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BUDGETING FOR SUSTAINABLE GOVERNANCE (B4SG): A BIBLIOMETRIC REVIEW AND AGENDA IN THE PUBLIC SECTOR

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Abstract

Collaborative budgeting has been identified as an important governance tool to improve transparency, accountability, citizen engagement, and sustainable public sector management. However, the body of collaborative budgeting research remains incomplete and disjointed, both in its intellectual framework and thematic development in relation to sustainable governance. This study aims to analyse the pattern of publications, influential journals, networks of collaboration, keyword structures, and thematic development in the field of collaborative budgeting and sustainable governance.

This study performs a bibliometric analysis from 2006 to 2026 of 352 articles published in the Web of Science database. The analysis employs descriptive statistics, co-occurrence network analysis, co-authorship analysis, country collaboration network analysis, and thematic map analysis to examine the intellectual structure of the field.

Results indicate that since 2017, scholarly output has strongly risen, underscoring the increasing relevance of collective governance, fiscal transparency, and budget reforms for fiscal governance. The primary themes in the research were accountability, transparency, governance, collaborative budgeting, and performance. The thematic map revealed that the motor themes of governance and collaborative budgeting are well developed and are pushing the field forward, while fiscal transparency and performance management are important yet underdeveloped areas of interest requiring more theoretical and empirical research. The study also illustrates the interdisciplinary nature of the research, mainly located in public administration, governance, sustainability, and public finance management. International networks of collaboration reveal that developed countries, particularly the USA, Spain, and China, are the most productive, while developing regions are under-represented.

The study contributes to the literature by proposing "Budgeting for Sustainable Governance (B4SG)" as a new integrative approach connecting collaborative budgeting with sustainable governance, transparency, accountability, and public participation. The results offer valuable directions for future research, including the development of governance systems in developing countries and collaborative budgeting using digital tools.

Keywords: Budgeting; Accountability, Public Sector Governance, B4SG, SDG, Transparency

JEL Classification: *H61, H83, D73, O20, M48*

1. Introduction

One of the most important democratic innovations in the area of public governance and public financial management is collaborative budgeting. Participatory Budgeting (PB) is a process that allows citizens to be directly involved in the process of deciding how to spend public funds, in deciding what new public facilities are needed, and in monitoring the use of these public funds. Collaborative budgeting was developed in Porto Alegre, Brazil, and has spread to municipalities and local governments and public institutions around the world (Gatto & Sadik-Zada, 2022).

The growing importance of the place of PB is very closely related to the broader shift from authoritative-bureaucratic administration towards participatory governance and towards sustainable governance systems. Current governance approaches focus on transparency, accountability, civic participation, social participation and participatory decision-making. In the context of participatory budgeting, collaborative budgeting is viewed as a tool to enhance democratic legitimacy and financial sustainability, institutional resilience and public trust (Sinervo et al., 2024; Oh et al., 2019).

Collaborative budgeting takes place in several fields of literature, such as the field of public administration, public financial management, public governance and sustainability, digital democracy and institutional change. Previous research has explored the concept of PB from various angles, including democratic participation, transparency, fiscal efficiency, digital governance, and public sector reforms and sustainable development. However, the incorporation of these dimensions in a holistic sustainable governance agenda is still a new field of academic research.

Although collaborative budgeting literature has grown substantially, several gaps remain. First, many studies focus separately on transparency, participation, efficiency, or governance quality, while fewer studies integrate these dimensions into a comprehensive sustainable governance framework. Second, existing empirical literature is heavily concentrated in Europe, Latin America and developed countries, with limited research from developing economies and emerging governance systems. Third, digital participatory budgeting remains an evolving area where long-term governance impacts and inclusiveness require further investigation. Fourth, while many empirical and conceptual studies exist, there is limited bibliometric research examining the intellectual structure, thematic evolution, influential authors, collaboration networks, and emerging trends in participatory budgeting and sustainable governance scholarship. Therefore, the present study aims to address these gaps through a bibliometric analysis of collaborative budgeting and participatory budgeting research within the broader context of sustainable governance.

1.1. Problem Statement

Despite the growing recognition of collaborative budgeting as a strategic governance tool for enhancing transparency, accountability, citizen engagement, and sustainable public sector management, the existing body of research remains fragmented and incomplete in its intellectual framework and thematic development. The literature is characterized by conceptual disconnection across transparency, participation, efficiency, and governance quality dimensions; pronounced geographical concentration in developed countries with limited representation from developing economies and emerging governance systems; and inadequate systematic bibliometric mapping of the field's intellectual structure, thematic evolution, collaboration networks, and emerging trends. Furthermore, the emergence of digital participatory budgeting presents unresolved questions regarding long-term governance impacts, inclusiveness, and effectiveness, while theoretical integration across participatory democracy, collaborative governance, institutional, and sustainable governance frameworks remains limited. This study addresses these gaps through a comprehensive bibliometric analysis of collaborative budgeting research from 2006 to 2026, aiming to identify publication patterns, influential journals, collaboration networks, keyword structures, and thematic developments, and to propose "Budgeting for Sustainable Governance (B4SG)" as an integrative approach connecting collaborative budgeting with sustainable governance outcomes.

2. Literature Review

2.1 Participatory Democracy Theory

The core theory of participative budgeting is participatory democracy theory that calls for citizens' direct participation in the governance and public decision making process. Participatory democracy is different than the representative one as it invites people to join in the process continually, not just during elections. The authors Park et al. (2023) suggest that participatory budgeting can lead to better fiscal results because of greater transparency and increasing budget literacy among citizens. Their research on Korean local governments found that there is a positive relationship between high-quality citizen participation and fiscal balance, as well as government accountability. Likewise, Gastil and Broghammer (2021) urged participatory budgeting processes to foster deliberative engagement, inclusion and sustained civic involvement. They were inspired to link theories of democratic deliberation with online engagement tools to enhance participatory governance. Wampler and Touchton (2019) added that broadened participation, increased deliberation, and institutions tying into governance processes are key ingredients for successful participatory institutions and improved public well-being

2.2 Collaborative Governance and New Public Governance

Another important conceptual basis for PB is collaborative governance theory. Collaborative governance describes the practice of multi-level, multi-stakeholder decision making that is used to address public issues. Sinervo et al. (2024) conceptualized participatory budgeting as a mechanism of sustainable governance that integrates organizational sustainability, financial sustainability, socio-political sustainability and environmental sustainability. The authors argue that PB enhances governance by making citizens a part of public financial management processes. Participatory governance mechanisms have been further strengthened by the advent of the NPG. NPG prioritizes networks, partnerships, citizen-centred governance and collaborative public management over hierarchy and bureaucracy. Mattei et al. (2022) argued that the institutional arrangements of PB is crucial to the extent of citizen involvement. In a study of Italian municipalities they have shown that this participation of citizens from the start of deliberative and decision-making processes is what triggers meaningful engagement.

2.3 Institutional Theory and Budgetary Reform

The institutional theory also gives valuable insights into participatory budgeting and public financial reforms. Norms, political actors, resistance mechanisms and governance structures are emphasized as a way to shape institutional scholars' budgeting reforms. Aliabadi et al. (2021) examined the public budgeting reforms in Iranian universities and concluded that the resistance of institutions is one of the factors that hinders the implementation of the system of performance-based budgets. Their results show some dilemmas between continuity and reformist change in the institutions.

Likewise, Gómez-Villegas et al (2020) studied the implementation of IPSAS in Latin America and found that the public financial management reforms seek to modernize governance systems by improving transparency, accountability and ensuring accounting standards are harmonized.

2.4 Sustainable Governance and Financial Sustainability

Participative budgeting and sustainable governance have been a major subject of current literature. Sustainable governance is governance systems that are able to achieve a balance among financial sustainability, institutional resilience, social equity, environmental responsibility and long-term democratic legitimacy. The participatory budgeting has been seen as a way to enhance sustainable governance through citizen engagement in public financial management processes, institutional accountability, and administrative sustainability (Sinervo et al., 2024). In South Korea, participatory budgeting was also shown to have a positive impact on fiscal sustainability and administrative efficiency in municipal governments by Jung (2022). The study found that in addition to its democratic role, PB can be important to improving fiscal health and governance efficiency. Oh et al. (2019) also showed that participatory government mechanisms are not only equitable and financially efficient, but also do not reduce administrative efficiency. They conclude that their results corroborate the premise of participatory governance as a mechanism to improve sustainability in a participatory and collective way. Moreover, Bednarska-Olejniczak et al. (2020) demonstrated that participatory budgeting helps in achieving sustainable rural development, and also supports the localization of Sustainable Development Goals (SDGs). They have studied in Poland that the improvement of the quality of life through the use of PB mechanisms also contributes to the priorities of local development

2.5 Public Well-Being and Social Sustainability

Participatory budgeting has been found to have a positive effect on social well-being and trust of institutions in several studies. Wampler and Touchton (2019) concluded that there is a relationship between participation and deliberation in institutional setting and a reduction in the infant mortality rate in Brazilian municipalities that have participatory budgeting programs. What is equally important to note is that deliberative participatory governance promotes the recovery of political trust and the sustainability's implementation as Weymouth et al. (2020) also argued. Their Australian case studies showed that a

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partnership-based approach to governance builds trust between the people and governments. Additionally, Gatto and Sadik-Zada (2022) highlighted that the use of PB creates an environment for community participation, civic involvement and local development that fosters transparent and collaborative governance

2.6 Budget Transparency and Governance Quality

Transparency and accountability are key features of participatory budgeting literature. Clear budgeting systems allow citizens to have access to fiscal information and to be able to monitor public spending and hold governments account for public spending. There was a strong positive correlation between budget transparency and governance quality at the country level reported by Bisogno and Cuadrado-Ballesteros (2022). Their research revealed that open budgeting enhances trust in institutions and accountability.

The study by Citro et al. (2021) also found that the transparency of political and electoral processes plays a significant role in the transparency of budgets. The authors conclude that transparency reforms need enabling institutional and political conditions to be successful. Villoria, 2021 noted that transparent policies are essential and rely on trust in institutions, merit-based government and administration, as well as good governance. Transparency mechanisms are not sufficient unless they are accompanied by good institutional conditions. Schnell and Jo (2019) also pointed out citizen education and strength of civil society and executive oversight as crucial factors in the functioning of open government systems.

2.7 Fiscal Transparency and Corruption Reduction

Fiscal transparency has been shown to have a strong association with corruption reduction and better governance in literature. Based on their findings, Chen and Neshkova (2020) concluded that countries that are more transparent in the accounting of their spending are normally seen as less corrupt. Their research showed that the disclosure of information as far as budgeting processes are concerned actually has a higher anti-corruption effect when it is done at the latter part of budgeting processes. Another study by Montes et al. (2019) reached the same conclusion: fiscal transparency contributes to government effectiveness, to the efficiency of resources used in government spending and to the management of public debt. De Simone et al. (2019) also established that transparency has a positive impact on government spending efficiency, particularly in democratic political context.

Fiscal rules effectively work in combination with adequate budget transparency, which was the main point made by Gootjes and de Haan (2022).

2.8 Transparency and Government Efficiency

Other research also links transparency to the performance of public sector and administrative efficiency. Cifuentes-Faura et al. (2023) determined that increased transparency in finances leads to increased efficiency of the municipalities and better allocation of resources. Hu et al. (2020) also demonstrated that public satisfaction with budget transparency has a positive impact on their trust in local governments. Their results indicate that quality budget information and citizen involvement have strong influences on citizens' views on governance quality. Birskyte (2019) and Sun and Andrews (2020) also shed light on the determinants of transparency at the local and city level, and found that demographic, political and technological factors impact how transparent cities are.

2.9 Digital Citizen Empowerment

The use of digital technologies has revolutionized participatory governance, which now offers citizens more opportunities to engage with governance via online platforms and e-governance systems. Sharma et al. (2022) found participatory budgeting as one of the significant elements of Digital Citizen Empowerment (DCE). Their systematic review of the literature highlighted that digital participation mechanisms are a key means of enhancing democratic engagement and information societies. Similarly, Bisogno et al. (2022) also concluded that e-government initiatives and e-participation can have a positive impact on budget transparency and accountability. Mæroe et al. (2021) further pointed out the important role played by e-participatory budgeting systems in enhancing e-democracy and local government decision-making.

2.10 Challenges of Digital Participatory Budgeting

There are some problems with digital PB, but they are not as numerous as one might think. Poorly designed digital participatory budgeting platforms can have the unintended effect of fostering a competition instead of a collaborative environment between citizens, Menendez-Blanco and Bjorn (2022) contended. The research on the “Decide Madrid” platform found that the quality of participation and collaborative engagement is greatly influenced by the design of a platform. Gastil and Broghammer (2021) also emphasized the need to create online participatory systems that are designed to be inclusive, motivating, and deliberative.

2.11 Research Objectives

The study is guided by the following objectives:

RO1. To analyze the pattern of publications, influential journals, networks of collaboration, keyword structures, and thematic development in the field of collaborative budgeting and sustainable governance.

RO2. To identify the intellectual structure and thematic evolution of collaborative budgeting scholarship from 2006 to 2026.

RO3. To examine international collaboration patterns and geographical distribution of research in collaborative budgeting and sustainable governance.

RO4. To identify key conceptual and geographical gaps in collaborative budgeting research, particularly in developing country public sector contexts.

RQ5. To propose "Budgeting for Sustainable Governance (B4SG)" as a comprehensive integrative approach connecting collaborative budgeting processes with sustainable governance goals, transparency, accountability, and public participation.

2.12 Research Questions

Correspondingly, the study poses four research questions:

RQ1. What are the publication trends, influential journals, and scientific production patterns in collaborative budgeting and sustainable governance research from 2006 to 2026?

RQ2. What is the intellectual structure and thematic development of collaborative budgeting scholarship, as revealed through keyword co-occurrence networks and thematic mapping?

RQ3. What are the collaboration patterns among authors, institutions, and countries in collaborative budgeting research, and how is research distributed geographically?

RQ4. What are the major themes, motor themes, niche themes, basic themes, and emerging or declining themes in collaborative budgeting and sustainable governance literature?

RQ5. What conceptual and geographical gaps exist in collaborative budgeting research, and how can "Budgeting for Sustainable Governance (B4SG)" serve as an integrative framework for future research?

3. Research Methodology

3.1 Research Design and Philosophical Orientation

This study adopts a quantitative bibliometric research design to systematically examine the intellectual structure, thematic evolution, publication patterns, and collaboration networks in collaborative budgeting and sustainable governance literature. Bibliometric analysis is a quantitative research methodology that employs statistical and mathematical techniques to analyze bibliographic data, including publications, citations, co-authorships, and keyword co-occurrences (Pranckutė, 2021). The study employs a descriptive and exploratory bibliometric approach, utilizing performance analysis and science mapping techniques. Performance analysis examines the productivity and impact of countries, institutions, authors, and journals, while science mapping visualizes the structural and dynamic relationships within the research field through co-occurrence networks, co-authorship networks, and thematic maps (Donthu et al., 2021).

3.2 Population and Sampling

The population for this study comprises all scholarly articles published on collaborative budgeting, public sector budgeting, and sustainable governance available in the Web of Science (WoS) database. The sample consists of 352 research articles retrieved from the Web of Science database using a comprehensive search strategy. The search query string was developed to capture the full breadth of literature on collaborative budgeting, public financial management, and sustainable governance

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Table 1.
Search Query String

Database	WEB OF SCIENCE
Search Field	ALL
Search Keywords	(“Collaborative Budgeting” OR “Public Budgeting” OR “Government Budgeting” OR “Budget Process” OR “Budget Governance” OR “Budget Transparency” OR “Performance Budgeting” OR “Public Financial Management” OR “Strategic Budgeting”) AND (“Sustainable Governance” OR “Good Governance” OR “Governance Effectiveness” OR “Policy Performance” OR “Governance Indicators” OR “Executive Capacity” OR “Public Governance” OR “Sustainable Development” OR “SDG*” OR “Institutional Effectiveness” OR “Government Effectiveness” OR “Accountability” OR “Transparency”) AND (“Public Sector” OR Government OR Province OR Municipal OR “Local Government” OR “Public Administration”)
Citation Topics	All
Document Type	Articles
Language	English

The inclusion criteria for the sample are: (a) articles published in peer-reviewed journals indexed in Web of Science; (b) articles written in English; (c) articles with content relevant to collaborative budgeting, public sector budgeting, governance, transparency, accountability, or sustainable development in the public sector; and (d) articles published between January 2006 and May 2026. The exclusion criteria are: (a) conference proceedings, book chapters, editorials, and review articles; (b) articles not primarily focused on budgeting or governance themes; (c) articles with insufficient bibliographic information; and (d) duplicate records. The retrieved 352 documents represent the final sample and were published across 198 different sources, authored by 781 researchers, with an annual growth rate of 9.6%, indicating a rapidly expanding and maturing research field.

3.3 Instrument Development

The primary data collection tool for this study is the Web of Science Core Collection database, accessed through institutional subscription. WoS provides a comprehensive bibliographic record for each article, including Bibliometric Information: Authors, affiliations, publication year, journal name, volume, issue, pages, DOI, Content Information: Title, abstract, author keywords, Keywords Plus, Citation Information: Number of citations received, cited references and document Information: Document type, language, research areas, Web of Science categories

3.4 Data Collection Procedure

Data were exported from WoS in plain text and tab-delimited formats, compatible with bibliometric analysis software. The exported data files include all bibliographic fields necessary for comprehensive bibliometric analysis: authors, titles, abstracts, keywords, publication years, journals, affiliations, countries, and citation information.

3.5 Data Analysis Techniques

The bibliometric analysis was conducted using RStudio with the Bibliometrix package and Biblioshiny web interface (Aria & Cuccurullo, 2017), complemented by VOSviewer software for network visualization (van Eck & Waltman, 2010). Annual scientific production trends were analyzed to identify publication growth patterns over the 2006–2026 period.Most relevant sources (journals) were identified by publication count. Country-wise scientific production was mapped to identify geographical distribution of research. Author productivity and collaboration patterns were examined. Descriptive statistics including average citations per document, average authors per document, and international co-authorship rates were calculated. Thematic mapping was also done.

3.6 Ethical Considerations

This study exclusively uses publicly available secondary data from the Web of Science database. No primary data collection from human subjects was conducted. Therefore, ethical approval was not required. All data sources are properly cited, and no copyright violations are involved as bibliometric data is extracted for research purposes following standard academic practices.

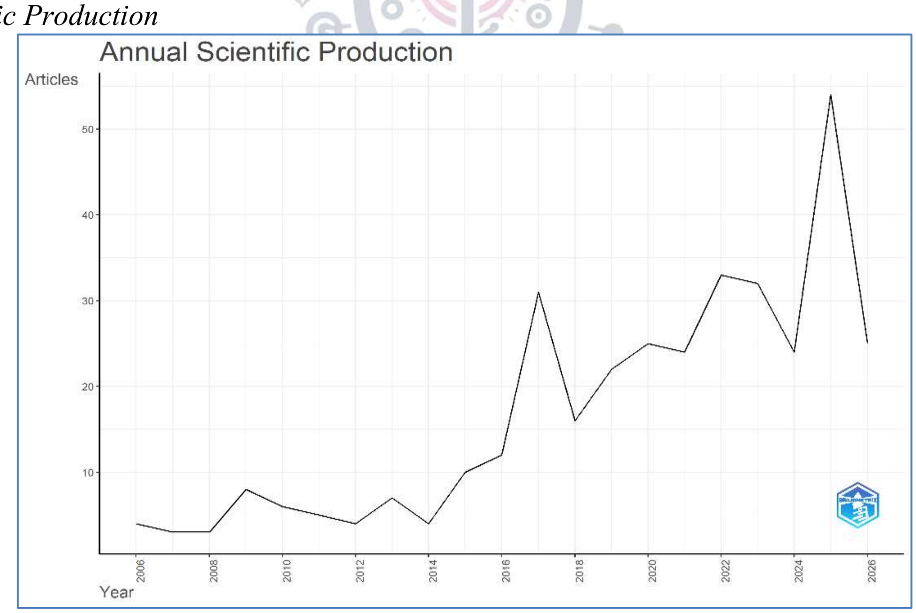
4. Results of the Study

4.1 Publication Trends

From 2006 to 2026, scientific publications of matters concerning collaborative budgeting and sustainable governance (CB-SG) have been on a gradual but significant upwards trend, as shown in the annual scientific production trend. The first few years (2006-2014) were relatively under-studied and only a few papers were published each year. But from around 2015, academic interest began to rise significantly, reflecting a rising global academic awareness of budgeting reforms, governance effectiveness, transparency and issues related to sustainability in the public sector. It is noticeable that there is a significant increase in publications in the years that followed 2017, which is one of the years when the importance of sustainable governance, SDGs, participatory governance and public financial management reforms gained traction in countries. The production continued to increase with minor fluctuations reaching a peak in 2025 with publication of more than 50 articles. This is a marked rise and has become an important and rapidly developing research theme in recent years, with collaborative budgeting and sustainable governance. There is a small drop in 2026, but this might be due to under-counting in this year's data and not a real drop in research interest. The general trend is that the domain is maturing from an emerging field to a more established domain of scholarly enquiry and research activities with growing global interest.

Figure 1

Annual Scientific Production



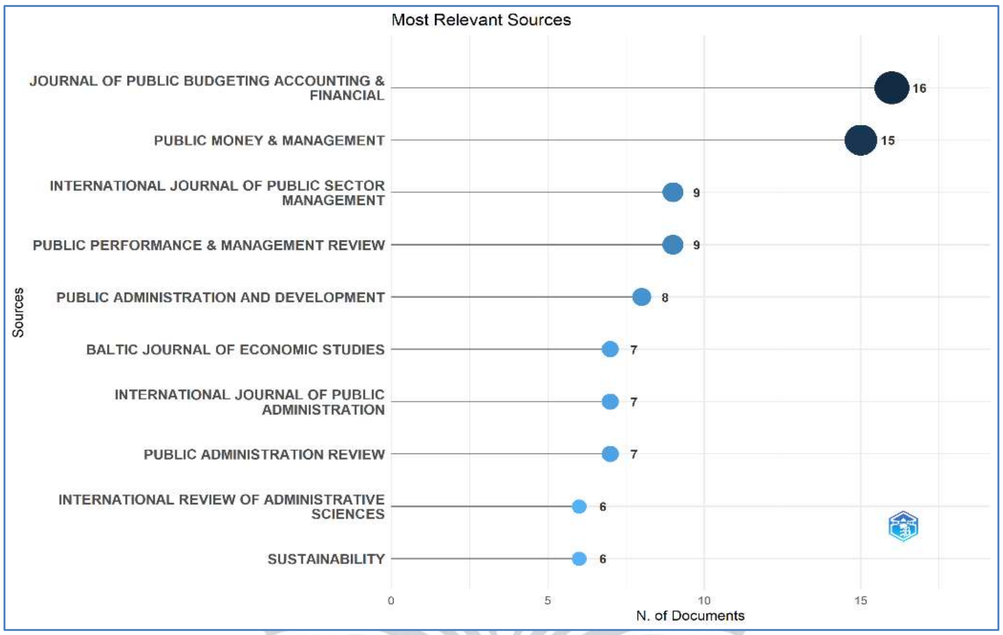
4.2 Most Influential or Relevant Journals

Analysis of the most relevant sources highlights the main journals in the field of collaborative budgeting, public sector management and sustainable governance. The Journal of Public Budgeting Accounting & Financial Management was the most productive source with 16 publications closely followed by Public Money & Management with 15 publications. This suggests that the field of study is very much based on the public budgeting and financial management and governance research field. Performance Management and Governance Effectiveness is also a focal area in budgeting research, as evidenced by other influential journals with 9 documents each, namely, International Journal of Public Sector Management and

Public Performance & Management Review. Similarly, Public Administration and Development had 8 publications that evidenced the importance of the budgeting studies in development administration and institutional reforms. There are journals such as Sustainability and International Review of Administrative Sciences, which clearly show the interdisciplinary character of the budgeting field, by connecting budgeting practices with sustainability and governance quality and administrative sciences. As a whole, the source analysis indicates that the literature is focused in the following areas: public administration and public financial management, governance studies and sustainability research. These journals are the main source of knowledge that drives the intellectual evolution of collaborative budgeting and sustainable governance research (Figure 2).

Figure 2

Most Relevant Sources



4.3 Influential Journals Production Trend

The sources' production over time analysis shows the development and publication trends of the most important journals in the collaborative budgeting and sustainable governance discipline. The number of contributions to scholarly journals is fairly small up to 2018, with the number of published articles increasing by leaps and bounds thereafter in most major journals.

The Journal of Public Budgeting Accounting & Financial Management and Public Money & Management experienced the highest growth rates, especially since 2020, eventually becoming the primary publication channels by 2025-26. It mirrors the growing academic interest in budgeting reforms, the effectiveness of governance, accountability and public financial management for sustainability.

Likewise, as can be observed in International Journal of Public Sector Management and Public Performance & Public Sector Management Review, which demonstrated sustained trends of growth over time, the field of performance management and the growing field of collaboration and governance has increased in significance for public administration studies. In comparison, the contributions to the field of Public Administration and Development were made earlier than other disciplines, but at relatively stable levels in recent years.

As a whole, it shows that research in the area of collaborative budgeting and sustainable governance has moved significantly towards the last ten years, and that research in this field has found a new home in the public administration and budgeting journals (Figure 3).

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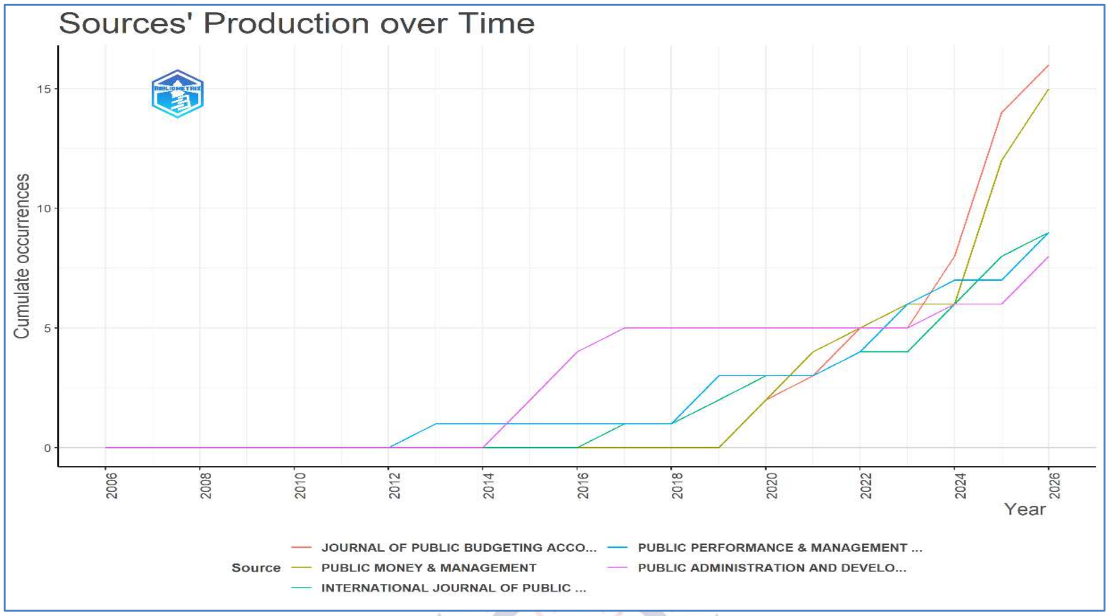
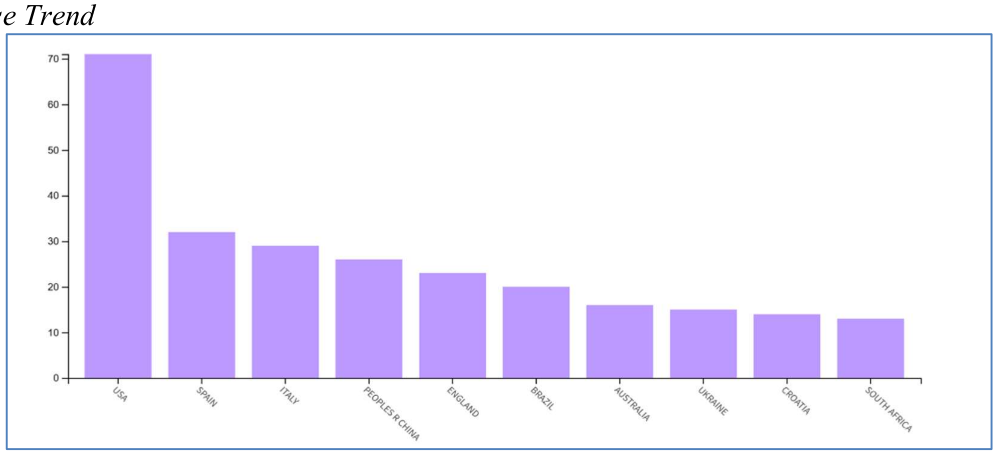
Figure 3
Sources Production over Time



4.4 Country Wise Publication Trends

According to the country-wise scientific production analysis, the United States is the main source of scientific production on collaborative budgeting and sustainable governance, with the highest number of published documents. It shows the high value given to research and teaching in the United States on public financial management, governance reforms and research on sustainability. Significant European and Asian involvement in the field is evident, with Spain and Italy contributing the second and third highest number of posts. There are also some countries with interesting research output like England, Brazil and Australia, which demonstrates the global interest in budgeting and governance related topics in both developed and emerging countries. Further, funding from countries such as Ukraine, Croatia and South Africa indicates the research field is also gaining visibility in various regional settings, notably in connection with governance reforms and transparency, accountability and sustainable development issues. The overall figure indicates that research on collaborative budgeting and sustainable governance is spread around the world, but the majority of influential research work is centred in developed countries with a more developed public administration and governance research environment (Figure 4).

Figure 4.
Country Wise Trend



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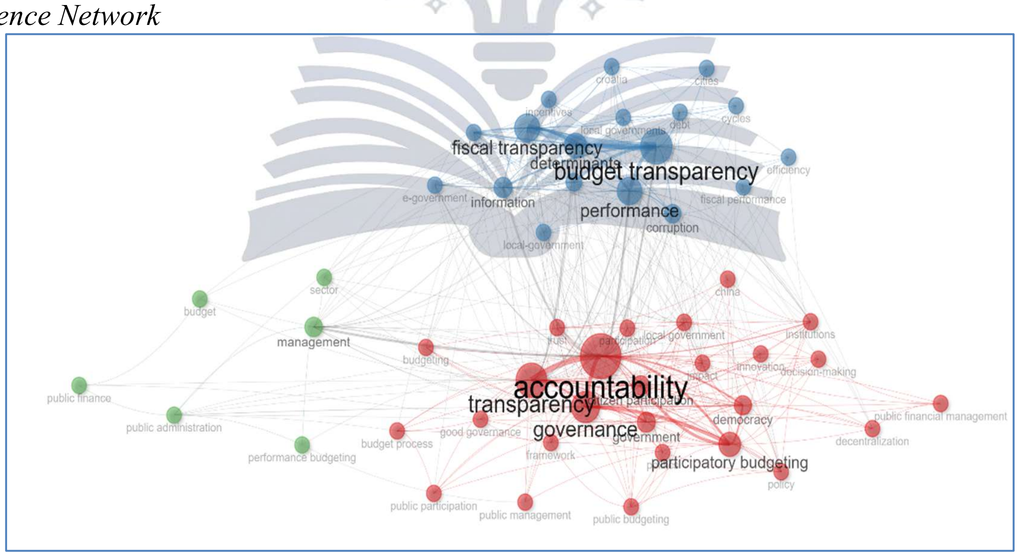
4.5 Co-Occurrence Network Analysis

The keyword co-occurrence network shows the intellectual structure and thematic relationships in the literature on collaborative budgeting and sustainable governance. The network is divided into various clusters (coloured lines show the closeness of research themes and conceptual groupings). The most dominant and central keyword in the network is 'accountability' and is the largest node with a high number of inter-connections throughout the clusters. This means that accountability is identified as one of the main areas of research that connect public budgeting, governance effectiveness, transparency and performance management. It sits at the centre of considerations, suggesting that accountability is considered a very important aspect of sustainable good governance and collaborative budgeting processes. The blue cluster is mainly related to topics such as transparency, concepts of performance and governance, which have been a central part of the research and underpinning the concepts of openness, efficiency, policy effectiveness, and institutional performance in public sector budgeting systems. The red is a cluster of related themes on governance mechanisms, budgeting, public administration and institutional accountability. This cluster shows the conceptual links that are strong between collaborative budgeting approaches and governance quality. The green cluster, meanwhile, is comparatively smaller and more niche, suggesting research arenas in the process of development or emergence which have a relationship to the governance and budgeting landscape, but which are not as well studied in the literature. The strong interlinkages between clusters suggest a very interdependent research area with clusters that often focus on budgeting, governance, transparency, accountability and performance in conjunction. Overall, the co-occurrence network makes clear that the literature is shifting towards increasingly budgeting frameworks with a focus on integrated governance, rather than towards integrated budgeting. In general, the co-occurrence network shows that literature is moving increasingly towards budgeting frameworks that focus on integrated governance and not on integrated budgeting, with a strong emphasis on accountability, transparency, collaboration and sustainable policy outcomes.

Figure 5.

Co-Occurrence Network



4.6 Co-Authorship Analysis

The co-authorship network visualization shows how authors are connected to each other in the field of collaborative budgeting and sustainable governance. The network is split up into a number of 'coloured' clusters, each of which denotes a set of authors who work with each other frequently. The size of a node is proportional to the influence or productivity of an author and the links between nodes are in proportion to the number of collaborative links or joint publications. The analysis shows that the research field consists of several individual clusters of collaboration groups, instead of one strong and integrated global network. There are a few small and medium-sized clusters, suggesting that scientists often work within themed or regional

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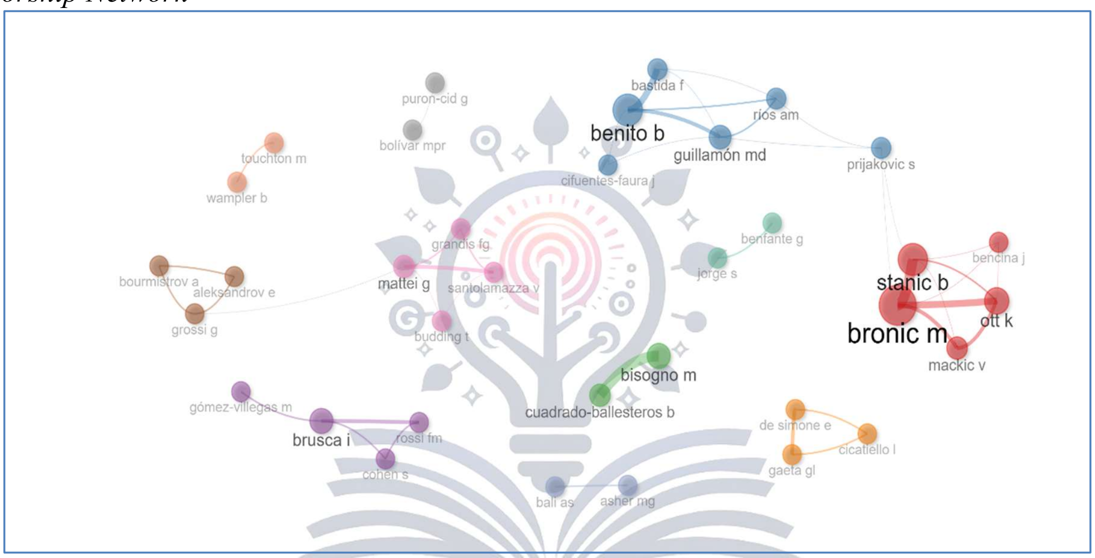
groups. This implies that the field is still in its infancy and has not yet achieved broad network integration by scholars. A few larger nodes, especially in the blue and red clusters, reflect influential authors that are core participants connecting co-authors and driving research in their thematic areas. The authors here seem to be collaboration points, and to be important knowledge producers in the field of governance, transparency and public budgeting studies and participatory governance studies. There were also a number of disconnected or weakly connected clusters, reflecting the limited extent of collaboration across institutions, countries and disciplines. Such fragmentation can be due to the variations in the governance systems and public administration traditions and research interests between regions and countries. The overall co-authorship analysis shows that collaborative budgeting and sustainable governance is becoming a more collaborative field of research, yet the academic network remains somewhat fragmented. Greater research collaboration with an international and interdisciplinary approach might improve the theoretical integration and comparative research and global development of knowledge within the field.

Figure 6.
Co-Authorship Network



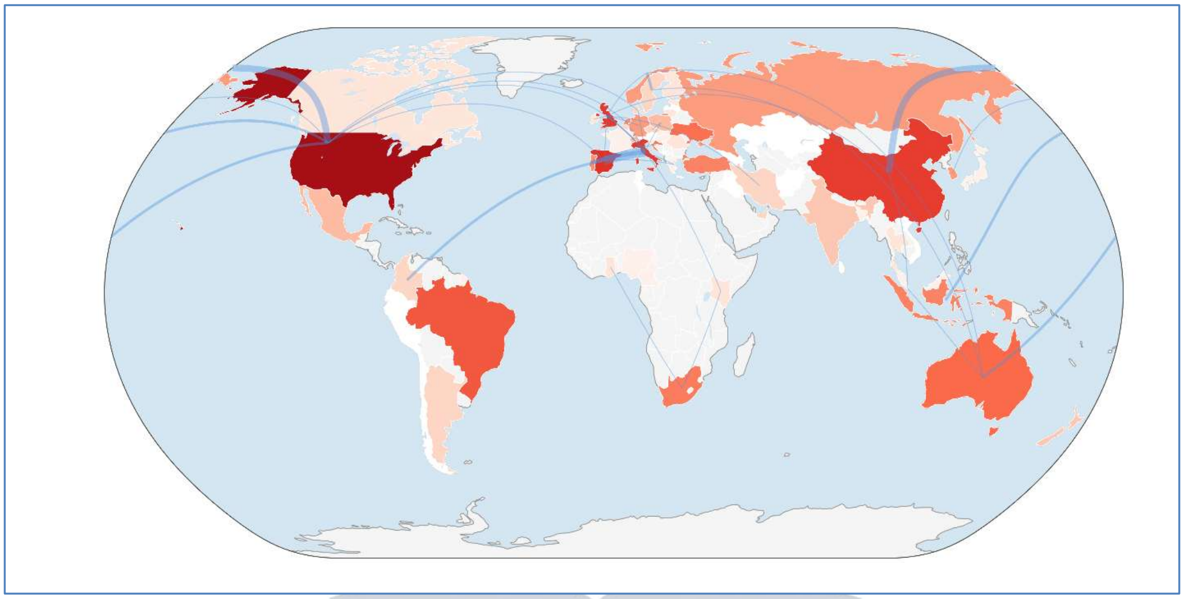
4.7 Countries Collaborative Network Diagram

The countries' network map of research collaboration shows the international collaborative research patterns related to collaborative budgeting and sustainable governance. The visualization is both geographic and cross-country in scope, showing not just where research takes place, but also how much cross-country scholarly collaboration there is. The United States seems to be the largest and most central node in the global network of collaboration, being linked with several European countries as well as countries in Asia and Oceania. This is indicative of the important influence of international institutions and scholars from the United States on the intellectual evolution of studies related to governance and transparency and public budgets. Additionally, there are also signs of growing globalisation of the public governance and budgeting reforms research, as one can observe from the strong collaborative relationships between countries like China, Australia, England, Spain and various European countries. The collaboration links mirror the growing trend of international transborder R&D relationships for tackling complex governance and sustainability problems. The network also shows the increasing interest of new economies like Brazil, South Africa and some Asian countries on themes concerning public financial management, participatory budgeting, accountability and sustainable governance, indicating that the themes related to public financial management, participatory budgeting, accountability and sustainable governance are in the agenda of academics and research centres world-wide, outside the traditional ones of the West.

Colours on the map indicate level of research productivity and collaborative influence: darker colours are associated with countries with high research productivity and high collaborative influence, while lighter colours are associated with countries with relatively low research productivity and collaborative influence. The focus of collaboration within the developed countries indicates that developed countries' research infrastructures and institutional funding and governance reform agendas make important contributions to international knowledge production in this area. Meanwhile, the number of developing regions with limited representation, such as parts of Africa and South Asia, suggests a significant area of research and representation. It means there is a need for better cooperation between developed and developing countries, where the problems of governance, budgeting, sustainability and development could be more serious. In general, the collaborative network illustrated how collaborative budgeting and sustainable governance research is becoming a global network. There is, however, a lack of evenness in collaborations, which underlines the need for more widespread collaboration involving underrepresented areas, more South–South collaboration, and more interdisciplinary international collaborations to enhance understanding of sustainable governance practices globally (Figure 7).

Figure 7.

Countries Collaborative Network



4.8 Word Cloud

The keywords and primary research foci in the topic of collaborative budgeting and sustainable governance are identified by the word cloud that was created from the 352 articles that were retrieved from the Web of Science database. The size of each keyword indicates the frequency and importance of the keyword in the literature. The most salient word is “accountability”, which suggests that the main issue in the budgeting, governance and public administration studies is accountability. This is a strong expression of the increasing importance of responsible allocation of resources, institutional accountability, and the effectiveness of government budget processes. Other salient terms that are very visible are “transparency”, “budget transparency” and “fiscal transparency”, indicating that transparency, access to information and transparency in financial practices are central fields of research. They are closely related to the themes of public trust, combating corruption, and enhancing democratic governance. The presence of terms such as “governance”, “government”, “management” and “public financial management” indicates the interdisciplinary nature of the subject, which incorporates concepts from public administration, financial management and public financial management studies.

Further, the use of terms like 'participatory budgeting', 'participation' and 'democracy' suggest that the academic community is increasingly interested in collaborative and citizen-driven budgeting methods which promote inclusiveness and citizen involvement in public decision-making. “Policy”, “institutions” and “corruption” are some of the other keywords that emerge repeatedly in the literature, with the literature often

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focusing on budgeting in relation to the effectiveness of policy, the quality of institutions, governance reforms and anti-corruption mechanisms. The word cloud indicates that the literature on collaborative budgeting and sustainable governance is mostly focused on accountability, transparency, participation, governance quality and public financial management, underlining the importance of inclusive and transparent budgeting systems, for the purpose of achieving sustainable governance outcomes (Figure 8).

Figure 8.
Word Cloud

4.9 Thematic Map Analysis

The thematic map is a representation of the conceptual structure and maturity of research themes related to the topic of collaborative budgeting and sustainable governance, using two dimensions: relevance degree (centrality) and development degree (density). The map divides themes into four quadrants – Motor Themes, Niche Themes, Basic Themes and Emerging/Declining Themes.

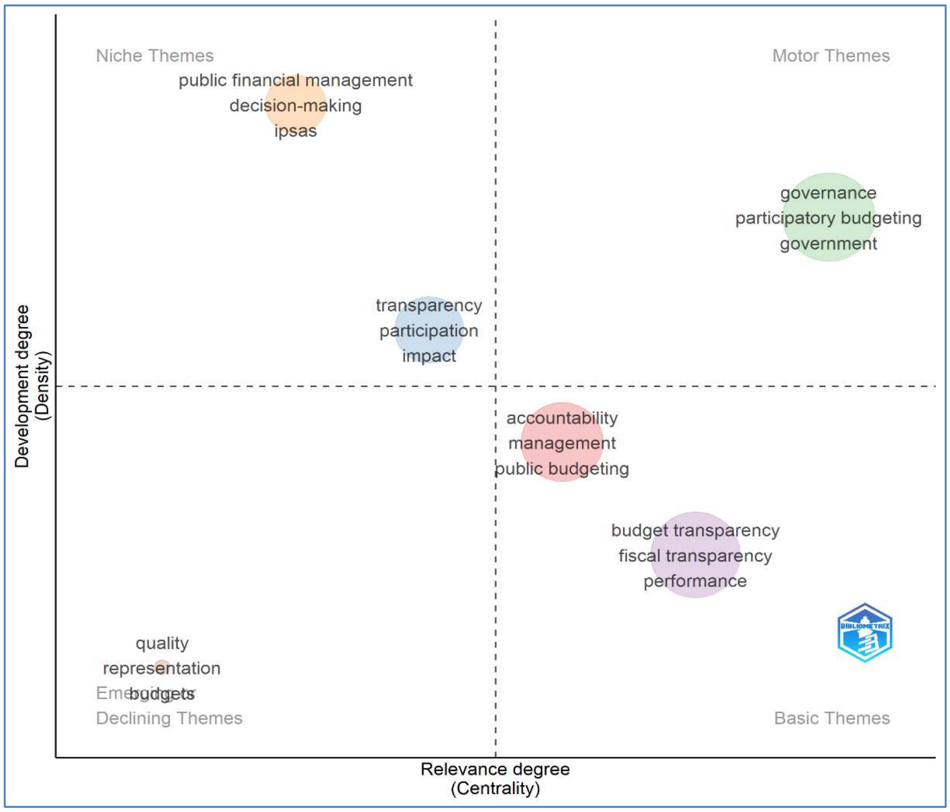
4.9.1. Motor Themes (Highly Developed and Important). The upper-right quadrant is the Motor Themes, a well-developed and integral part of the research field. This is where the cluster of governance, participatory budgeting, and government is located, suggesting that these themes are the intellectual pillars of the literature. The centrality of their results indicates that participatory and collaborative governance concepts are key in public budgeting and sustainable governance studies. This discovery is consistent with the increasing focus on inclusive governance, citizen engagement, democratic budgeting and collaboration between institutions for the generation of sustainable development outcomes globally.

4.9.2. Niche Themes (Well Developed but Isolated). The upper left corner features Niche Themes such as public financial management, decision making and 'IPSAS' (International Public Sector Accounting Standards). These themes are very specific, internally driven and generally have less of a cross-sectional linkage to the wider research domain. This implies that technical aspects of accounting for standards, financial reporting and public financial decision-making are changing in isolation and are often researched from an administrative or accounting standpoint rather than as part of a comprehensive sustainable governance approach. The cluster of the themes "transparency," "participation" and "impact" is also near this quadrant, suggesting that these themes are moderately developed and are gaining in significance as a way to assess governance outcomes and citizen engagement.

4.9.3. Basic Themes (Important but Underdeveloped). The lower right quadrant denotes Basic Themes which are important in this field but not well developed conceptually. This section contains the keywords "budget transparency", "fiscal transparency" and "performance". They are fundamental concepts that are highly cited, but not very dense, which suggests that they need further theoretical and empirical development. Likewise, the cluster of words related to "accountability", "management" and "public budgeting" is located between the basic and motor themes. This suggests that the concepts of accountability and public budgeting have a major role to play, but need a more robust conceptual relationship to collaborative governance and sustainability frameworks.

4.9.4. Emerging or Declining Themes. The bottom left quadrant is the Emerging or Declining Themes quadrant, which shows keywords like "quality," "representation" and "budgets." These are low centrality, low-density themes that may represent new research areas or may have been less visible in the scholarly field over the years. These themes, relative to each other, suggest research avenues for future work, especially in the fields of representation, inclusiveness and quality dimensions of budgeting systems in sustainable governance contexts (Figure 9).

Figure 9.
Thematic Map



5. Discussion and findings

This current bibliometric study offers you a complete intellectual landscape on the research of collaborative budgeting, participatory governance, public financial management and sustainable governance. The results show that there has been significant scholarship in the field over the past 20 years, with the number growing, especially since 2015, to suggest a growing interest in governance-oriented budgeting reform, at least at the academic and policy level, around the world. The analysis of scientific production showed a marked increase in outputs and this trend became evident from 2017, which can be attributed to the growing importance of transparency, accountability, participatory governance and sustainable public financial management in the current debate on governance. The descriptive statistics also showed that it is a relatively new field of research and practice that is growing rapidly: there are 352 documents, 781 authors and published in 198 documents. The annual growth rate of 9.6% shows the significant interdisciplinary research areas of "collaborative budgeting and sustainable governance. Further, the relatively high co-authorship rates and international collaboration patterns indicate a gradual shift towards more integration and cross-national research in the field.

In the source analysis, the most significant journals are found to be Journal of Public Budgeting Accounting & Financial Management, Public Money & Management and International Journal of Public Sector Management. This demonstrates the primacy of the literature in the fields of public administration, governance, budgeting and financial management. The fact that research production is growing in these journals as years go by further reinforces the fact that budgeting research is evolving from the classical financial control dimensions to a governance dimension and consequently to a budged based on sustainability.

The Keywords analysis and the word cloud indicated that highest frequency keywords which form the dominant set of conceptual pillars were “accountability”, “transparency”, “governance”, “participatory budgeting” and “performance.” This prominent position of accountability in the network and the associated aspirations for better institutional responsiveness, legitimacy and democratic control, make it hard to see budgeting as only a means of allocating funds. Such results are highly congruent with the arguments of Bisogno and Cuadrado-Ballesteros (2022), who identified a positive relationship between transparent budgeting systems, governance quality and increasing institutional trust. In the same vein, Chen and Neshkova (2020) showed that fiscal transparency plays an important role in corruption reduction and enhancing governance effectiveness.

Participatory budgeting and participatory governance are further reflected by the large number of participatory issues in the motor quadrant of the thematic map, indicating the shift toward way of governance that involves collaboration. The results verify Participatory Democracy theory that highlights a direct role of citizens in public decision makers. Park et al. (2023) stated that PB can foster greater fiscal outcomes and accountability of the government through better engagement and budget knowledge. Similarly, Wampler and Touchton (2019) found that citizens' participation and deliberation, when embedded in governance systems, leads to improvements in public well-being through participatory institutions. Hence, the existing state of the literature would show that participatory budgeting is among the most influential spheres of study, when it comes to sustainable governance research.

However, the thematic map also highlighted the areas of governance, participatory budgeting and government as highly developed motor areas, that is, areas where there is movement towards intellectual development. This can also be explained through the eyes of collaboratives in the governance theory, in which a governance structure is a network based, citizen oriented and partnership oriented. Mattei et al. (2022) pointed out that good participatory governance requires proper institutionalization and meaningful participatory involvement of stakeholders already at the early stages of decision-making. In line with this, Sinervo et al. (2024) theorised PB as a strategy for organizational, socio-political and financial sustainability in governance processes.

Transparency, fiscal transparency and performance were also basic themes highlighted in this study, but still little developed. These are among the most central themes in the field, but their relative low densities suggest possible need for further conceptual and/or empirical development. This discovery indicates that, although transparency and performance measurement are recognized globally as key concepts in governance, the gap between transparency and performance measurement and sustainable governance frameworks, as a whole, is still not yet filled. Similarly, previous research from Montes et al. (2019), De Simone et al. (2019) and Cifuentes-Faura et al. (2023) found that transparency greatly enhances government effectiveness, the use of resources and fiscal sustainability.

Thematic analysis has also yielded another important finding, and this is the themes of public financial management, IPSAS and decision making are considered niche themes. This means that the domains of technical budgeting and technical accounting reforms are still considered esoteric fields and have yet to be fully integrated with sustainable governance scholarship. Gómez-Villegas et al. (2020) also claimed that the adoption of IPSAS and the change of public financial management is mostly aimed at modernizing the governance systems using transparency and harmonized accounting. But these findings indicate that further interdisciplinary interconnection of technical budgeting reforms and sustainability research from a governance perspective is needed.

Co-authorship and countries' collaboration network analyses revealed that there is still moderate fragmentation in research in this area and that the collaborations between countries are mostly existing within developed countries, namely the U.S., Spain, England, Australia and China. The USA proved to be the leading contributing country and hub for collaborative work in the global network. These results show that the emphasis of collaborative budgeting scholarship remains accountability and enhanced governance systems in developed economies. There is, however, an important field for further research and the relative underrepresentation of developing countries suggests that where governance inefficiencies, budgetary fragmentation or institutional capacity constraints are more significant, further research is required.

This statement is especially pertinent to the case of developing economies at large. Despite the extensive literature on developed countries and on municipal level collaborative budgeting experiences, few empirical papers have explored provincial systems of governance in developing areas. Results of this study, therefore, strengthen the argument for further studies on collaborative budgeting arrangements in settings with poor institutional coordination, low transparency, central budgeting and poor governance.

Digital governance and e-participation themes in literature also come as a testament of digital governance systems in importance. Sharma et al., (2022) pointed out that participatory budgeting is an essential pillar of Digital Citizen Empowerment and Bisogno et al., (2022) highlighted the positive impact of the e-government endeavours on the transparency and accountability of budgets. But literature also reveals that there are challenges linked to collaborative systems in the digital age. In an analysis, Menendez-Blanco and Bjorn (2022) highlighted that if not designed well, such digital participation platforms might have the unintended consequence of reducing collaboration and inclusiveness. Based on the current results, it can be concluded that digital governance is an evolving research frontier that needs more empirical research.

From the overall bibliometric results, it appears that collaboration in budget preparation is being increasingly acknowledged as a strategic governance tool to improve transparency, accountability, citizens' participation, institutions' trust and sustainable governance results. There is a clear trend in the literature from a traditional bureaucratic budget approach to more participative, network and sustainability-oriented governance frameworks. However significant challenges still remain regarding how collaborative budgeting can be linked to sustainable governance indicators, the evaluation of policy performance and SDG implementation in public sectors in developing countries.

The study thus makes an important contribution to literature in identifying the intellectual structure of the domain of collaborative budgeting scholarship, the evolution of the themes and the directions of future research. It also contributes to raising the concept of “Budgeting for Sustainable Governance (B4SG)” as a comprehensive governance mechanism, connecting budgeting processes with sustainable governance goals, public engagement, transparency, accountability and long-term sustainability of policies and governance.

6. Conclusion and Recommendations

This bibliometric study extensively analysed the state of the scholarly field on collaborative budgeting, Collaboratory budgeting and sustainable governance in the public sector. The study is based on 352 publications found in the Web of Science database for the last twenty years (2006–2026), it contributes to academic research by providing an overview map of the intellectual structure, publication trend, key journals, collaborative network, themes and emerging directions of research in the field. The result shows that studies on collaborative budgeting and sustainable governance have greatly proliferated in the past decade, including the importance of transparency, accountability, citizen’s participation, fiscal sustainability and government effectiveness in contemporary public administration system.

The analysis revealed that the field is very interdisciplinary with public administration, governance studies, public financial management, sustainability and institutional theory, digital governance and democratic participation all playing a role. The growth of publications over time, notably since 2017, reflects the shift from a concept of collaborative budgeting as a local democratic innovation to the recognition of collaboratives as a governance approach associated with agendas for sustainable development and public sector reform on a global scale. The high levels of concern about accountability, transparency, governance, Collaboratory budgeting and performance also highlights that today's budgeting processes are not only financial tools but also governance tools to strengthen institutional legitimacy and public trust and to improve policy making.

To provide the answers to the question, the thematic analysis showed that collaborative governance and collaborative budgeting are now discernible as the key thematic motor forces for the intellectual evolution of field. This discovery sits well with the theory of collaborative governance and collaborative democracy which supports for governance pegged in networks and citizens' perspective. Meanwhile, the concepts of transparency, fiscal transparency and performance management were recognized as underlying but low-level themes indicating a need for further conceptual integration between reforming the budgeting process and establishing sustainable governance structures. A number of technical issues such as "IPSAS", "institutional decision making and public financial management (PFM) reforms" were identified as niche areas with limited development and communication of governance and sustainability.

Other visualisations of collaboration between countries and co-authorship of articles revealed a trend towards increased internationalisation and collaboration, yet also a very fragmented picture with the dominance of developed economies. The most important and the focal point of collaboration was the United States, while other developing regions were under-represented in literature, particularly the South Asian region and some parts of Africa. This is an invitation for more studies in this direction and serves to highlight the need to consider the perspectives of developing countries, where the problems of governance, institutional weakness, budgetary inefficiencies and sustainable development are much more prevalent.

The findings also showed the importance of the use of digital governance tools and Collaboratory budgeting tools to promote citizen participation, transparency and accountability. Simultaneously, a range of literature reveals a series of challenges in inclusiveness, platform design and quality of collaboration in the new field of DPM, indicating the need for novel empirical and policy studies in this field.

Overall, the present research again verifies that collaborative budgeting is now seen as a strategic governance tool that can enhance participatory democracy, institutional accountability, governance quality, resource allocation effectiveness and sustainable policy results. In the literature a clear shift from the traditional bureaucratic budgeting system to a collaborative, transparent and sustainability-oriented governance system appears.

The study has a few significant contributions to the body of knowledge. It makes a systematic bibliometric overview of collaborative budgeting and sustainable governance scholarship through the identification of influential themes, publication patterns, collaboration structures and intellectual trends. Second, it points at key conceptual and geographical gaps in research, especially in the context of developing countries in the public sector. Third, it facilitates the conceptualization of "Budgeting for Sustainable Governance (B4SG)" as a holistic approach to intertwining budgeting systems with transparency, accountability, citizens' participation, governance effectiveness and sustainable development goals.

6.1 Way Forward and Future Research Directions

The results of the paper indicate the slow evolution of the field from traditional budgeting research to governance and collaborative approaches to budgeting. Nonetheless, there are a number of gaps in both the conceptual and empirical literature. Future research should be targeted on the development of:

- Formulating integrated frameworks that connect and couple collaborative budgeting, sustainable governance and SDG implementation.
- Growth of empirical research in developing countries (including in the provincial and local government sector, where collaborative budgeting is less explored).
- Understanding the effect of transparency, accountability and performance management on sustainable policy results and trust.
- Connecting technical public financial management issues with topics like IPSAS, digital governance and fiscal reform with wider sustainable governance issues.
- Discussing the influence of citizen participation, co-creation and the cooperation between different departments in enhancing the effectiveness of budget management and governance.

- Comparing and longitudinally analysing the changes in collaborative budgeting practices over various systems of governance and institutional arrangements.
- Understanding the role of new technology, like e-governance and digital budgeting platforms and AI for public financial management in transparency and participatory governance.

Thus, collaborative budgeting is getting established as a strategic governance instrument to achieve sustainable development, though it still needs to be better consolidated theoretically, brought into other disciplines and in empirical reality evidenced, especially in least developed countries.

Author Contributions

All authors participated in ideation, development, and writing the manuscript. All authors read and approved the final manuscript.

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

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Informed Consent

This study exclusively utilizes secondary data from the Web of Science database and does not involve primary data collection from human subjects. As such, informed consent was not applicable for direct human participation in this bibliometric research. The authors confirm that all data used in this study are publicly available through the Web of Science database, and no personal, identifiable, or sensitive information of individuals was collected or analysed. Institutional ethics guidelines and standard academic research practices were followed throughout the study.

Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request. The bibliometric data were retrieved from the Web of Science Core Collection database and analysed using RStudio with the Bibliometrix package and VOS-viewer software. The datasets include publication records, bibliographic information, citation data, keyword co-occurrence matrices, co-authorship networks, and country collaboration data. Due to licensing restrictions and Web of Science subscription terms, raw bibliographic records cannot be publicly deposited in open repositories; however, aggregated datasets, analysis outputs, visualization files, and supplementary materials can be shared by the corresponding author upon reasonable request

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