Charting Inclusive Digital Society Research Trends: A Bibliometric Analysis of E-Participation Through Social Media

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Abstract. This study analyzed 287 articles on e-participation within social media, which were retrieved from the Scopus online databases as of 11 December 2022. The aim was to identify crucial areas and significant contributors within the field and recent research trends. The findings indicate that the trend of e-participation was slow to start, with researchers primarily from Western nations. The field still struggles to establish itself as an independent area of research, and identity-related issues are prevalent. In addition, the subject of e-participation through social media has received limited attention in the literature, with a focus on politicians' groups and minimal consideration of government-driven initiatives. This study is among the first to analyze bibliometric trends in e-participation literature related to social media. It is revealed that the publication trends on e-participation did not portray any consistent increment over the years, although the adoption of ICT in public sectors is happening at a peak rate. The findings can guide future research in this area and underscore the importance of considering government-driven initiatives in e-participation research, as they play a critical role in shaping digital democracy. Nonetheless, it is essential to interpret these findings deliberately, as the dataset solely covers the Scopus database and may not comprehensively cover all available sources. Finally, the study serves as a basis for future investigations in the field of e-participation and social media.

Keywords: E-Participation · Digital Society · Social Media · Digital Solutions

1   Introduction

Electronic participation (E-Participation) refers to the process of using technology to encourage stakeholders' involvement and interaction. Governments worldwide have adopted e-participation policies to promote citizens' participation in public decision-making [1]. The importance of Information and Communication Technology (ICT) in enabling citizen participation has grown significantly over the past few decades [2]. Moreover, e-participation is crucial in educating citizens about the complex decision-making process, enhancing their understanding and perception of the rationale behind a given policy. However, its implementation involves various complex aspects that impact the participation process beyond just technology capability or participation itself [3]. Existing research in this field has often focused on a single domain without considering its connections to other aspects [4].

In reality, while specific e-participation programs have shown significant effects, many of them have a low level of citizen involvement, and only a few have had a tangible impact on the decision-making process [5–9]. To improve citizens' e-participation, governments are advised to move to where citizens gather most, such as social media, instead of expecting them to move to traditional government websites [10]. However, despite social media's increasing popularity and extensive usage, little research has been conducted to encourage its users to participate in public decision-making [5, 11]. Although e-participation and social media have been analyzed regularly using various research methods, their literature analysis using bibliometrics is still relatively uncommon. This inadequacy leads to difficulties for future researchers in understanding research trends, identifying gaps, and proposing impactful studies. Hence, this article provides an overview of recent research trends in e-participation using bibliometric analysis techniques. It also seeks to evaluate the critical areas and significant applications of e-participation, particularly in social media.

2   Literature Review

Social media platforms have created new opportunities for e-participation, enabling citizens to engage in public decision-making through ICT. This trend has attracted researchers in the Information Systems (IS) field to explore the area. To facilitate knowledge growth, bibliometric analysis can shed light on the extent of research on e-participation via social media, providing a better understanding of current trends and identifying available gaps for future research. In light of this, it was found that most studies on e-participation have focused on general concepts rather than social media as a tool for e-participation. Only 10% of the analyzed studies specifically addressed social media, indicating a need for further research in this area [12].

The definition of e-participation remains unsettled among academics [9], and it is often used interchangeably with synonyms like "engagement," "involvement," and "empowerment," and occasionally with "political involvement." Consequently, this lack of agreement could hinder the growth and development of e-participation. E-participation was initially considered a sub-section of e-democracy aimed at encouraging representative democratic decision-making [13]. Nonetheless, e-participation is not limited to politics. In contrast to e-participation initiatives in the political context, there is a growing

movement towards citizen-centric e-participation initiatives designed to involve citizens in policy-making processes [10]. These initiatives prioritize citizens' needs and interests over those of politicians and governments. The objective is to provide more interactive and participatory platforms, motivating citizens to participate in policy-making processes [10].

E-participation is a growing area that uses digital innovations to enhance citizen involvement in shaping public policy, especially for achieving the 2030 Sustainable Development Plan [5]. To encourage citizen e-participation, engaging them where they are most active, such as on social media platforms rather than relying solely on traditional government websites, is essential. Social media platforms provide a new dimension to the e-participation field and offer significant ability for improving citizen involvement in policy-making processes at various levels [2, 10, 14]. Despite the extensive use of social media, there has been limited research on encouraging its users to engage in public decision-making [5, 11].

Recent literature summarized the study trend on e-participation through social media [5, 10, 15]. A key emphasis was also placed on the difficulties in promoting e-participation initiatives that prioritize citizens, specifically elevating their engagement and participation on these platforms [5, 11]. Social media platforms provide an opportunity to increase citizen participation in e-participation initiatives, but recent research indicates that they tend to be more informative than interactive [16]. Efforts are needed to create more interactive and engaging e-participation initiatives that provide citizens with opportunities to express their opinions and contribute to policy-making processes [5, 15, 17].

Overall, e-participation is a growing field that aims to increase citizen participation in policy-making processes through the use of digital technologies. While e-participation has historically been associated with e-democracy and political contexts, there is a growing movement towards citizen-centric e-participation initiatives that prioritize citizens' needs and interests over those of politicians and governments. Efforts are needed to create more interactive and engaging e-participation initiatives that provide citizens with opportunities to express their opinions and contribute to policy-making processes. Therefore, bibliometric analysis is a good starting point for identifying recent trends and exploring future research directions. This can help increase the level of citizen engagement with the government in practice.

3   Methods

To conduct the bibliometric analysis for this study, it followed the suggestion by [18] and modified it based on the recommendations by [19]. The method was systematic and followed a specific process, which can be replicated in future studies. The study used 287 articles to answer the research questions. It employed the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) method to select articles from the Scopus database. The study used categorical inclusion and exclusion criteria, which are specified in Fig. 1. The criteria were based on the relevance of the articles to the research questions, the quality of the articles, and the publication date. The inclusion criteria included articles published in the last five years, written in English, and related

to the topic of interest. The exclusion criteria included articles not written in English, articles unrelated to the subject, and articles with low-quality scores.
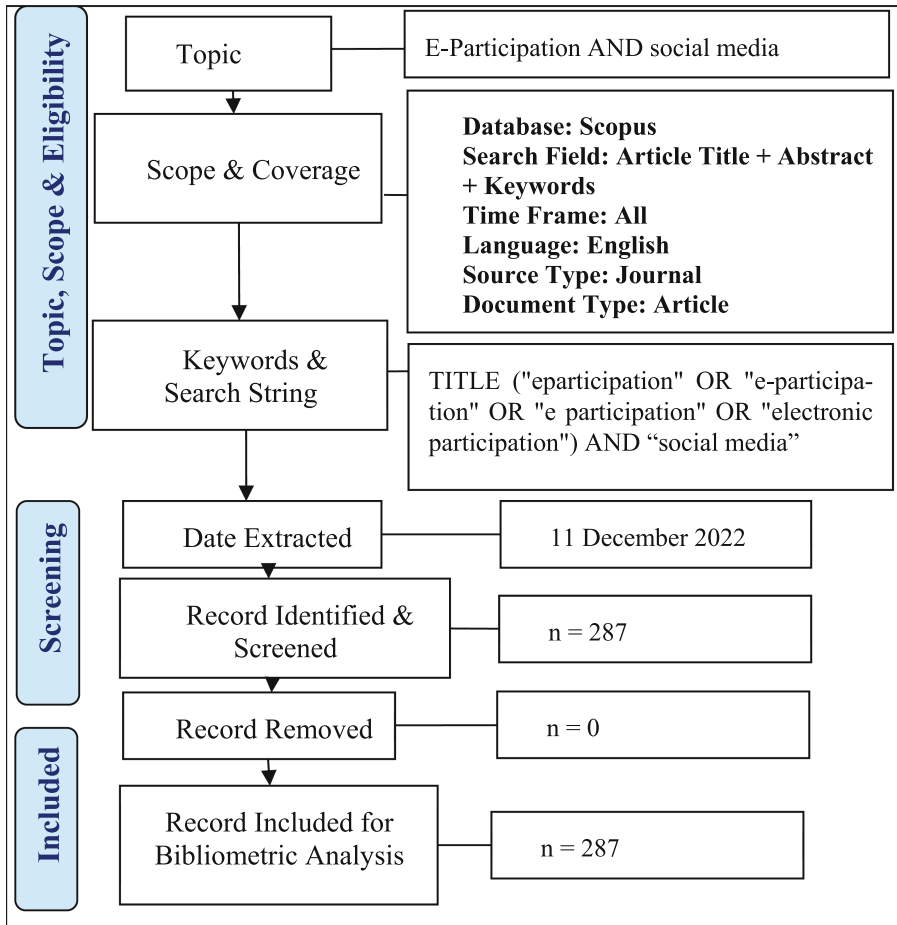
Fig. 1. Flow diagram of the search strategy.

To search for relevant papers, five sets of keywords were applied in the Scopus database, as displayed in Fig. 1. The primary keyword used was a combination of "eparticipation", "e-participation", "e participation", or "electronic participation" AND "social media".

4   Results

Through the implementation of bibliometric analysis, the study has derived outcomes related to document types, source types, language, subject area, research trends, keywords, authorship, and citations, which are explained in further detail in the following sections.

4.1 Documents Profiles

Table 1 illustrates the distribution of the various types of documents related to e-participation and social media examined in the Scopus database. Conference papers were the most common document type, accounting for 48% of the total. Articles represented 29.27%, followed by book chapters at 11.15% and conference reviews at 8.36%. The remaining documents were in the form of reviews (1.05%), books (0.70%), and editorials (0.70%), respectively. Conference papers in this context refer to papers presented at conferences that may have been published as full journal articles [20].

Table 1. Document type.

Document Type	Total Publications (TP)	Percentage (%)
Conference Paper	140	48.78%
Article	84	29.27%
Book Chapter	32	11.15%
Conference Review	24	8.36%
Review	3	1.05%
Book	2	0.70%
Editorial	2	0.70%
Total	**287**	**100.00**

Table 2 provides an overview of the source types related to e-participation, indicating that there are four types of sources. The most significant source type is conference proceedings, accounting for 39.37% of the total. Journals represent the succeeding greatest source type in e-participation research, comprising 31.36%, followed by book series at 20.56% and books at 8.71%.

Table 2. Source type.

Source Type	Total Publications (TP)	Percentage (%)
Conference Proceeding	113	39.37%
Journal	90	31.36%
Book Series	59	20.56%
Book	25	8.71%
Total	**287**	**100.00**

Table 3 shows the distribution of languages used in e-participation-related documents. English was the primary language for publication of most of the documents,

representing 98.61% of the total. The remaining 0.35% were published in Italian, Portuguese, Russian, and Spanish, which were the least popular languages used in this study.

Table 3. Languages

Language	Total Publications (TP)*	Percentage (%)
English	284	98.61%
Italian	1	0.35%
Portuguese	1	0.35%
Russian	1	0.35%
Spanish	1	0.35%
Total	**288**	**100.00**

* One document was written in dual languages

Table 4 displays the 15 most productive journals in the e-participation field. The analysis revealed that the "Computer Science" category had the highest number of e-participation-related documents, accounting for 284 (74.22%). This may be due to its listing in the Scopus database, which could have contributed to its high percentage compared to other listed sources. The "Social Science" category had the second-highest percentage of published e-participation documents, contributing up to 36.59% with a total of 105 documents. The remaining journals had published less than 100 documents, with the lowest on the list publishing only 49 articles as of the data search date.

Table 4. Subject area.

Subject Area	Total Publications (TP)	Percentage (%)
Computer Science	213	74.22%
Social Sciences	105	36.59%
Mathematics	49	17.07%
Business, Management and Accounting	39	13.59%
Decision Sciences	26	9.06%
Engineering	21	7.32%
Environmental Science	6	2.09%
Economics, Econometrics and Finance	5	1.74%
Arts and Humanities	4	1.39%
Energy	3	1.05%

(*continued*)

Table 4. (*continued*)

Subject Area	Total Publications (TP)	Percentage (%)
Medicine	3	1.05%
Psychology	3	1.05%
Materials Science	1	0.35%
Pharmacology, Toxicology and Pharmaceutics	1	0.35%

4.2 Research Trends

Figure 2 illustrates the publication trend of e-participation research between 2007 and 2022. Although publications related to e-participation date back to 2007, there was no significant increase in the number of publications until recent years. Between 2007 and 2010, there were no publications, and the trend fluctuated until 2013. However, since 2013, the graph demonstrates a gradual but steady rise in the number of publications, indicating a growing interest in e-participation. It is worth mentioning that the number of documents for 2022 is relatively low, despite this study being conducted in February 2023. Table 5 provides a breakdown of publications from 2007 to 2022.

Table 5. Year of publication.

Year	TP	NCP	TC	C/P	C/CP	*h*	*g*
2022	14	4.88%	3	200	14.29	66.67	
2021	21	7.32%			0.00		
2020	23	8.01%			0.00		
2019	26	9.06%			0.00		
2018	34	11.85%			0.00		
2017	27	9.41%			0.00		
2016	34	11.85%			0.00		
2015	30	10.45%			0.00		
2014	24	8.36%			0.00		
2013	17	5.92%			0.00		
2012	27	9.41%			0.00		
2011	6	2.09%			0.00		
2010	3	1.05%			0.00		
2007	1	0.35%			0.00		
Total	**287**						

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
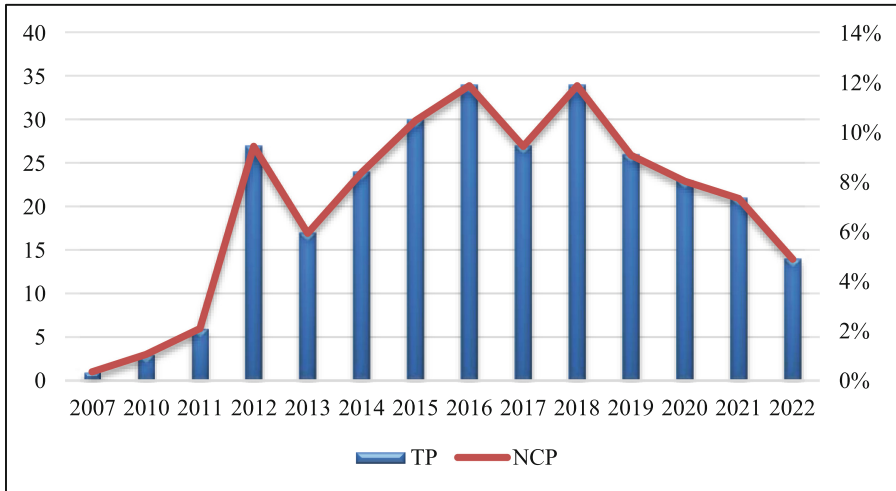
Fig. 2. Total publications and citations by year.

4.3   Citation Analysis

Table 6 presents citation metrics for the collected documents from 2007 to 2022, encompassing the overall number of citations and average citations per year for all retrieved articles. As per the table, the 286 retrieved articles received 52,608.85 citations over 15 years (2007–2022), with an average of 12.08 citations annually.

Table 6. Citations metrics.

Metrics	Data
Papers	286
Number of Citations	16
Years	15
Citations per Year	215.88
Citations per Paper	12.08
Cites_Author	52608.85
Authors_Paper	2.53
h_index	26
g_index	53

Table 7 provides an overview of the citation metrics for the collected documents as of February 2007, including the total number of citations and the mean citations per year for all retrieved articles. As indicated, there were 8,600 citations reported from 1992 to 2007 for 286 obtained articles, with an average of 302.85 citations per year.

The listed articles are related to social media and governance (which is very relevant to e-participation), and their names and affiliations are essential for readers to understand the backgrounds and expertise of the researchers who have contributed to the field. The top 5 highly cited articles cover a range of topics, including the impact of social media on corporate transparency [21], citizens' engagement on local government's Facebook sites [22], measuring participation in online political engagement [23], predicting changes in voting preferences using Twitter analytics [24], and factors influencing social media use in local governments [25]. Table 7 helps researchers spot the most dominant articles in the field and track the progress of research in this area.

Table 7. Top five highly cited articles.

No	Authors	Title	Year	Cites	Cites/Year
1	Bonsón et al. (2012)	Social media and corporate transparency in municipalities	2012	616	11
2	Bonsón et al. (2015)	Citizens' engagement on local governments' Facebook sites. An empirical analysis: The impact of different media and content types in Western Europe	2015	297	8
3	Gibson and Cantijoch (2013)	Conceptualizing and measuring participation in the age of the internet: Is online political engagement really different to offline?	2013	217	10
4	Grover et al. (2019)	Polarization and acculturation in US Election 2016 outcomes–Can Twitter analytics predict changes in voting preferences?	2019	129	4
5	Guillamón et al. (2016)	Factors influencing social media use in local governments: The case of Italy and Spain	2016	102	7

4.4 Keywords

Table 8 presents the top 10 keywords used in e-participation research, their total number of publications, and their percentage. VOS viewer is used to create a visual map (see Fig. 3) with a minimum threshold of five occurrences to analyze the keywords. The results demonstrated that "E-Participation" was the most frequently used keyword, appearing in 167 publications, followed by "Social Media" (163) and "Social Networking (online)"

(102). These three keywords covered over half of the total publications. The table also highlights other commonly used keywords such as "Egovernment", "Government Data Processing", "Decision Making", and "Public Policy." Overall, Table 8 helps researchers gain an understanding of the most frequent topics and themes in e-participation research.

Table 8. Top ten keywords.

Author Keywords	Total Publications (TP)	Percentage (%)
E-Participation	167	58.19%
Social Media	163	56.79%
Social Networking (online)	102	35.54%
E-Participation	40	13.94%
Government Data Processing	39	13.59%
Egovernment	36	12.54%
Decision Making	35	12.20%
EParticipation	28	9.76%
Public Policy	28	9.76%
Electronic Participation	21	7.32%

Figure 3 depicts a visualization map that demonstrates the connections among author keywords, citations by documents, and bibliographic coupling by authors. The varying colors, font sizes, and thickness of the connecting lines signify the strength of the relationships between the keywords. Keywords that share the same color are frequently listed together, indicating their close association and tendency to co-occur. For example, the diagram shows that E-Participation, Social Media, Social Networking (online), and Electronic Participation are highly related. Additionally, after excluding the core keyword (E-Participation) specified in the search query, the keywords with the highest occurrences are "Government Data Processing", "E-government", "Decision-Making", "Public Policy", and "Electronic Participation". This figure is helpful for researchers to visualize the relationships between different keywords in the field of E-Participation research and to identify potential research topics or themes.
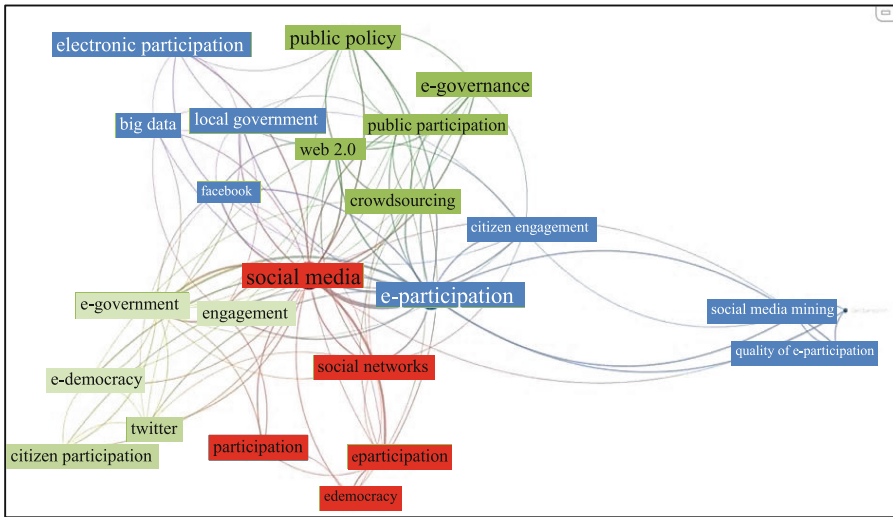
Fig. 3. Network visualization map of the author keywords.

5 Discussion and Conclusion

The study utilizes bibliometric analysis to identify the most researched topics and their relationships in e-participation through social media research from 2007 to 2022. The study presents twelve tables and a network visualization that includes document profiles, research trends, citation analysis and author keywords. All peer-reviewed journals available in the Scopus database that focus on e-participation in social media are reviewed. As a result, it is found that English is the dominant language in this research area, with approximately 98.70% of the retrieved documents written in this language. The trend also revealed that the literature on e-participation has not significantly increased over the years, despite the widespread adoption of ICT in public sectors. Although it has been researched for over 15 years, e-participation has faced challenges in establishing itself as an independent field, which calls for further research to strengthen it both theoretically and practically.

Theoretically, the result of this study advanced the academic understanding of e-participation. Several key discoveries have been made, including a declining trend in the number of authorships per document over time. Greece has reported the highest number of authors in this research domain, followed by Canada and Ireland as the primary contributing countries. Several other European countries have also supported scholarly works in this area. Another significant contribution of this study is that it identifies potential topics for future research by analyzing keywords with less frequent occurrences. The study fills a gap in the literature, as very little bibliometric analysis has been conducted to analyze e-participation in social media in the last decade. Therefore, this study has successfully updated and enriched the bibliometric literature, mainly since there has been a decline in e-participation in social media research since 2018. On the other hand, the practical impact of the study's results on e-participation lies in its ability to guide policymakers and practitioners in designing and implementing more

tailored and effective e-participation initiatives. By identifying specific research areas and potential topics for further exploration, this study offers valuable direction to enhance citizen engagement, address challenges, and leverage the power of social media to foster meaningful and inclusive public participation in decision-making processes. In the long run, this will lead to more responsive and citizen-centric policies, greater transparency, and increased trust between governments and the public.

However, the study has certain limitations, primarily because it only uses datasets from the Scopus database, focusing primarily on peer-reviewed publications. Thus, future research should also consider using various online databases such as Web of Science (WoS), Springer, and IEEE Xplore, among others, to obtain a more comprehensive range of scientific contributions. Next, to avoid subjective assessment by authors, the results of the bibliometric analysis should be compared with different methods. While the study provides valuable insights into e-participation in social media literature, it is still vital to further broaden the analysis's scope and increase the reliability of the findings by exploring other databases and utilizing alternative methodologies, such as qualitative content analysis, systematic literature reviews, or meta-analysis. Furthermore, to build on this study, future researchers could highlight several important points extracted from the findings. For instance, Asian countries have not been thoroughly researched in terms of e-participation in social media, creating an opportunity for future research to explore how people in countries like Malaysia, with unique cultures, religions, nationalisms, and lifestyles, could influence e-participation. Investigating these unique characteristics could offer valuable insights into how e-participation can be tailored to specific cultural contexts. Overall, this study can provide useful information for researchers, practitioners, and policymakers to identify knowledge gaps, research opportunities, and potential collaborations in the field of e-participation in social media.

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