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From Participation to Legislative Knowledge: A Bibliometric Review of E-Participation Research in Legislative Institutions

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***Abstract*—This study provides a comprehensive science map of e-Participation research in legislative institutions, addressing the fragmentation and lack of connection between citizen input and internal knowledge management. The purpose is to map the field's intellectual structure, evaluate the traceability of citizen inputs into parliamentary outputs, and identify strategic research gaps. Using the SPAR-4-SLR framework and PICOS-based screening, 41 empirical journal articles were selected from the Scopus database for bibliometric analysis using Bibliometrix and VOSviewer. Findings indicate that the field is dominated by European contexts and grounded in participation theory, institutional implementation, and behavioral adoption models. While recent trends show an increasing focus on advanced analytics and artificial intelligence, existing literature fails to explain how e-Participation mechanisms integrate with internal knowledge management. Specifically, there is no standardized metric to trace citizen input from initial submission to final committee recommendations or legislative amendments. This study contributes by offering an integrated scientific map tailored to legislative settings and proposing the Legislative Knowledge Transformation Model (LKTM). This model provides strategic guidance and practical indicators to strengthen evidence-based and transparent legislation. By establishing a reproducible pipeline for managing participatory data, the research paves the way for comparative validation in developing countries to enhance parliamentary oversight and institutional legitimacy.**

***Index Terms*—Bibliometric analysis, citizen participation, e-participation, legislative data analytics, knowledge management.**

I. INTRODUCTION

Digital transformation has increased expectations that legislative institutions operate with greater transparency, responsiveness, and reliance on evidence. Citizens also expect substantive opportunities to influence policy processes [1], [2], [3]. Electronic participation (e-Participation), which refers to the use of information and communication technologies to involve citizens in governance, is an increasingly sought-after approach to address these democratic demands [4], [5], [6], [7], [8]. Within the legislative context, e-Participation takes different forms, ranging from online public consultations to digital petition platforms to virtual deliberation rooms where citizens can contribute directly to drafting laws.

Although promising, the introduction of e-Participation in parliaments is complex and challenging. Parliamentary knowledge work is commonly fragmented, with Members of Parliament (MPs) and supporting staff having difficulty finding relevant information and processing the large volumes of information generated by citizen participation [9]. Previous studies in the literature highlight that e-Participation is contingent upon technology, organizational culture, process design, and institutional capability [10]. In addition, meaningful engagement requires feedback and dialogue to be effective; however, these elements are often under-resourced or absent, resulting in a relatively tokenistic influence of citizen input [11].

The current research in the related field still tends to highlight certain aspects of e-Participation separately, such as technology adoption barriers, internal dynamics of parliamentary organizations, or perceptions of participation quality. This fragmentation hinders the formation of a coherent intellectual map regarding the main theoretical foundations, dominant themes, and strategic research gaps [12]. In this context, the knowledge management perspective is highly relevant, as legislative institutions are knowledge-based organizations that must manage and transform inputs from citizens, experts, civil society, and the media into legislative outputs. The main challenge lies in converting data from citizen participation into structured information and knowledge that

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can be systematically used in the decision-making process [13], [14].

Departing from the intersection of representation theory, evidence-based policy, and public sector knowledge management, this study raises three main questions: RQ1: What theoretical foundations, themes, and patterns of collaboration shape e-Participation research in legislative institutions? RQ2: To what extent do existing studies explain the transformation of citizen input into legislative knowledge that can be traced to oversight functions and legislative outputs? Moreover, RQ3: Where are the most significant conceptual, methodological, and contextual gaps? To delimit the scope and enhance replicability, this study employs the PICOS logic [15]. This study addresses the dominance of literature centered on the European context, which often lacks operationalization, by presenting an integrated science map, offering operational definitions along with traceable indicators and metrics that can be replicated, and paving the way for comparative validation in developing countries to strengthen evidence-based, accountable parliamentary oversight.

To overcome this fragmentation and obtain a more systematic and measurable overview of the literature, bibliometric analysis is an appropriate methodological approach. Unlike narrative reviews, the bibliometric method allows for quantitative and visual mapping of large collections of literature based on metadata, thereby enabling more objective identification of publication patterns, collaboration networks, and conceptual structures [16], [17]. Therefore, this study employs bibliometric analysis to systematically map the development, intellectual structure, and collaboration dynamics in the study of e-Participation and knowledge management in the legislative context. Through this approach, the research aims to identify the main themes, intellectual foundations, and research gaps that can serve as a basis for formulating future research agendas.

II. Related Work

Bibliometric methods have been widely used to map research landscapes in digital participation and governance. Several studies have applied systematic bibliometric approaches to examine development trends, intellectual structures, and thematic clusters related to e-Participation. For instance, [18] identified the top journals, authors, and conceptual structures in this field of study while demonstrating the usefulness of citation and co-word analysis related to e-Participation by reviewing 235 Scopus-indexed articles on e-Participation and e-government. Similarly, [19] analyzed 783 Web of Science publications on e-Participation, tracing publication outputs, key contributors, and keyword distributions to present a holistic view of research trends.

Bibliometrics has also addressed broader participation and governance issues. A Scopus-based review of e-Democracy identified growth trends, main clusters, and major publications, such as Government Information Quarterly, and stressed the necessity of comparative analysis across multiple databases [20]. Other bibliometric studies related to e-Participation, such as community engagement in infrastructure or electoral research in Southeast Asia, demonstrate how science-mapping techniques can identify trends and knowledge gaps across contexts and disciplines [21], [22].

Nevertheless, bibliometric studies that explicitly examine the intersection of e-Participation and knowledge management within legislative institutions remain limited. Most existing reviews tend to situate e-Participation within the broader domain of e-government or focus on constructs related to e-Democracy, without examining the institutional setting where citizen input meets formal legislative processes. In addition, previous studies rarely consider performance analysis, intellectual structure, and thematic evolution together to construct a comprehensive science map.

This study seeks to fill a research gap by mapping studies on e-Participation in the legislative context using four types of analysis: publication performance, co-citation, bibliographic coupling, and thematic evolution. Through this integrated approach, the study provides a clearer understanding of the development of e-Participation in relation to the legislative knowledge process, while also serving as a foundation for formulating a more specific future research agenda for legislative institutions.

III. Research Method

This study uses the Scientific Procedures and Rationales for Systematic Literature Reviews (SPAR-4-SLR) as a process framework to ensure a rigorous, transparent, and reproducible bibliometric review [23]. The review deliberately limits the selected articles to maintain a clear focus, specifically on e-Participation in the legislative context. SPAR-4-SLR structures the workflow into clearly defined phases: identification, screening, and synthesis, with explicit decision rationales and audit trails, as shown in Fig. 1.

A. Assembling

The identification phase focused on assembling an initial corpus of literature related to e-Participation and knowledge management in legislative contexts. We performed a comprehensive search in the Scopus database using the following query: *(parliament OR e-Parliament OR legislative) AND (aspiration OR "public complaints" OR e-Participation) AND (data OR information) AND (knowledge OR "knowledge management" OR "knowledge transformation") AND (model OR "policy analytic") AND PUBYEAR > 2016 AND PUBYEAR < 2026 AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (EXACTKEYWORD, "Decision Making") OR LIMIT-TO (EXACTKEYWORD, "Public Participation") OR LIMIT-TO (EXACTKEYWORD, "Policy Making") OR LIMIT-TO (EXACTKEYWORD, "Citizen Participation") OR LIMIT-TO (EXACTKEYWORD, "E-Participation") OR LIMIT-TO (EXACTKEYWORD, "Knowledge") OR LIMIT-TO (EXACTKEYWORD, "Legislation") OR LIMIT-TO (EXACTKEYWORD,*

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"Information Processing") OR LIMIT-TO (EXACTKEYWORD, "Decision Support Systems")).

Assembling	
Identification	**Research Domain:** Digital Governance; E-Participation; Public Policy; Knowledge Management. **Institutional Focus:** Legislative Institutions (Parliaments, Congresses, Legislative Councils). **Objectives:** * To analyze publication trends, influential scholars, and methodological approaches in e-Participation and knowledge management within legislative contexts. * To identify and synthesize dominant research themes, theoretical frameworks, and conceptual models in the field. * To develop an integrated framework linking e-Participation platforms, knowledge transformation processes, and legislative decision-making. * To propose a comprehensive research agenda addressing identified gaps in theory and practice. **Source Type:** Peer-Reviewed Academic Journals. **Source Quality Index:** Scopus-indexed publications (as per provided metadata). **Publication Period:** 2015–2025 (with emphasis on recent developments).
Acquisition	**Search Mechanism:** Systematic search in the Scopus database using comprehensive Boolean operators. **Search Period:** 2015–2025 (capturing recent developments while maintaining historical context). **Search Keywords:** (parliament OR "legislative assembly" OR congress OR "law-making body") AND ("e-participation" OR "digital participation" OR "online deliberation" OR "citizen engagement") AND ("knowledge management" OR "information processing" OR "data transformation" OR "policy analytics") AND ("decision making" OR "policy making" OR legislation OR "public policy"). **Initial Pool:** 70 articles identified from the metadata.
Arranging	
Organization	Extracted metadata was systematically organized and analyzed, including bibliographic information (authors, institutions, countries, journals, publication year), methodological data (research design, sample size, data collection methods, analytical techniques), conceptual elements (theoretical frameworks, key constructs, conceptual models), contextual factors (geographic context, institutional setting, technological focus), and findings & implications (key results, practical recommendations, theoretical contributions).
Purification (Screening & Eligibility)	**Inclusion Criteria:** * **Document Type:** Empirical research articles (quantitative, qualitative, mixed-methods). * **Source Status:** Peer-reviewed academic journals indexed in Scopus. * **Language:** English. * **Contextual Relevance:** Studies focusing on legislative institutions or with clear implications for parliamentary processes. * **Thematic Focus:** Articles addressing e-participation, citizen engagement, knowledge management, or policy processes in governmental contexts. **Exclusion Criteria:** * **Document Type:** Review articles (to focus on primary research), conference papers, and book chapters. * **Source Type:** Non-peer-reviewed publications and working papers. * **Geographic/Contextual Mismatch:** Studies exclusively focused on executive agencies, local governments (unless explicitly linked to legislative processes), the private sector, or non-governmental organizations without legislative relevance. * **Thematic Irrelevance:** Papers addressing unrelated domains (such as pure environmental science, clinical health studies, **or** business management without governance implications). **Screening Process:** * **Initial Screening:** Based on titles and abstracts (70 articles). * **Full-text Assessment:** Detailed evaluation of remaining articles. * **Final Sample:** 41 articles included for in-depth analysis (23 High Match + 18 Medium Match).
Assessing	
Evaluation	**Analysis Method:** Bibliometric Analysis. **Agenda Proposal Method:** Future research and analysis directions.
Reporting	**Reporting Conventions:** Publication trends, author productivity, country productivity, top global cited articles, author collaboration networks, thematic maps, and future trend themes.

Fig. 1. SPAR-4-SLR framework.

This search targeted peer-reviewed journal articles within the specified timeframe, yielding an initial set of 70 documents. Metadata extracted included publication year, authors, affiliations, countries, keywords, citation counts, and source titles. These data points served as inputs for subsequent bibliometric analysis.

To delimit the scope at the identification stage, we pre-specified eligibility using the PICOS logic: Population (defined as national parliaments and their support units, such as secretariats, committees, and legislative experts); Intervention/Interest (encompassing e-Participation, grievance mechanisms, and the associated analytics that transform citizen inputs into legislative knowledge); Comparison (where available, across mechanisms or institutional domains); Outcomes (operationalized as traceable markers of knowledge transformation and legitimacy, such as integration into oversight agendas, committee recommendations, and traceable revisions of bill digests); and Study designs (limited to empirical, peer-reviewed articles including qualitative, quantitative, mixed methods, case studies, and quasi-experiments). Consistent with this framing, we retained final versions of English-language records from 2017 to 2025. This PICOS specification guided query construction and scoping in the Assembling phase and serves as the operational rule set for the subsequent Arranging and Assessing phases of the SPAR-4-SLR process.

B. Arranging

The title and abstract screening applied the PICOS inclusion and exclusion rules; only empirical, peer-reviewed studies with explicit links to legislative oversight processes were retained. The initial dataset was preprocessed and formatted according to the SPAR-4-SLR protocol to ensure quality and coherence. Non-empirical papers, including reviews, conference papers, book chapters, and non-journal articles, were excluded. We also excluded articles that did not focus significantly on citizen participation. These refinements led to a final database of 41 articles eligible for in-depth analysis. Although the number of articles may appear small, this volume is still considered adequate because the topic being studied is very specific: the intersection of e-participation, knowledge management, and legislative institutions. This limitation reinforces the goal of this research towards scientific mapping rather than broad statistical generalization. Therefore, this study prioritizes conceptual specification and meticulous screening over corpus expansion.

To enhance replicability, data validation was conducted in two stages: first, screening titles and abstracts against PICOS criteria; and second, a full-text review to ensure that each article genuinely discusses the legislative or parliamentary context and contains empirical evidence relevant to the research objectives. In addition, Scopus metadata, such as author names, publication year, keywords, source titles, and citation records, were verified to ensure completeness and consistency, ensuring only articles with a clearly defined scope and relevance were included in the analysis.

C. Assessing

The full-text inclusion process and data extraction were guided by PICOS, with the results feeding the operationalization of the traceability indicators. In the evaluation step, bibliometric methods were used to analyze the processed dataset. The analyses included:

- Performance analysis: Analyzing the statistics of publication output, author productivity, and institution/country contributions, as well as citation impact trends.
- Intellectual structure: Exploring classic papers and active research groups through co-citation and bibliographic coupling.
- Conceptual structure: Analyzing the map connecting keywords and thematic networks to identify common research themes.

- Thematic evolution: Using tools such as VOSviewer and Bibliometrix to visualize how thematic focus has evolved.

The bibliometric software used included VOSviewer (v1.6.20) and the Bibliometrix package (v4.0.0) in R. For co-word analysis, we used a minimum threshold of 2 occurrences to focus on stronger, well-explained terms and normalized association strength to calculate term proximity. Clustering algorithms based on modularity optimization were applied for co-occurrence and coupling analyses, while thematic mapping and evolution functions helped trace thematic shifts throughout the dataset.

IV. Result

As a bridge between the review and the empirical results, we explicitly connect the findings to our research questions. For RQ1, the performance and intellectual structure analysis converges on three anchors: participation theory, institutional implementation, and behavior/adoption models, with a collaboration network largely focused on Europe. For RQ2, only a few studies operationalize the mechanisms of knowledge transformation that can be traced from citizen input to committee output; standardized traceability indicators, for the most part, do not exist. Regarding RQ3, the science map motivates a forward agenda comprising an auditable legislative knowledge management model, a standardized indicator set that is suitable for mapping participation to parliamentary knowledge outputs, and comparative validation in developing countries. Together, these results substantiate the need to move beyond descriptive participation studies toward measurable, reproducible pipelines that can strengthen evidence-based oversight and institutional legitimacy.

This section reports the findings of the bibliometric analysis of studies on e-Participation in legislative institutions, based on the methodological procedures described earlier. The results combine descriptive performance indicators and science-mapping techniques to examine publication trends, geographical distribution, influential journals and authors, and the intellectual and conceptual structure of the field. The published record is visualized using figures and tables depicting the growth of publications, patterns of collaboration, and thematic relationships, as well as through co-citation analysis, bibliographic linkages, and thematic maps. In short, this section offers a comprehensive overview of trends and directions in legislative e-Participation as well as gaps in knowledge.

A. Publication Trends and Geographical Distributions

The descriptive analysis shows that scholarly interest in e-Participation within legislative institutions has developed gradually over time. Early publications appeared sporadically, followed by a more consistent increase in output in recent years (see Fig. 2). This pattern reflects the growing relevance of digital participation and transparency initiatives in parliamentary contexts. Nevertheless, compared to the broader literature on e-government and e-democracy, the overall volume of research remains limited, indicating that legislative e-participation is still an emerging and specialized research area [12].

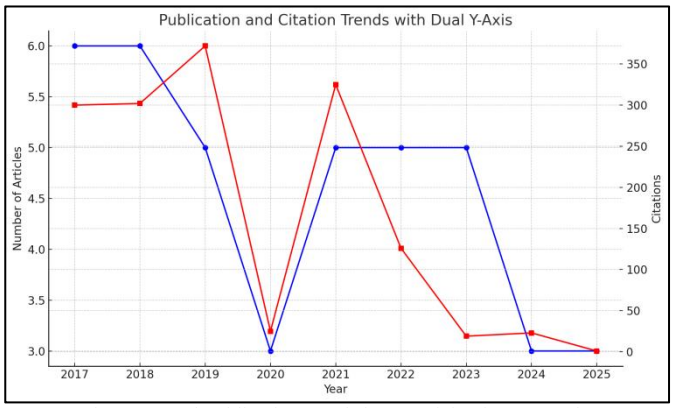

Fig. 2. annual publication trends in e-participation research.

To assess country-level performance, we rely on the frequency with which countries appear in the corpus of 41 empirical works (see Fig. 3) and observe strong geographic clustering around Europe. The results show that the UK (12 articles), Italy (9 articles), and Germany (7 articles) are the main contributors, forming the leading European cluster. This concentration is due to structural and contextual factors, such as a high institutional commitment to the Open Government and the EU's Digital Single Market agendas, which have created a favorable policy environment and funding opportunities in the region [24]. Furthermore, cases such as Belgium and the Netherlands demonstrate a strong academic background in information science and public administration, as well as a highly developed e-government infrastructure, providing a fertile empirical context for studying legislative e-Participation [25], [26].

B. Most Influential Authors

The author performance analysis identified [28] as the most dominant contributor in our analysis (Fig. 4). With three papers and more than 350 citations, this author is near the center of gravity in terms of intellectual influence on research on legislative e-Participation and knowledge management. The author's contributions consistently address critical issues, including policy-cycle innovation through advanced analytics, the orchestration of digital governance processes, and political empowerment in online participation contexts [27], [29].

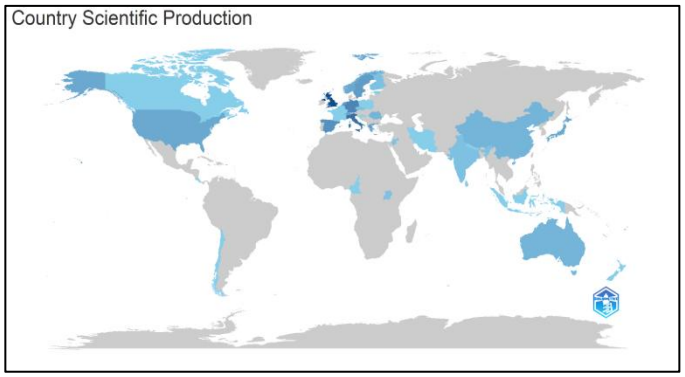

Fig. 3. Geographical distribution of publications by country.

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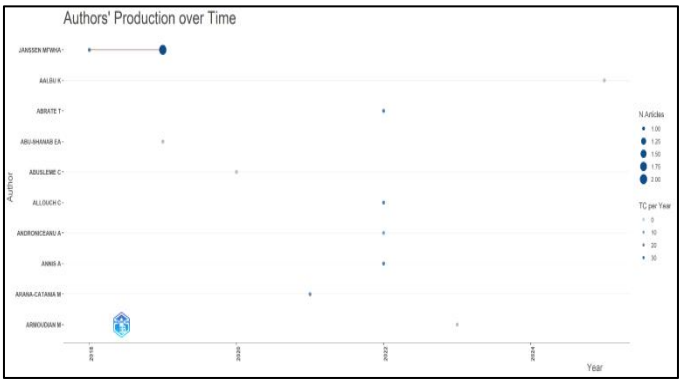

Fig. 4. Most influential authors.

C. *Most Influential Articles*

The performance analysis of articles identifies the top works that contribute to the intellectual foundation of this field (Fig. 5). The article by [27] focuses on social media analytics methods for understanding voter behavior and political polarization, underscoring the strategic relevance of citizen-generated data in contemporary political life. At the same time, [28] contributes a managerial-organizational lens regarding policy orchestration through sustainable analytics.

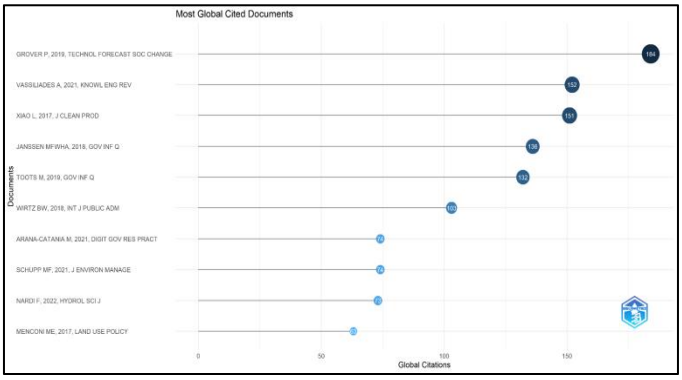

Fig. 5. Most Influential Articles

In a similar vein, [30] highlights the increasing attention being paid to transparency, interpretability, and accountability in policy analytics, whether through argumentation analysis or explainable artificial intelligence (AI). Overall, these key findings affirm that well-implemented legislative e-Participation is not supported solely by a data collection system but also requires a robust analytical system to process participation data into actionable policy information.

D. *Research Themes and Intellectual Structure*

1) *Co-citation analysis*

Co-citation analysis identifies three major thematic clusters that define the intellectual structure of research on legislative e-Participation (Fig. 6). The first category is rooted in core participation theory presented by [31], such as the foundational paper on the ladder of citizen participation, which advocates for increased depth and quality in citizen engagement as critical evaluative dimensions. The second cluster concerns implementation dynamics and critical reflection, as exemplified by [32], addressing representation and deliberation in digital participation and the structural complications within official policy-making. The third cluster, grounded in the theory of planned behavior, emphasizes citizen-level and institutional-level behavioral and adoption determinants [33]. Taken together, these clusters suggest that robust research on legislative e-Participation must integrate normative participation theory with implementation challenges and the factors that determine behavior within a coherent analytical framework.

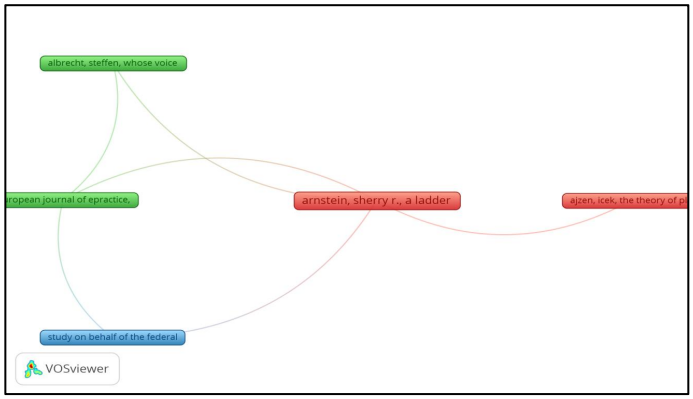

Fig. 6. Co-citation network of legislative e-Participation research.

2) *Bibliographic coupling analysis*

Bibliographic coupling analysis identifies four research clusters with productive activity, which correspond to modern topic areas (Fig. 7). Cluster 2 appears to be the most closely related to the transformation of legislative knowledge, including research on policy innovation, orchestration, and organizational design structures [10]. This group illustrates a shift from the adoption of technology to more advanced levels of knowledge management and institutional organization. Another cluster concentrates on the local level of e-Participation and the urban planning domain [34], while Cluster 3 overlaps with governance approaches and business models for e-Participation [35]. The distribution of such clusters contributes to the growing understanding that sustainable digital public deliberation requires integrative models that can reconcile technology, organization, and analysis layers.

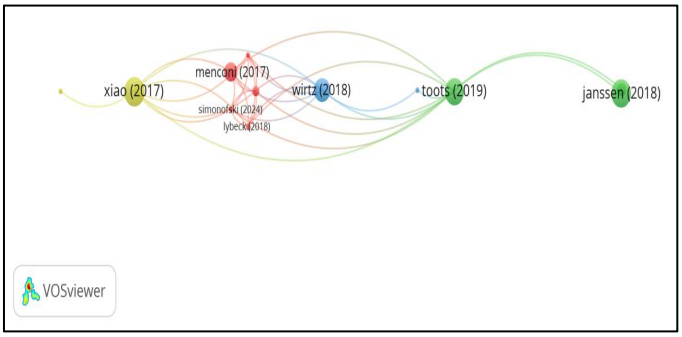

Fig. 7. Bibliographic coupling network.

3) Conceptual structure (thematic map) analysis

The thematic map analysis clarifies the field's conceptual evolution (Fig. 8). Decision-making emerged as a prominent theme, reflecting the growing role of information systems in supporting structured decision-making processes. Prior studies show that decision-making is not a standalone activity but is supported by system-based approaches that transform data into actionable insights. This fact indicates that participatory inputs should be integrated into decision-making processes rather than treated as isolated technological outputs [36]. E-Participation was identified as a primary theme due to its central role in governance and policy research. Conceptual frameworks and empowerment are already established themes; however, both present significant gaps between their theoretical development and practical implementation. Emergent and declining topics regarding e-government, policy analysis, and deliberative democracy indicate areas for future investigation that focus on the interplay between participatory data analytics and deliberative processes and institutions.

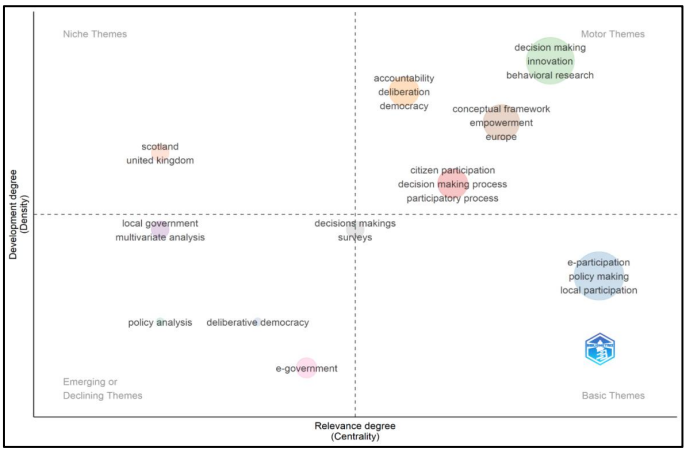

Fig. 8. Thematic map of the conceptual structure of e-participation research.

E. Discussion

The relatively small number of articles is consistent with the scope of a specific field of study. This research specifically focuses on legislative institutions and their relationship with e-Participation and knowledge management, thereby limiting the number of qualifying publications. The studies provide a substantive finding, indicating that the study of e-Participation in legislative institutions remains a field of research that has not yet fully developed.

Overall, bibliometric data indicate that research on e-Participation in parliamentary institutions has reached a moderate level of maturity, but intellectual fragmentation persists. Empirical European contexts, a few very active authors, and original contributions comprise the disciplinary framework, which is dominated by participation theory, institutional implementation models, and behavioral adoption theories. Despite the focus on digital transformation and participation topics, evidence from the science mapping indicates only a limited link between the e-Participation instruments in place and legislative knowledge management processes. Newly forming clusters in policy innovation, analytics, and orchestration suggest a turn to more applied issues. However, they still lack a coherent model for turning citizen input into legislative knowledge that legislators can act on. Overall, these findings highlight a recurring separation between participatory data collection and its systematic use in legislative decision-making. An integrated, normative knowledge transformation framework could address this issue.

V. Conclusion

This bibliometric study shows that research on e-Participation and knowledge management in parliamentary organizations has a solid conceptual foundation, though it remains developing and fragmented. The existing literature relies on classical participation theories, previous empirical studies, and more recent findings that are beginning to shift toward issues of advanced algorithms, the application of analytics, and transparency in decision-making. Nevertheless, this study's findings confirm that no synthesis exists linking citizen participation mechanisms with the dynamics of digital governance and data-driven knowledge management in the legislative policy process.

Theoretically, this study contributes by mapping studies on e-Participation in the legislative context and positioning them as a form of knowledge transformation in which citizen input is processed, selected, validated, and transformed into knowledge that can be used in oversight and legislative processes. Practically, this study emphasizes the importance of applying the Legislative Knowledge Transformation Model (LKTM) to manage citizen input and integrate it into oversight processes. This model is relevant for legislative institutions to develop mechanisms to trace the relationships among citizen aspirations, commission agendas, institutional recommendations, and policy formulation. In the context of developing countries, including Indonesia, and specifically the House of Representatives (DPR RI), these findings provide a strategic basis for strengthening governance of citizen participation, improving oversight quality, and enhancing parliamentary legitimacy.

This study also emphasizes that legislative knowledge transformation is an increasingly important field, yet it has not been extensively studied or used as a basis for decision-making. The use of the SPAR-4-SLR approach, guided by PICOS, in this research has enhanced the transparency and reproducibility of the literature search process, thereby enabling cross-study

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comparisons. Future research is recommended to examine LKTM comparatively across the parliaments of developing countries, particularly in Southeast Asia, using mixed-methods research designs and quasi-experimental approaches to assess how traceability mechanisms, policy analytics, and institutional workflow management influence oversight quality and legislative effectiveness.

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