

Bibliometric Analysis of Methodologies and Trends in Participatory Planning Using a Dual Strategy Approach

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Abstract - Participatory planning has emerged as an important tool for democratic decision-making in the fields of urban planning, public policies, and social development through involving citizens in governance processes and ensuring transparency and social sustainability. However, its efficient use faces problems related to the colonial past, political centralism, and threats of superficial consensus. The present article discusses the following research problem: In spite of the current scientific interest in participatory planning, there is no systematic bibliometric study of the methodology trends, leadership of institutions, and theme evolution in various temporal and search-strategy settings. To solve the problem, the study performs a bibliometric analysis of the literature on participatory planning identified in the Scopus database with the help of two alternative search strategies. Strategy 1 identified 77 articles (1995-2024) based on the Boolean search query "participatory AND planning" with Social Sciences filtering. Strategy 2 identified 953 articles (2020-2025) with additional filters of open access and English language. The data were analyzed using RStudio and Bibliometrix tools in order to study the dynamics of scientific production, international cooperation, major institutions, authorship, and theme dynamics. Strategy 1 showed low yearly growth (1.41%), but high citation impact (29.01 citations per document) and moderate international cooperation (24.68%). Strategy 2 proved to be a constantly developing strategy (9.96% per year), having high international cooperation (34.21%), and wide theme diversity (23.44 citations per document). Some main topics in both strategies are participatory methods, governance, urban planning, and sustainable development. Emerging technologies like GIS, mobile applications, and artificial

intelligence are being used in this field increasingly often. These results clearly show how the concept of participatory planning has progressed from being a developing practice into an interdisciplinary field with many ramifications for inclusive urban governance and the realization of the Sustainable Development Goals (SDGs).

Keywords: Participatory Planning, Bibliometrics, Urban Governance, Social Inclusion, Multicriteria Methods, Bibliometrix

I. INTRODUCTION

Participatory planning is a fundamental tool that requires the involvement of different stakeholders in the process of decision making concerning urbanism, public policies and social development. Participatory planning has been considered as an important aspect of public and urban administration and has a preponderant place in the fields of inclusion and democracy in governance. Apart from being a process, participatory planning is considered as a strategy that makes the planning more effective and flexible and helps achieve stability of the social system through making it a learning process through the use of Reticular Model and Citizen Participation (Smith, 1973). As a tool of participatory design, it acts as a strategy for designing cities which are active and livable through merging of local knowledge and expertise (Pan et al., 2022). Moreover, this research views it as an interactive process of building formal representations

of complex socio-environmental problems jointly (Zellner, 2024).

On the ground, the participatory planners engage in negotiations among the different stakeholders to build a common arena for action and ensure that there is honesty and transparency in the decision making process. The Planning Support Systems (PSS) concept has operationalized this principle of participation through a development process that responds to the shortcomings in traditional PSS (Pan et al., 2022).

From a scientific point of view, the process of participatory planning has been well-documented in various urban settings. Participatory instruments in the cities of Ho (Ghana) and Kpalimé (Togo) have been implemented with the use of the Arnstein model, which is used to evaluate the level of control and influence exerted by the citizens in the process of planning and decision making. Even though there were many barriers, including colonial past and centralized political regime, collaboration culture and openness help apply participatory approaches (Sondou et al., 2025). Participative planning is an essential instrument which needs the participation of various parties in the decision-making process relating to urbanization, public policies, and social development (Dahl et al., 2025).

In recent years, mobile applications have become means to support active citizen participation in governance and urban planning. These are critical in ensuring that there is a link between citizens and public administrations, leading to citizen-centered urban planning (Albrechts, 2013; Fahsi & Kettani, 2024). In Romania, Urban Design Management (UDM), a methodology developed by the University of Helsinki, incorporates participatory value through an iterative design process meant to foster collective visions, strategies, and master plan solutions (Paval & Gavozdea, 2022). Likewise, digital media like participatory videos have been included in modernizing governance practices, thus enhancing the involvement of citizens in urban planning (Wang et al., 2023). The case of Brazil offers an excellent example; since the Constitution of 1988, Master Plans have been prepared through popular participation, as required by the City Statute of 2001 (Caldeira & Holston, 2015).

This interdisciplinary character of participatory planning ensures the acceptance of implemented decisions and supports social innovation for achieving more effective and inclusive governance, although it is conditioned by the form of participation, motivation of the society, material and territorial factors. France, the UK, and Germany are some of the countries that have made important contributions in this area through research on the topic of participatory approach, stakeholders, decision-making, and governance.

Nevertheless, the critical literature suggests the existence of a "potential crisis" of participatory planning as it may overlook crucial debates regarding dominant orthodoxies through a focus on consensus (Legacy, 2017; Makhzoumi &

Al-Sabbagh, 2018). Social sustainability in urban areas can also benefit from the application of the participatory method known as A'WOT-TOPSIS, which is a multi-criteria decision approach that includes SWOT analysis, Analytic Hierarchy Process (AHP) and Technique for Ordering Preferences by Similarity to Ideal Solution (TOPSIS) to enhance the transparency of process and collaboration with high workload (Akbulut Basar, 2024). The TOPSIS technique involves the choice of alternatives based on their closeness to the positive ideal solution (PIS) and far away from the negative ideal solution (NIS) (Huang & Jiang, 2018). The Participatory Scenario Planning (PSP) method is employed in socio-ecological research to assess alternative futures and promote shared understanding despite the need for systematic monitoring to assess the effects of collective actions (Oteros-Rozas et al., 2015; Tomitsch et al., 2025). Recent studies in computational governance and predictive analytics utilize a data-driven approach to model user interactions and preferences to integrate multi-stakeholder feedbacks (Prasath, 2026).

Another evolving area in the field is the use of artificial intelligence (AI) in participatory planning. AI can help in decision making in complicated situations, as it represents non-human agents and makes middle-out approaches possible (Donthu et al., 2021). In heritage planning, AI uses unstructured textual data analysis to identify the cultural importance of a site from various stakeholders' points of view (Foroughi et al., 2025). Machine-learning based PSS should be transparent and consistent, two fundamental values of AI-based planning system adoption (Lock et al., 2021). In smart cities, the participatory AI design aims to decrease biases and create socially responsible urban management architecture, while the participatory design of AI systems allows for different stakeholders to affect AI creation and prevent any negative consequences, particularly on vulnerable groups (Falco, 2019; Zytka et al., 2022).

However, despite the emergence of a considerable body of such literature, a research gap remains; that is, few bibliometric studies have investigated methodological trends, institutional patterns, and the thematic development of participatory planning in different timeframes or via different search approaches. The available reviews of the literature are more often than not either narrative or restricted to one specific context.

The article bridges this knowledge gap through a double-strategy bibliometric study of the literature on participatory planning published in the Scopus database. The concrete research aims are: (1) To examine trends of scientific production, collaborations, and institutional dominance in participatory planning research; (2) To explore methodologies and themes; and (3) To compare results using two different search strategies.

The rest of this paper is organized as follows: Section 2 contains the Methodology; Section 3 includes the

bibliometric analysis; Section 4 gives a discussion of the results vis-a-vis the literature; and Section 5 provides the conclusions, limitations, and future work directions.

II. METHODOLOGY

Research Design

The study adopts a quantitative research design, adopting a bibliometric approach involving systematic database searches and scientometric analysis through software. The choice of bibliometrics as the methodology for the study was based on the capability of this technique in mapping the intellectual architecture, output patterns, and theme development in a scientific discipline in an objective and reproducible manner (Donthu et al., 2021). This study deals with research on participatory planning that is recorded in the Scopus database, the largest peer-reviewed abstract and citation database.

Data Sources and Search Strategies

All the data used for the study were acquired through the Scopus database, which is a complete database of peer-reviewed scientific literature that allows systematic bibliometric extraction of data. The two searches that have been conducted here are supplementary to each other.

Strategy 1 involved searching with the Boolean search term “participatory” AND “planning” in Titles/Abstracts/Author Keywords. It was restricted to the subject category of Social Sciences and type of document as journals. This produced a first-stage set of 1,519 entries, later narrowed down to 77 articles (comprising 66 articles, 6 reviews, 2 books, 2 conference papers, and 1 book chapter) from 1995 through 2024.

Strategy 2 also used the same Boolean search string “participatory” AND “planning,” but used more filters, namely: (a) dates 2020–2025 for capturing current trends; (b) subject area Social Sciences; (c) document type “article”; (d) keyword terms “participatory approach” and “participatory planning”; (e) English language; and (f) access “Open Access.” The search produced a total of 953 articles

(comprising 944 articles and 9 books) out of the initial set of 16,816 items.

Inclusion and Exclusion Criteria

The inclusion criteria for both strategies are as follows: (1) peer-reviewed journals indexed by Scopus that include scientific articles, reviews, books, book chapters, and conference proceedings; (2) topic related to participatory planning in urban, regional, rural, or public policy environments; (3) belonging to the Social Sciences category; and (4) having full metadata (title, abstract, author keywords, and citations). The exclusion criteria are: (1) any editorial materials, erratum, letters, and short surveys lacking any empirical or theoretical analyses; (2) literature without abstracts or author keywords; (3) publications that do not cover participatory planning as the key topic; and (4) Strategy 2 – publications that are not open access and not written in English language.

Analytical Tools and Workflow

Data analysis was performed using R software (version 4.3.2) and the Bibliometrix package, a comprehensive R-tool for quantitative research in scientometrics and bibliometrics (Aria & Cuccurullo, 2017). The Biblioshiny graphical interface was used to facilitate visualization and interpretation of outputs. The following bibliometric indicators were computed: (1) annual scientific production and growth rate; (2) document average age and average citations per document; (3) author and institutional productivity (total articles and fractionalized articles); (4) international co-authorship rates (Single Country Publications – SCP; Multiple Country Publications – MCP); (5) keyword co-occurrence analysis for thematic mapping; and (6) country-level production and collaboration metrics.

Fig. 1 illustrates the workflow presents the bibliometric analysis process, including Scopus data collection, search strategy formulation, document screening, dataset preparation, Bibliometrix-based analysis, and generation of research outputs through tables, figures, and interpretations.

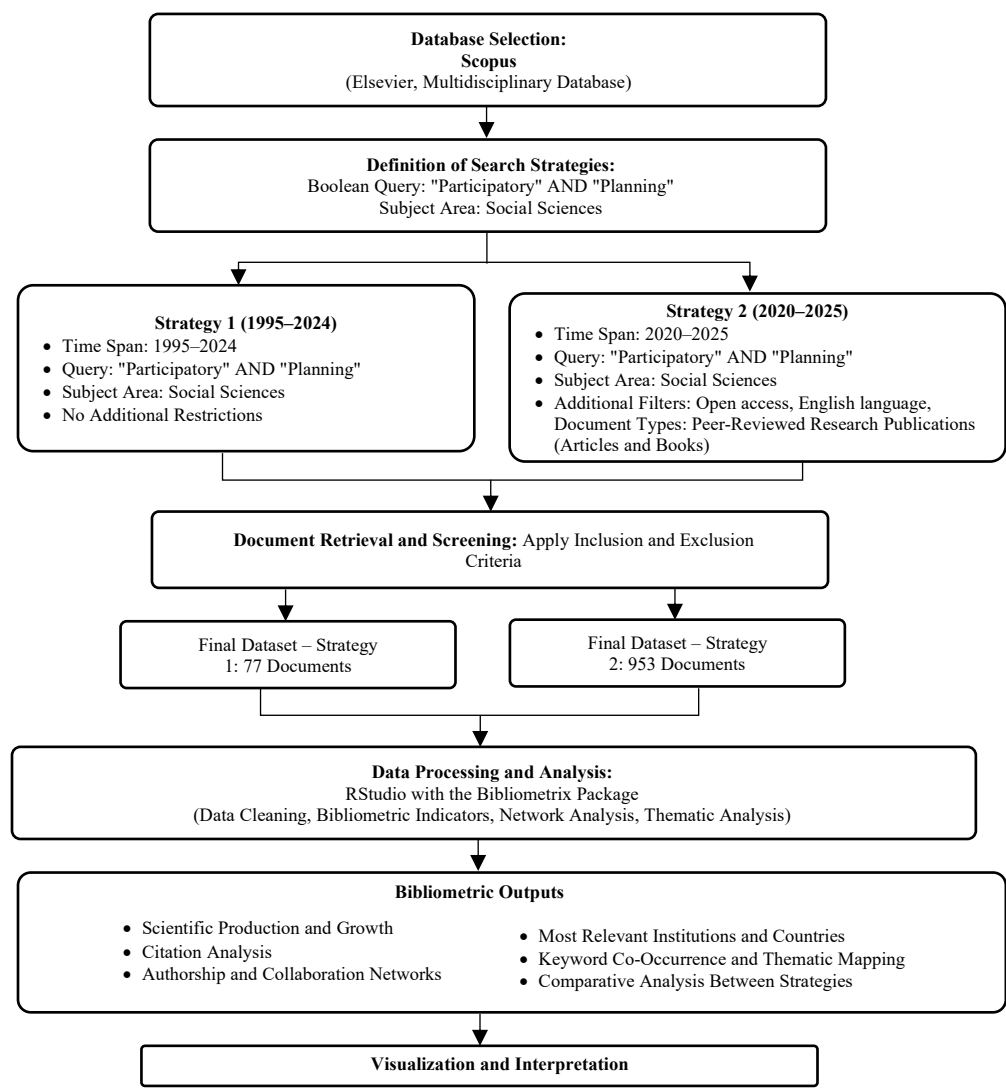


Fig. 1 Methodological Workflow of the Bibliometric Analysis

Research Questions

The study is guided by the following research questions:

RQ1. What are the most relevant methodologies employed in participatory planning research in public and urban management?

RQ2. How do these methodologies contribute to decision-making related to urban planning, public policy, and social development?

RQ3. In which fields and geographic contexts has participatory planning been applied?

III. RESULTS

General Bibliometric Overview

Table I presents the main bibliometric indicators for both search strategies. Comparing the two strategies, Strategy 1 reflects a stable but low-growth field (1.41% annual growth,

low/stable growth), with high citation impact (29.01 citations/document) and moderate collaboration (24.68% international co-authorship). Strategy 2 reflects an active, expanding field (9.96% annual growth) with strong internationalization (34.21%) and sustained citation relevance (23.44 citations/document).

Strategy 1 (1995-2024) shows a stable field with low renewal in the literature (the average age of the document: 12.4 years) and high citation impact (29.01 citations/document), suggesting that the papers published are widely cited. The international co-authorship rate of 24.68% points to moderate international collaborations, while 3.35 average number of authors per document suggests that there is an active level of collaboration. The semantic depth can be seen from 515 Keywords Plus and 313 author keywords, which allow for thematic and trend analysis. The types of documents include 66 articles and 6 reviews.

TABLE I MAIN BIBLIOMETRIC INFORMATION BY SEARCH STRATEGY

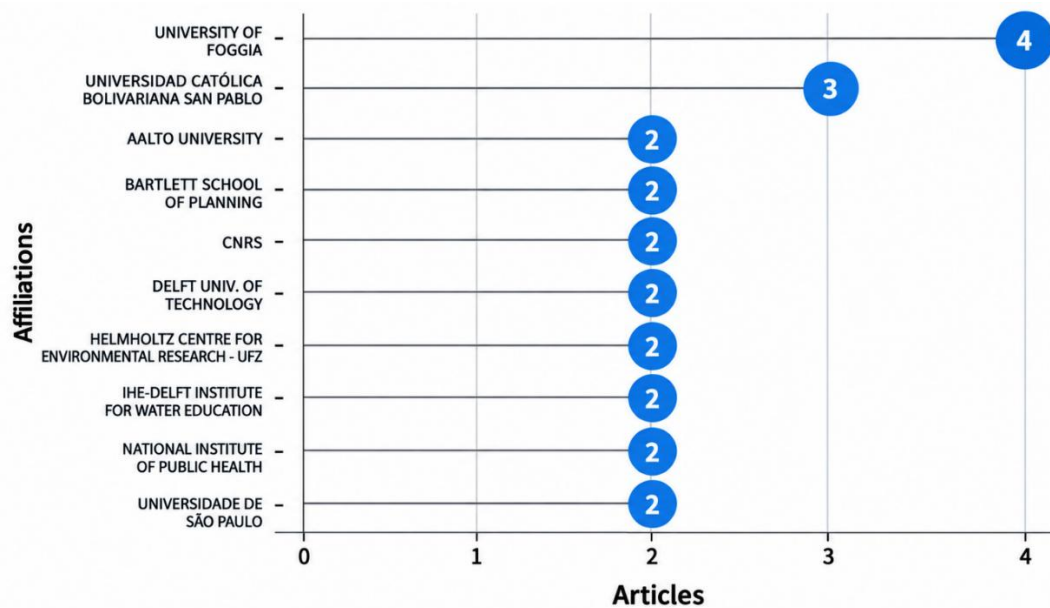
Description	Strategy 1	Strategy 2
MAIN INFORMATION ABOUT DATA		
Timespan	1995:2024	2020:2025
Sources (Journals, Books, etc.)	55	247
Documents	77	953
Annual Growth Rate %	1.41% (low/stable growth)	9.96% (sustained growth)
Document Average Age (years)	12.4	2.35
Average Citations per Document	29.01	23.44
DOCUMENT CONTENTS		
Keywords Plus (ID)	515	3,224
Author's Keywords (DE)	313	3,210
AUTHORS		
Authors	254	3,424
Authors of Single-Authored Docs	22	149
AUTHORS COLLABORATION		
Single-Authored Documents	23	153
Co-Authors per Document	3.35	3.86
International Co-Authorships %	24.68%	34.21%
DOCUMENT TYPES		
Article	66	944
Book	2	9
Book Chapter	1	0
Conference Paper	2	0
Review	6	0

Source: Information extracted from RStudio using the Bibliometrix package.

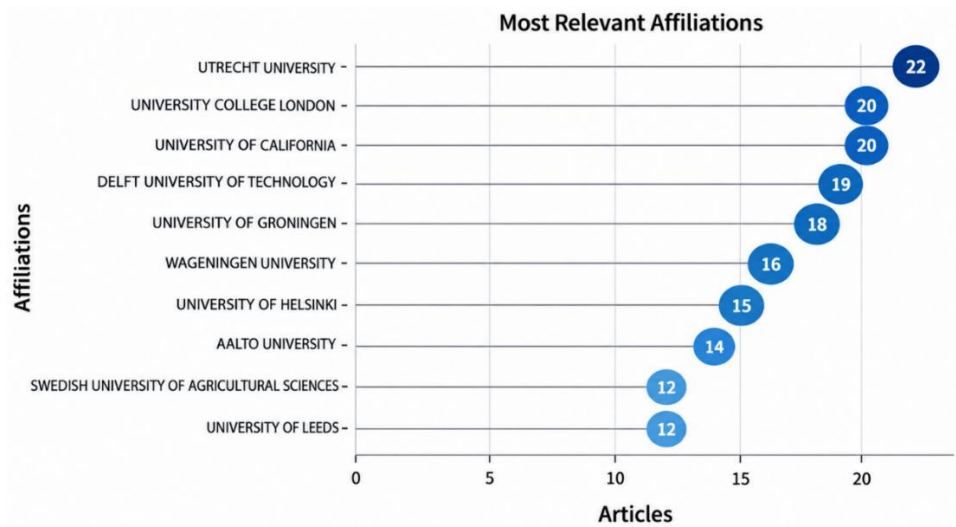
Strategy 2 (2020–2025) presents an active and expanding research domain characterized by a 9.96% annual growth rate and a markedly recent body of literature, with an average document age of 2.35 years (reflecting intense publication output concentrated between 2022 and 2025). The 34.21%

international collaboration denotes significant globalization of research. The almost equal number of Keywords Plus (3,224) to Authors' Keywords (3,210) demonstrates consistency in keywords assigned by authors and extracted algorithmically, providing an opportunity for co-word analysis. The vast majority of documents are peer-reviewed journal articles (944 of 953), alongside 9 scholarly books.

Most Relevant Affiliations



Strategy 1



b) Strategy 2

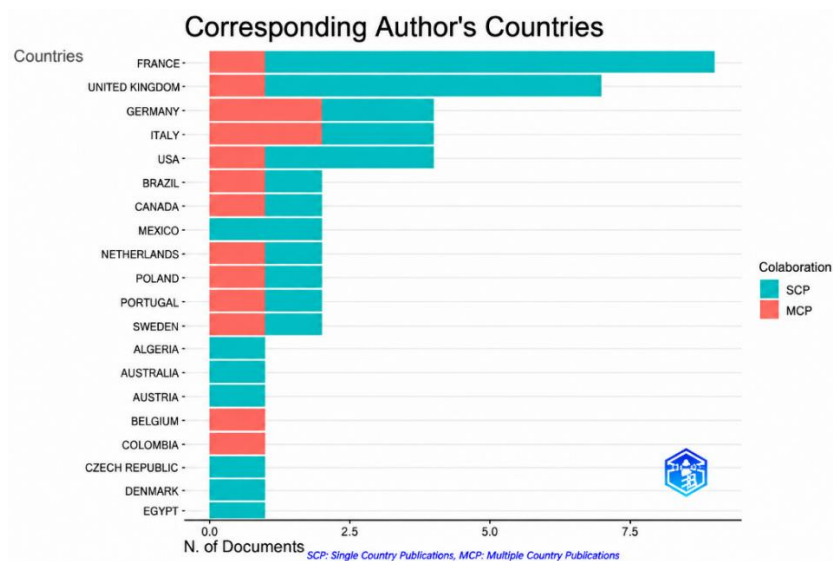
Fig. 2 Most Relevant Affiliations: a) Strategy 1 and b) Strategy 2

Source: Information extracted from RStudio using the Bibliometrix package.

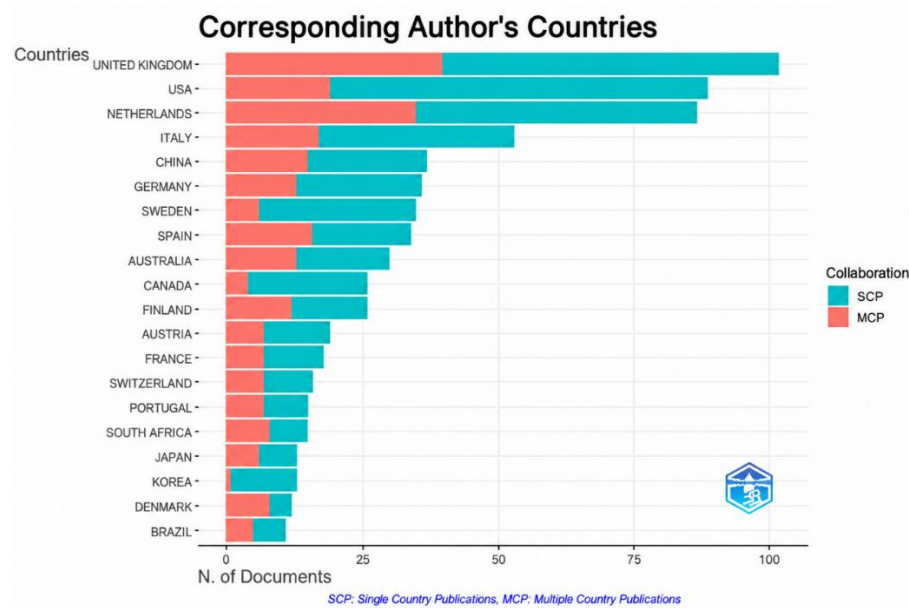
As shown in fig. 2, the most important institutional outputs that have been created through both the searches are as follows. In Strategy 1, the highest output institution is Universidad Católica Boliviana San Pablo (3 publications), which is remarkable considering that it is a Latin American institution in a situation dominated by institutions from Europe. As shown in fig. 2(a), Aalto University (Finland), CNRS (France), and Delft University of Technology (The Netherlands) have each produced 2 publications, showing the strength of Europe in the area. F. Foggia is at the top with 4 papers. The fact that there is great geographical diversity in terms of Europe, Latin America, and Asia shows that the field has become internationalized.

In Strategy 2, fig. 2(b) reveals a large boost in institutional productivity, wherein Utrecht University is leading the way with 22 publications from institutional output, followed by University College London and University of California, each with 20 publications. It is probable that these institutions represent key focus areas of sustainability, innovation, and environmental studies. Geographically, these institutions are located across Europe, North America, Oceania, Asia, and Latin America, indicating very good internationalization. In terms of the distribution of institutions, it is of the Lotka kind, where a few institutions produce highly and many publish 3-5 publications. Universities like Wageningen, Delft, ETH Zürich, and Imperial College London emphasize the multidisciplinary and applied nature of the discipline.

Scientific Production and International Collaboration



a) Strategy 1



b) Strategy 2

Fig. 3 Scientific Production and International Collaboration by Country: a) Strategy 1 and b) Strategy 2

Source: Information extracted from RStudio using the Bibliometrix package.

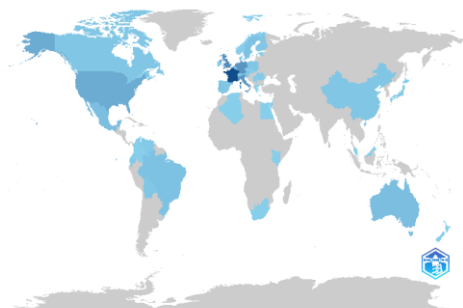
Fig. 3 emphasizes the national distribution of scientific publications and collaborations in both search processes. Fig. 3(a) represents the production and collaboration at the national level for Strategy 1. France leads in document volume (9 documents, 11.69% of the Strategy 1 sub-corpus by country), followed by the United Kingdom (7) and Germany, Italy, and USA (4 each). Countries including Belgium, Colombia, Japan, and Malaysia show 100% international collaboration (albeit with low volume), while Germany, Italy, Brazil, Canada, the Netherlands, Poland, Portugal, and Sweden show ~50% collaboration rates. Mexico, Algeria, and Australia appear with 0% international co-authorship, suggesting nationally self-contained production. The high overall international collaboration rate

aligns with evidence that internationally co-authored papers tend to have higher citation impact.

Fig. 3(b) shows the scientific output and international cooperation behavior of Strategy 2. The United Kingdom leads with 102 articles (10.7%), followed by the USA (89) and the Netherlands (87). A productive European core is visible (UK, NL, IT, DE, SE, ES, FI), reflecting strong research investment and collaborative networks. In terms of international collaboration (MCP%), Denmark (66.7%), South Africa (53.3%), Belgium (50%), Portugal, and Finland (~46%) show strong global integration despite lower total volumes. Conversely, South Korea (7.7%), Canada (15.4%), and Sweden (17.1%) show lower international co-authorship, possibly reflecting research self-sufficiency. Spain, Australia, and China exhibit balanced high production and collaboration (~40–47% MCP), indicative of leadership in international scientific networks.

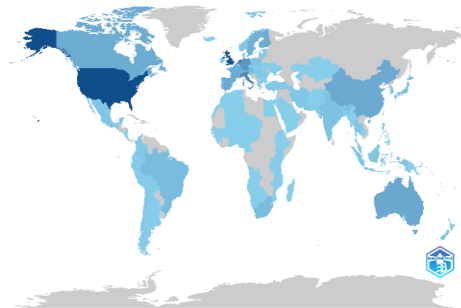
Appearance by Region and Country

Country Scientific Production



a) Strategy 1

Country Scientific Production



b) Strategy 2

Fig. 4 Appearance by Region/Country: a) Strategy 1 (left) and b) Strategy 2 (right)

Source: Information extracted from RStudio using the Bibliometrix package.

Fig. 4 represents the geographic distribution of the contributions made in terms of the total number of affiliations recorded from both approaches to the searches. In fig. 4(a), the geographical distribution of scientific production is presented for Approach 1 (from 1995 to 2024, \$N = 77\$). In this collection, France emerges as the country with 36 affiliation records, followed by the UK, Germany, Italy, and the Netherlands (with 14–18 affiliations respectively). While most of the scientific production is produced by European organizations, international contribution is present from all continents: the Americas (USA: 10, Mexico: 5, Brazil: 4); Asia (China, Japan, Malaysia); Africa (South Africa, Egypt, Algeria, Kenya); and Oceania (Australia, New Zealand). Twenty countries receive a single mention, thereby indicating wide but skewed international participation and

demonstrating geographical imbalances that call for greater integration in research.

Fig. 4(b) displays the geographical distribution of Strategy 2 (2020-2025, \$N = 953\$), that follows recently published open access articles. In this case, the most prominent places in terms of number of institutional occurrences belong to the USA (302 occurrences), UK (290), and Netherlands (205), then Italy, Germany, Australia, and China. The majority of top twenty places is taken by Western European countries, which shows their crucial significance in scientific production around the world. In Asia, the lead is taken by China, India, Japan, and South Korea, while in Latin America and Africa – Brazil, Mexico, Argentina, and South Africa. Altogether, 61 countries participated in this strategy and had 5 or fewer occurrences.

Most Relevant Authors

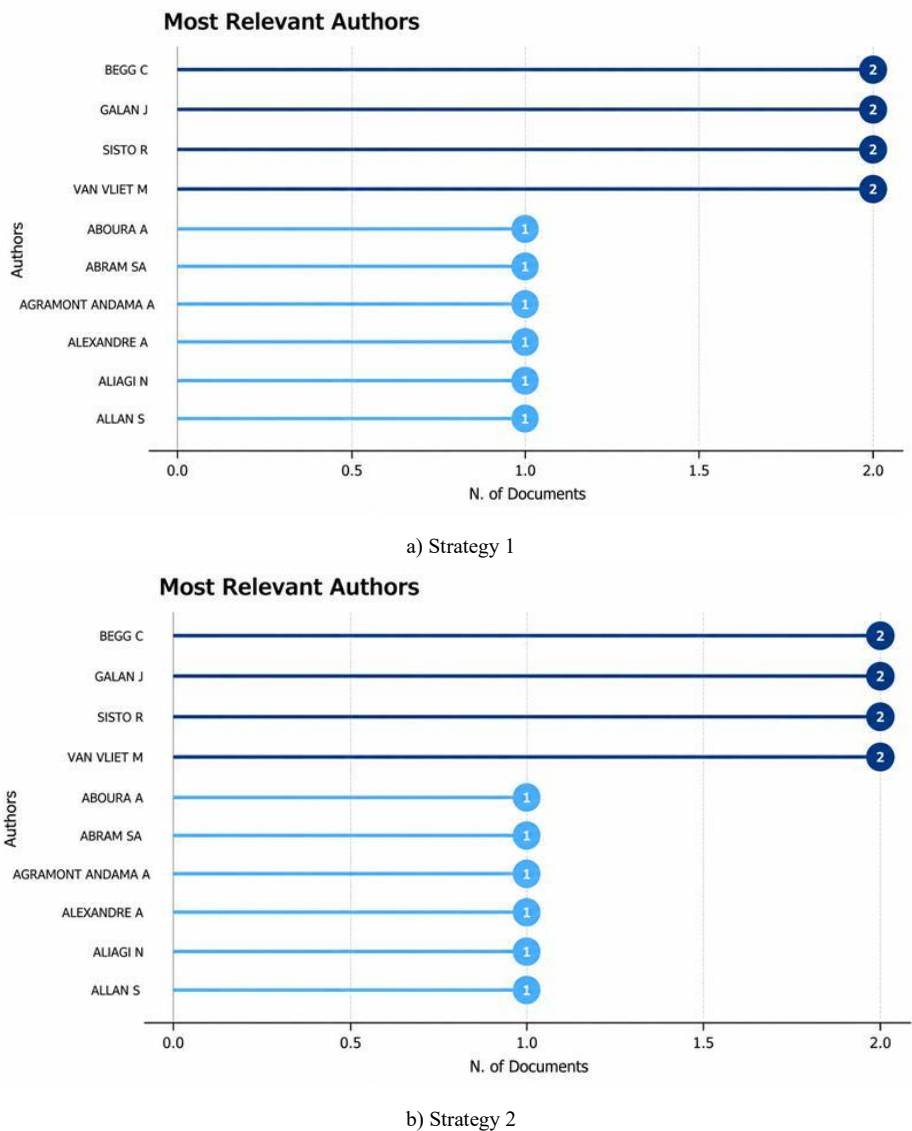


Fig. 5 Most Relevant Authors: a) Strategy 1 (left) and b) Strategy 2 (right)

Source: Information extracted from RStudio using the Bibliometrix package.

TABLE II COMPARATIVE ANALYSIS: STRATEGY 1 VS. STRATEGY 2

Dimension	Strategy 1 (1995–2024)	Strategy 2 (2020–2025)
Corpus Size	77 articles	953 articles
Annual Growth Rate	1.41% (stable)	9.96% (dynamic)
Avg. Citations/Document	29.01 (high impact)	23.44 (high impact)
International Collaboration %	24.68% (moderate)	34.21% (strong)
Leading Institution	University of Foggia (4 documents)	Utrecht University (22)
Top Country (Corresponding Author)	France (9 documents)	United Kingdom (102 documents)
Top Country (Affiliation Appearances)	France (36 mentions)	USA (302 docs)
Top Author	GALAN J (2 articles)	LEGACY C / SORIA-LARA JA / TROUILLET B (5 articles each)
Top Keywords	Participatory approach, governance, urban planning, sustainability	Participatory approach, GIS, decision support, sustainable development
Thematic Focus	Historical consolidation; European hegemony	Emerging tech (GIS, AI); Global scope
Methodological Profile	TOPSIS, AHP, PSP, PAR	AI, machine learning, digital participation

Source: Own elaboration based on Bibliometrix outputs.

IV. DISCUSSION

The bibliometric findings derived from both search methods corroborate the development of participatory planning from a nascent interdisciplinary into a well-established field with worldwide coverage and considerable citation impact. This development conforms to the general trend in research on urban governance, whereby inclusive decision-making frameworks have replaced traditional top-down models of planning.

The constant 9.96% yearly growth rate of Strategy 2 and the high level of international collaborations (34.21%) suggest that participatory planning is not only growing in quantity but also in geographic diversity. The high citations per document (23.44) indicate that the newly published documents not only contribute to the body of knowledge through quantity but also add value by being relevant, widely cited documents influencing future research. It amounts to the development of a body of knowledge focused on citizen participation and joint decision making and thus makes participatory planning consistent with the Sustainable Development Goals (SDGs), especially SDG 11 (Sustainable Cities) and SDG 16 (Peace, Justice, and Strong Institutions).

Thematic analysis shows that the collaborative model, which is based on "participatory approach," "stakeholder," and "decision making," has ceased to be just a normative model and has turned into a methodology framework. Intersection of such terms as "urban planning," "land use," "approach to governance," and "sustainable development" confirms the integrative role of the participatory planning as an instrument of articulation in public policy. This finding corresponds with the results of the studies, which revealed that institutionalized participatory approaches could transform urban politics and adaptive governance (Caldeira & Holston, 2015; Mackenzie et al., 2012).

The geographical diversity seen in the keyword list and production data, ranging from the United Kingdom, Italy, Brazil, Ghana, Togo, Lebanon, and Romania, shows that this field is truly a global one and benefits from diverse case studies within a particular contextual frame. Brazilian lessons from their post-1988 constitution and Arnstein's ladder applied in West Africa can be used as templates for other nations. GIS, decision support system, and AI among the themes suggest that there is a technological evolution of the field of participatory planning in terms of moving towards precise participatory processes (Du et al., 2024; Foroughi et al., 2025). However, this does not mean a loss of the social aspect of participation but rather an expansion thereof.

The institutional analysis reveals an intriguing contradiction between the predominance of European universities (Utrecht, UCL, Delft, ETH Zürich) and the presence of non-European entities (Universidad Católica Boliviana, Brazil, South Africa). This is linked to structural inequities in scientific production at the global level, which show that the most highly cited and productive institutions are located in the Global North, whereas methodological innovations come from the applied world of the Global South. Further research efforts must focus on South-South collaboration and North-South collaboration to correct this imbalance.

It is evident from the author analysis that participatory planning is an area that possesses distributed intellectual leadership as very few authors appear more than once while many are involved in collaborative research. The fractionalization analysis reveals that the individuals who have contributed the most to the literature in the form of SORIA-LARA JA, FRIENDLY A, and WESTIN M along with peripheral participation of other individuals are beneficial to the field.

Together, the results show that participatory planning is developing both in terms of quantitative increase and conceptual maturity by combining participatory approaches

with sustainability and new analytical methods. In particular, the results provide an answer to the three research questions: the methodologies that are the most appropriate (RQ1) include ladder of participation by Arnstein, TOPSIS, PSP, UDM, PAR, GIS, and AI-based methods; their importance for decision making (RQ2) is demonstrated by greater transparency and technical sophistication; and the application areas and geographic settings (RQ3) include urban planning, public policy, social development, heritage, and environmental management on all inhabited continents.

Implications for information management and knowledge organization are profound because the development of the field calls for better bibliometric databases, more elaborate metadata for cross-disciplinary analysis, and a systematic approach to reviews, given the rapidly growing literature of this research area. Urban policy practitioners who are involved in the synthesis realize that the use of participatory approaches contributes to legitimacy, innovation, and sustainability, but this effect is conditional.

This study has various limitations. First, the analysis is limited to Scopus, and other sources of literature, like Web of Science, Google Scholar, or even local databases of Latin America, Africa, and Asia can remain excluded due to possible presence of literature in their own languages. Second, citation counts and other bibliometric indexes are highly time sensitive and are prone to underestimate influence of quite recent publications (2022–2025). Third, the limitation to English and open access publications in Strategy 2 might introduce some selection bias. Fourth, the study lacks qualitative analysis of the articles' content.

Future research directions may involve: (1) extending the search to Web of Science and local databases; (2) using co-citation and bibliometric coupling; (3) performing qualitative analysis of methodological groups (for example, use of AI in participatory planning); (4) analyzing differential effects of these technologies on different governance systems; and (5) analyzing issues of digital inclusion and accessibility to AI in developing countries.

V. CONCLUSION

Bibliometric analysis clearly shows that participatory planning has become an established interdisciplinary domain with constant growth and high citation impact. The double strategy method – Strategy 1 (77 documents published during 1995-2024) and Strategy 2 (953 documents published from 2020 to 2025) – made it possible to get insights on both the background of the field and its latest research methodology. Statistical results of the analysis include: Strategy 1 featured a stable low annual growth rate equal to 1.41%, with the high average number of 29.01 citations per document, which means that a small body of literature made a huge impact. Strategy 2 showed a vibrant annual growth rate of 9.96% and 34.21% of international collaboration with 23.44 citations per document. The prominent organizations (Utrecht University, UCL, Universidad Católica Boliviana) and nations (USA, UK, France, Netherlands) indicate both domination by

Europe and presence of substantial contributions from the Global South. Thematic clusters that dominate include “participatory approach,” “urban planning,” “governance,” and “sustainable development.” These themes do not change among the two strategies; however, other emerging themes such as “AI,” “GIS,” and “decision support systems” indicate more advanced techniques. For future research, multi-database searching, citation analysis, qualitative analysis of methodological clusters, and the issue of digital inclusion in participatory planning should be explored (see Discussion section).

Conflict of Interest

The scientific production was not financed by any organization. The authors declare no conflicts of interest related to the research, authorship, or publication of this article.

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