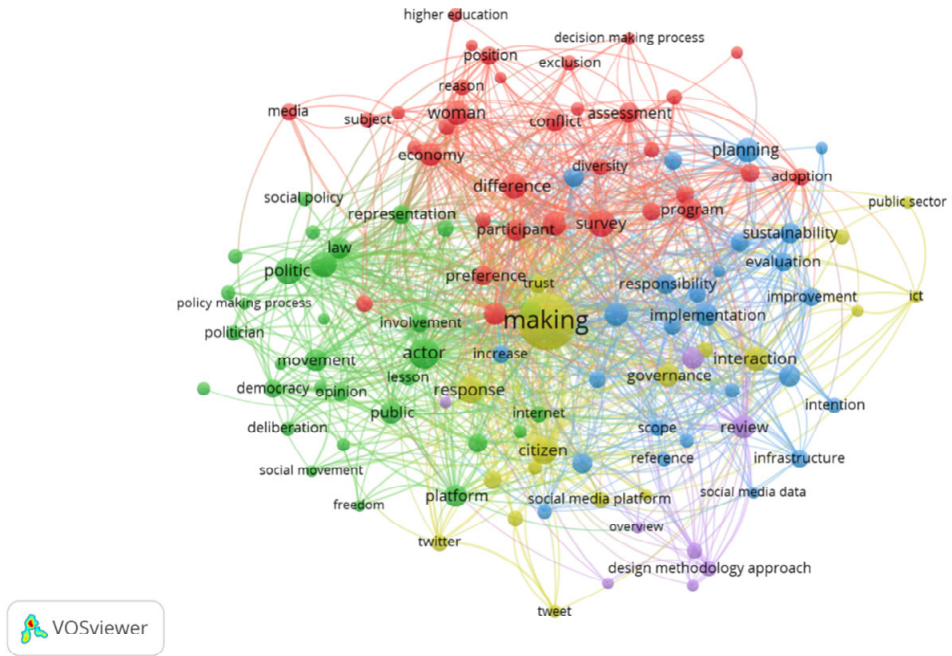
These countries participated the most in providing information and understanding about social media for policymaking and governance based on Scopus data. The ten countries produced the most documents, including the USA, the UK, Canada, Australia, Spain, China, Germany, Netherlands, Italy, and Austria. However, countries with a lot of knowledge about social media in government include the USA, the UK, India, Sweden, Netherlands, Australia, Greece, Denmark, Indonesia, and Norway.

The documents that discuss social media for policymaking are produced mainly by five countries, including the USA, the UK, Canada, Australia, and Spain, with as many as 173, 147, 60, 59, and 40 documents. Social media in government is mainly produced by the USA, the UK, India, Sweden, and the Netherlands, many forms namely 44, 39, 34, 23, and 16. They produced many documents on social media in government in the last ten years, 44 papers.

The amount of data generated from the results of Scopus on social media for policymaking was 744 documents, and the effects of Scopus on social media in government were 276 documents. Article documents dominate in providing information and knowledge about social media for government policymaking. The two images show that articles discussing social media for policymaking are more of an essay than a theme in government.

Data on a document per subject basis is displayed from the most significant percentage of the subject area. Data obtained from Social Sciences with 52.2% or 744, environmental science with 8.1% as many as 166 documents. Furthermore, the discussion of social media in government is divided into three fields of study, namely computer science, decision science, and social sciences, with 276 documents.

4.1 Visualisation of the social media themes for policymaking and social media in government

This section discusses the development of Social media for policymaking studies with 744 and social media in government with 276 documents. Data management is carried out using Vosviewer, which shows the development of the themes discussed. This is an essential factor in providing new and novel products in social media for policymaking and government research. Figure 5 shows social media for policymaking from the 2010 to 2020 Scopus results.

Figure 5 Themes of social media in policymaking cycle (see online version for colours)
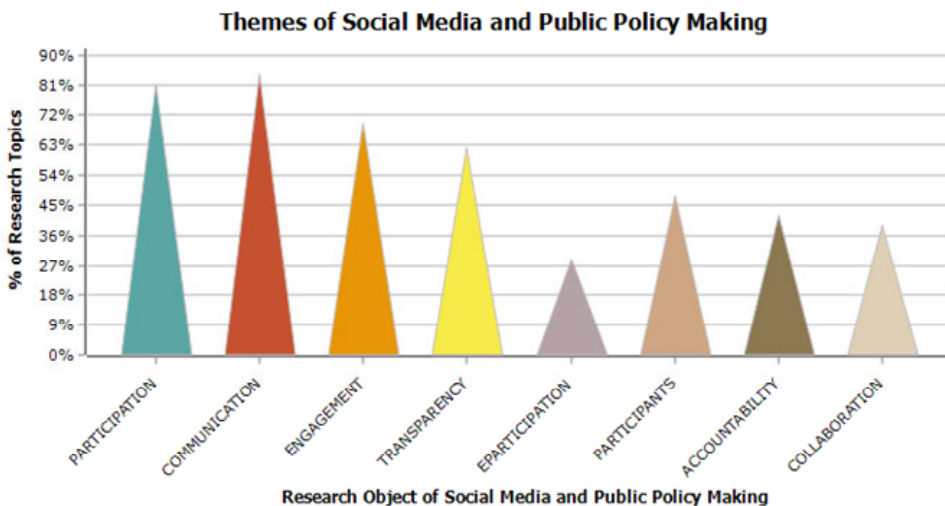
Information update on the development of research trends in social media for policymaking can be classified into five clusters based on the VOS viewer image correlation. Cluster 1 focuses on actor, internet, making, media, public policymaking, public opinion, representation, response, social issue, and social policy. Cluster 2 focuses on the ability, combination, evaluation, implementation, indicator, planning, policy development, policy implication. Cluster 3 discusses adoption, behaviour, connection, education, expectation, participant, population, social network. Cluster 4 discusses citizen, collaboration, communication technology, decision-maker, decision-making process, interaction, responsibility, and social media platform. Cluster 5 discusses the application, association, better understanding, content analysis, examinations, policymaker, practical implication, and social media data.

In the visualisation network about social media for policymaking, clusters that represent various data information are described. The first cluster focuses on actors involved in public opinion and responses to social and political issues. The second one discusses the adoption of problems and connections. The third cluster discusses the adoption of relationships in social media, while the fourth one discusses society and collaboration in responding to the policy process.

The visualisation network about social media in government illustrates clusters that describe various data information. Set 1 focuses on multiple communications from the public and various stakeholders. Set 2 focuses on adopting government policies in

multiple policies and relationships in different government policy processes. The visualisation network about social media in government describes clusters representing various data information in the discussion. Cluster 1 contains analysis, communication, organisation, public sector, social implication, social medium, and stakeholders. Cluster 2 discusses adoption, application, concept, e-government, policy, policymaker, relationship, and role. The analysis of the network visualisation and various sets illustrates communication from multiple stakeholders in government policy.

The policymaking process from various sources shows that social media influences the different information shared to shape participation, conversation, information, communication, and transparency. The information provided helps filter governance problems in the policymaking process and determine policies carried out by good management.

4.2   *Research issues and themes in study social media and public policymaking*

The theme of social media research in public policymaking provides much understanding for public policies in Figure 6. The findings discuss participation, communication, involvement, transparency, accountability, and collaboration. Furthermore, the discussion of the various conclusions reveals openness in the public policymaking process. It shows a method of participation in public policymaking communication that involves sharing parties through cooperation or collaboration. These issues are appropriate in determining policies that uphold the nature of good governance and openness to a discussion of social media themes in public policymaking. The amount of involvement from sharing pieces discusses participation, communication, involvement, transparency, accountability, and collaboration. These are forms of discussion and information that can be used in policymaking.

Figure 6   Policy issues in social media for policymaking (see online version for colours)
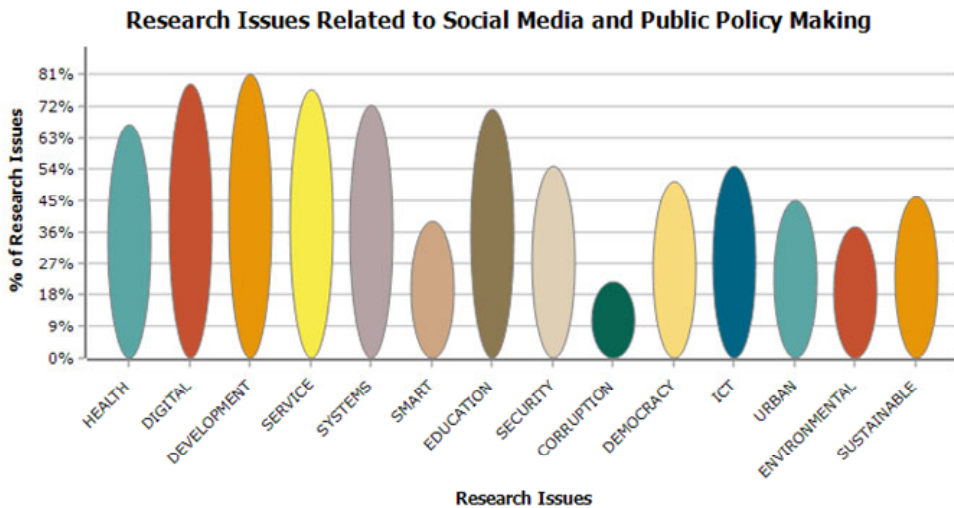

The discussion of social media's theme in making public policy focuses on eight indicators that provide input and aspects that support creating a public policy. The above themes that discuss participation reaching 81%, communication 82%, engagement 66%,

transparency 62%, participation 28%, participant 46%, accountability 40%, and collaboration 38%. These themes represent studies that provide understanding and openness in the public policymaking process. The discussion on participation is a participatory process that involves various parties considered to channel their aspirations in making public policies. Participation at this stage is the second most discussed theme, reaching 81%. The discussion regarding social media in the public policymaking process depends on good communication. In this discussion, communication is the most widely discussed indicator in creating a policy. Good policies result from community aspirations discussed through various communications to create policies for solving problems. Furthermore, determining public policy requires various parties' transparency for various policy processes to be understood for optimum implementation.

Collaboration is a form of cooperation between the government and various parties when determining a policy. It is necessary to have good collaboration between the government and the community in implementing procedures. The themes discussed in public policymaking provide a complete understanding of the policy determination's screening process. A good process leads to the creation of a policy that can generate maximum results for the community. Sound policymaking requires the existence of principles in creating a policy. These principles should provide aspects of openness, participation, accountability, communication, and good collaboration by the parties concerned. The creation of this process positively impacts policy implementation because there is confidence in implementing public policy. The process should meet the characteristics that trigger the performance of the objectives set by the government. Social media themes in making public policies from analysed data show the development of knowledge to achieve public policymaking goals. Figure 7 shows various research issues related to the public policymaking process.

Figure 7 Actor involved in policymaking (see online version for colours)
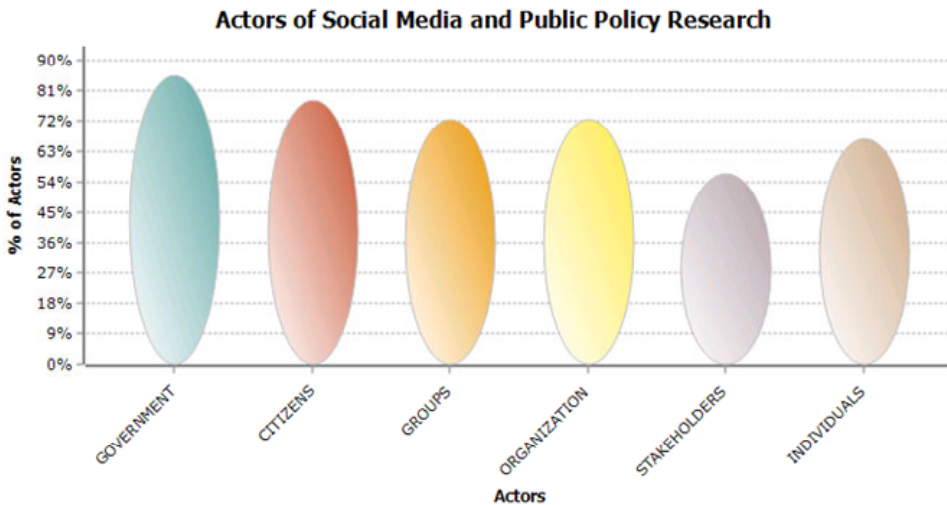
The figure shows various issues in the research on the image data based on multiple topics. The public policymaking process also involves health, digital, development, service, systems, innovation, education, security, corruption, democracy, ICT, urban, environmental, and sustainability. The most issues discussed in this theme are about

development with 81%, digital 78%, and service with 77%. These issues have various linkages in the process of making public policies that include diverse knowledge. They help draft policies that provide input in making public policies that involve social media. These issues offer insights regarding various policy processes.

The social media discussion while making public policies cover many societal issues, including health, digital, development, service, systems, innovation, education, security, corruption, democracy, urban ICT, environmental, and sustainability. These issues are discussed in detail to obtain good results for the government and the community. The number of problems in society requires solving problems through various policies.

4.3   Actors and tools as research objects of social media and public policymaking

Various studies on making public policies with social media involve different influential actors for the inputs to be channelled optimally. The actors involved provide information and filter a policy determined or established and obeyed by the community. These actors include government, citizens, groups, organisations, stakeholders, and individuals. The government is the holder of power in determining a policy and focuses on the community's aspirations and groups that can be studied to create an approach that embraces all issues.

Figure 8   Tools of social media for policymaking (see online version for colours)
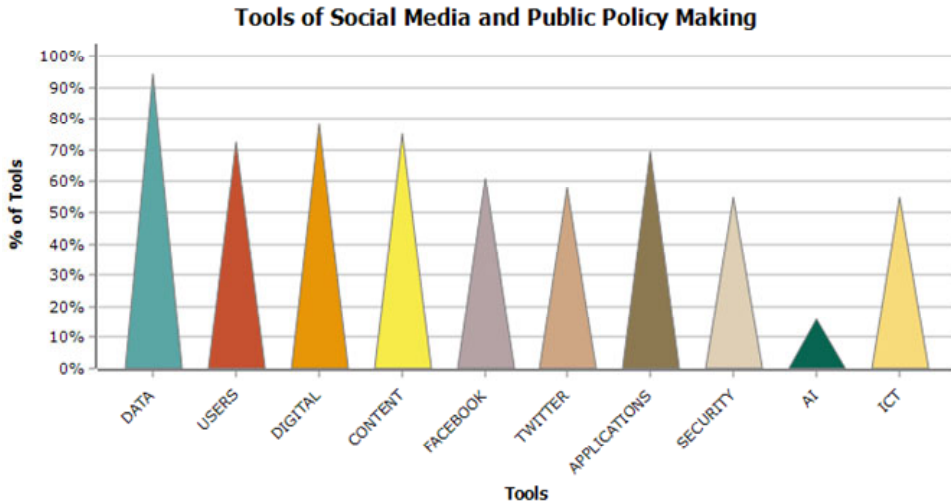
The discussion regarding social media involves several actors with a significant influence in creating a policy, including Governments, citizens, groups, organisations, and stakeholders, including individuals. The actors with the most critical role include the government with 85%, citizens 75%, groups and organisations 72%, individuals 68%, and stakeholders 56% at Figure 8. The high percentage indicates participation and influence generated in the policymaking process. The most powerful actor in the public policymaking process is the government, which has the right to determine whether or not an issue exists. Along with other parties, the government discusses problems that arise

through sound governance principles, including openness, accountability, effectiveness, good communication, and cooperation to achieve common goals.

Public policymaking aims to create a safe and prosperous society, eradicating problems troubling the public or creating harmful chaos. Various groups can convey aspirations considered worthy of being used as public policy. Making good public policy involves related communication in delivering multiple information to be filtered before being determined as public policy. Regarding social media in policymaking, the governments, citizens, groups, organisations, stakeholders, and individuals have essential roles. The discussion on this theme has covered all actors considered to have links in the public policymaking process. Figure 8 shows the tools in social media.

Tools are elements in social media with various sources to participate in the public policymaking process in Figure 9. These tools are used to obtain multiple inputs on existing issues and open access obtained through data, digital users, content, Facebook, Twitter, applications, security, AI, and ICT. They provide channelling of issues used in making public policies to be implemented by the community. In Figure 9, data obtained the highest value, precisely 94%, indicating openness in various public policymaking processes, digital with 79% follows, which is a tool used in open access to convey or distribute related information multiple issues that exist in society and needs to resolve in the policy process.

Tools used data, digital, users, content, Facebook, Twitter, applications, security, AI, and ICT. On the theme of social media, there were many tools involved as media used in open access. Data obtained in public policymaking were 95%, users 72%, digital 79%, content 75%, Facebook 60%, Twitter 58%, applications 70%, security 52%, AI 18%, and ICT 55%. This shows that in the discussion of social media, various tools are involved in participation, open access, and communication to understand the process of making public policies.

4.4 Research variables connecting in social media and public policymaking studies

The variable in social media's theme is a vision of interrelated networks with a significant influence on making a policy applied in society. These variables include data, participation, citizen, communication, Internet, individuals, electronic, mobile, user, organisation, applications, and services. This variable is shown in the image below with linkages and relationships in the public policymaking process. It is a network that cannot be separated in making public policies. The data in the variable image shows the existence of processes or access to data and issues in a society with social media involvement, creating good guidelines for the community. The variables that appear are interconnected in making public policies, as shown in Figure 9.

The variables in Figure 9 include data, participation, citizen, communication, internet, individuals, electronic, mobile, user, organization, applications, and services. Various variables have a strong relationship in public policy. There is communication between variables to provide direction or input on whether determined or stipulated in a general guideline. These variables are interconnected in the public policy process activities, like in the internet media in all aspects.

Figure 9   Variables and its correlation (see online version for colours)
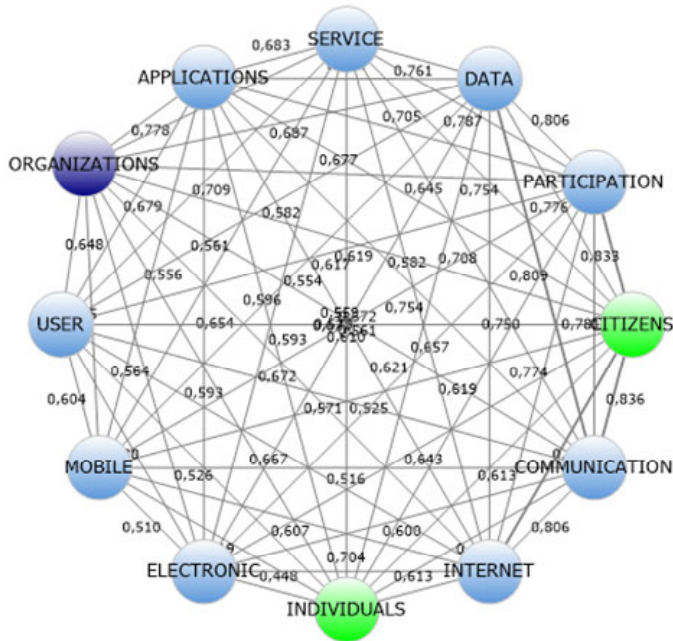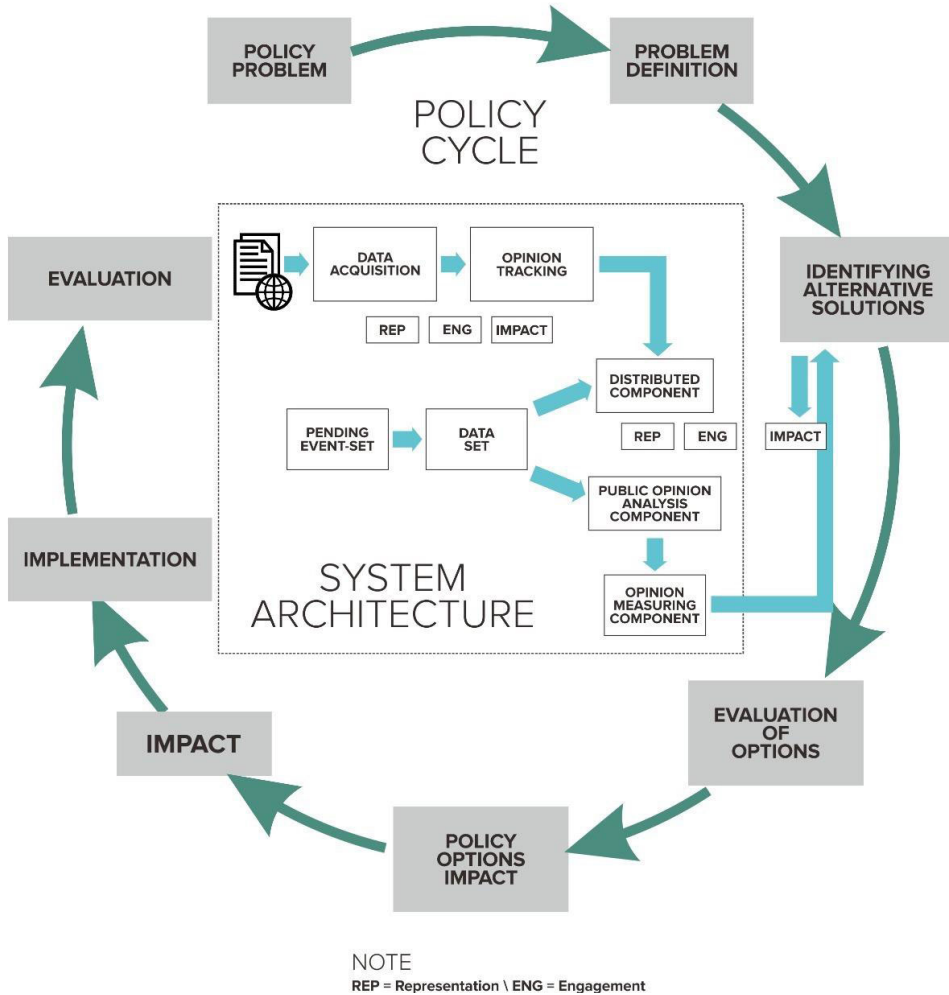

4.5   *Social media use in policymaking cycle model*

Contribution and a good understanding of extrinsic and intrinsic drivers' are essential in adopting technology for social learning (Khechine et al., 2020). Strong public communication engages stakeholders, while sustainable development strategies in decision-making help practitioners explain entrepreneurship and governance's role in developing continuous innovation (Betsch et al., 2020; Ciasullo et al., 2020). Furthermore, the use of online media by the government, such as social networking sites, the web, and blogs, can be used to practice values and increase public trust while responding to citizens' needs and encouraging participation in decision-making (Giacomini and Simonetto, 2020). Social media focuses on interactions between people who can manage the policy process (Shwartz-Asher et al., 2017). Social media is a technology suite that can make exchanges accessed quickly (Feeney and Welch, 2016). The shift in the digital distribution has changed newspapers' direction in collecting and sharing data with undetermined ethical consequences. The privacy policy practices of the 15 largest newspapers in the United States disclose what is permitted for retrieval and newsreaders with advertising, affiliation, and social media efforts and relates to the democratic role of journalism and transitional support for citizenship (Adams, 2020).

The government and citizens can use social media to exchange accurate data or information between them very quickly (Shwartz-Asher et al., 2017; Sayogo et al., 2020). The government adopts social media in service delivery for citizens to be involved in decision-making (Picazo-Vela et al., 2016). Social networks can provide precise information to reduce socio-political gaps (Starke et al., 2020). The implementation of social media in the public policymaking process can understand and focus on the impact that networks have on learning media and knowledge in various aspects (Basyal et al.,

2018). The implementation of social media in policymaking creates diverse, intelligent communities and provides a broader understanding of knowledge (Shwartz-Asher et al., 2017). It can be used to obtain valuable information in the public policy process (Loukis et al., 2020).

Figure 10 Proposed meta model of social media use for public policymaking cycle (see online version for colours)

Source: Modified from Chen et al. (2020) and Nurmandi et al. (2018)

Public policymaking with social media influences the results of decisions determined with various considerations (Wang and Medaglia, 2017). Contribution and a good understanding of extrinsic and intrinsic drivers' are essential in adopting technology for social learning (Khechine et al., 2020). Governments worldwide are increasingly active and innovative in providing good public services for the community with social media as an alternative in the public service process (Shwartz-Asher et al., 2017). Participation is involved in good governance management, especially for joint decisions (Shwartz-Asher

et al., 2017). The European citizens participate in social media implementation in public policymaking to achieve common goals (Giacomini and Simonetto, 2020). The government and citizens use it to exchange accurate data or information quickly and accurately (Panayiotou and Stavrou, 2019). Various influences developed in society show social media's role in policymaking. This helps obtain information and access to openness (Johannessen et al., 2016).

Communication is an integral part of the policy and stipulation process to involve the community and influence the public sphere (Sayogo et al., 2020). Social media encourages the public to participate in the openness system's sustainability in various activities (Pinem et al., 2018). The different influences developed in society show their role in the public policymaking process (Johannessen et al., 2016). Governments provide a complementary platform for information dissemination, connectivity, and engagement. In this regard, people can reach out to the government and its officials and make informed decisions (Song and Lee, 2016). Social media encourages interaction between citizens and the government. This can change the government's internal bureaucracy's direction for accountable public participation (Roengtam et al., 2017). With an internet network, people can receive and provide information more actively and interactively (Adum, 2019). Information technology influences individual, group, and organisational decision-making. Social media can influence the policy cycle's rationality and effectiveness in various public sectors (Giacomini and Simonetto, 2020).

The combined model in Figure 9 proposes system architecture to acquire information from social media in policy cycle with the following steps:

1   data acquisition and pre-processing

2   opinion tracking component performs hot topic and the sensitive topic selection and tracking

3   the distributed processing component performs the rapid processing of data access

4   the public opinion analysis component

5   the public opinion measuring component (Chen et al., 2020).

Step 1 and Step 2 try to identify and classify information into representation, engagement, and impact (Nurmandi et al., 2018).

5   Conclusions

The use of social media in various policymaking processes has had a significant effect. Open access can make public spaces understandable and help achieve common goals. Social media for policymaking studies from 2010 to 2020 is considered very large, with 744 documents. Most of the papers that discuss social media for policymaking are produced by five countries, including the USA, the UK, Canada, Australia, and Spain, with as many as 173, 147, 60, 59, and 40 documents. Social media in government is mainly produced by the USA, the UK, India, Sweden, and the Netherlands, many forms namely 44, 39, 34, 23, and 16. VOS viewer visualisation network on social media for policymaking depicts clusters that represent various information data. The first group focuses on actors involved in public opinion and responses to social and political

problems. Clusters 2 and 3 discuss problem adoption and connections and relationships on social media. Cluster 4 addresses community and collaboration in response to the policy process. The 5th cluster focuses on understanding policymaking and the NVivo 12 plus analysis results, which show the most frequently discussed aspects, including social, policy, journal, research, and media.

Discussions on social media in the government have 276 published documents. The country with the most documents is the USA, with 44 papers covering computer science, decision science, and social sciences studies. Vosviewer visualisation network on social media in government depicts clusters that represent various data information. Inset 1 focuses on communication from the public sector and multiple stakeholders. Set 2 describes the adoption of government concepts in various policies and relationships in the policy process. NVivo 12 plus a five-word analysis of the most discussed aspects, including social, journal, policy, government, and research. These studies describe the development of social media in public or government policies that provide information and knowledge related to government and social media use. This study only compares the results of the analysis of scientific developments in social media and government policies. Future research should examine approaches to making reliable policies and promoting transparency through social media.

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