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Participatory Budgeting as a Democratic and Managerial Innovation: Recent Trends and Avenues for Further Research⁵

ABSTRACT: *Participatory budgeting was introduced in Latin America in 1989, and within 10 years, this innovation spread all over the world. At the same time, researchers outside Latin America showed a growing interest in the issue, resulting in more diversified research. A few scholars have already tried to provide comprehensive literature reviews; however, these efforts have had a narrow focus or have appeared as embedded parts of analyses of specific issues. This article aims to (1) identify recent worldwide research trends in participatory budgeting, (2) identify the most popular issues addressed by international research and (3) suggest avenues and subfields of further research. We employed bibliometric techniques to analyse articles published in journals that were indexed and abstracted in the Web of Science database from 2001 to 2020.*

KEYWORDS: participatory budgeting, bibliometric analysis, Web of Science, research trends

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INTRODUCTION

Participatory budgeting (PB) was invented at the end of the 1980s in Porto Alegre, Brazil. After spreading across Latin America, it became a worldwide phenomenon at the beginning of the 2000s. PB is characterised by institutional centrality. At its heart is civil society, and it can express deliberations on neighbourhood budgets without incurring sectoral governance interferences (Baiocchi, 2001, 43). According to Baiocchi and Ganuza (2014), PB has been accompanied by different drivers and expectations from governments, policymakers, active citizens, and non-governmental and international organisations, which has led to diverse implementations (Sintomer et al., 2008; Krenjova and Raudla, 2013). As a result, the dimension of empowerment has ceased to be a central element of the concept.

Initiatives supporting the introduction of PB outside Latin America were often removed from broader projects on improving participatory or deliberative democracy (Ebdon, 2002; Sintomer et al., 2008). Instead, they offered a closed set of tools for target-oriented spending and the building of trust and co-creation in public service delivery. More precisely, PB became a suitable tool for supporting and promoting citizens' engagement in the work of government (Secinaro et al., 2021). Further development of this concept has been characterised by the spread of two emerging logics of management and community building that have replaced or coexisted alongside traditional political logic (Bartocci et al., 2019). In the two decades that followed the first implementation of PB, researchers focused on formal political logic (Cabannes, 2004; Goldfrank and Schneider, 2006; Rossmann and Shanahan, 2011). The unconventional logics mentioned above have recently inspired researchers to look at the relationship between resource allocation and citizens' preferences (Im et al., 2014), the potential of PB to enhance governmentality and transparency (Brun-Martos and Lapsley,

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2017), organisational complexity as a suitable environment for the adoption of innovations such as PB (Ewens and van der Voet, 2019), the contribution of PB to better urban governance (Kuo et al., 2020), influences and effects of PB on public policies and programmes (Aleksandrov et al., 2018; Touchton and Wampler, 2020), and links between PB and public spending (Shybalkina and Bifulco, 2019; Calabrese et al., 2020). Differences between the adoption of PB and the managing of budgetary routines (Balážová et al., 2022; Murray Svidroňová et al., 2023) and the application of tools to manage PB itself (Sintomer et al., 2008; Sintomer et al., 2012) have also been examined. As a research theme on innovations of a political nature, PB works within fields such as accounting and performance; it can thus have an incisive impact on public management (Kumar et al., 2020).

Hundreds of journal articles, book chapters and books focusing on PB have been published since the beginning of the 1990s, and it is difficult to follow all current research flows. This bibliometric analysis unravels the global thematic trend of academic publications on PB and dwells upon future avenues of research in the field.

The following section comprises an in-depth analysis of related works confirming the originality of the research purposes; the methodology section presents the tools used to perform the analysis; the fourth section shows the results obtained from the quantitative analysis; the fifth section discusses the results presented in the literature; and the final section concludes the analysis and provides an extensive research agenda.

RELATED WORKS IN THE FIELD OF PB

The conceptual definition of a participatory budget – and consequently of PB and its research growth – dates back to the 1990s (de Sousa Santos, 1998; Allegretti, 1999). A significant increase in academic publications occurred from 2000, and there were also notable advances in 2011 and 2014.

Over the last 20 years, there has been a substantial amount of research. Nonetheless, thus far, there has not been a single work that bibliometrically analyses the spread of this rather complex concept into several topics or aspects and their interconnections. Previous bibliometric work in this area has only focused on South Korea, and the sources of that analysis were journal articles published exclusively in Korean (Cho et al., 2020a).

Works presenting the state of the relevant literature are somewhat fragmented. There have been in-depth examinations of aspects and fields related to PB, including a literature review based on 21 databases looking at the impact of PB on health and well-being (Campbell et al., 2018), literature reviews on public sector management accounting (Anessi-Pessina et al., 2016), identification of barriers to accessibility and the use of PB in Germany (Gerlit et al., 2017), co-production (Verschuere et al., 2012) and trust in e-government and e-participation (Scherer and Wimmer, 2014).

Research dedicated to PB has sought to establish frameworks for certain aspects (Sintomer et al., 2013; Wampler, 2012), investigate particular cases and sector outputs (de Souza Santos, 1998; Abers, 1998; Allegretti, 2003; Ebdon and Franklin, 2016) and analyse comparisons between them (Sintomer et al., 2008; Dzinic et al., 2016). Such works are usually narrowed down to specific geographical locations. To present an overview and offer support for research arguments, several works have included literature reviews. Both Wampler (2007) and Van Cott (2008) presented an overview of PB in Brazil; Matheus et al. (2010) focused on radical democracy participation in the public management and social control of governments in Latin America; Goldfrank (2011) discussed the role of the left in deepening democracy; and Voorberg et al. (2014) focused on public co-creation and co-production with citizens. Zafeiropoulou et al. (2015) provided a literature review identifying success factors for implementing PB projects in a digital environment.

More recently, other qualitative mapping studies have been published. Van Helden and Uddin (2016) presented their results on public sector management accounting in emerging economies; Wampler et al. (2018) provided an in-depth perspective on PB; Omar et al. (2018) stressed the engagement of citizens in decision-making; and Mancilla-García and Bodin (2019) and Falanga et al. (2020) studied environmental governance and undertook a comparative study of the cities of Canoas in Brazil and Cascais in Portugal regarding the drivers of success of PB.

A summary of the literature is given in Table 1.

To the best of our knowledge, a broad bibliometric analysis that includes the administrative, economic and political aspects of PB, and which is based on works written in English and which explores the current situation while also covering developments on a global scale, has not been undertaken. This article attempts to fill this gap in existing knowledge.

Tab. 1: An overview of literature reviews (including embedded ones) focusing on PB (2000–2020).

Reference	Year	Type of work	Field	Main focus
Wampler	2007	ELR	P	The state and spread of PB
Van Cott	2008	ELR	P	Radical democracy
Matheus et al.	2010	ELR	P	Social control of the government in Latin America
Goldfrank	2011	ELR	P	The role of the left in deepening democracy
Verschuere et al.	2012	LR	A	Co-production
Scherer and Wimmer	2014	LR	P	ICTs and trust
Anessi-Pessina et al.	2016	LR	A	Public sector management accounting
Ebdon and Franklin	2006	ELR A		The organisational capabilities of PB
Gerlit et al.	2017	LR	A	The barriers of PB
Wampler et al.	2018	ELR	P	The spread of PB
Omar et al.	2018	ELR	P	The engagement of citizens
Campbell et al.	2018	SR	A	The impact on health and well-being
Mancilla-García and Bodin	2019	ELR	P	Environmental governance
Cho et al.	2020	BA	P	PB
Falanga et al.	2020	ELR	P	The drivers of success of PB

This table shows an overview of related works and their types – an embedded literature review (ELR), a literature review (LR), a bibliometric analysis (BA) and a scoping review (SR) – which correspond to the main topics of politics (P) and administration (A).

Source: the present authors

Tab. 2: A list of studies using the bibliometric method in public administration and accounting.

References	Fields
Cho et al. (2020)	PB in South Korea
Di Vaio et al. (2020)	Sustainable business models
Zhao et al. (2019)	Smart cities and participatory governance

Source: the present authors

Bibliometric methods use bibliographic data from online databases. A bibliometric analysis based on this data allows for an academic study and a comprehensive view of the area of investigation. Various studies have applied this type of analysis, which is an effective method in making research credible and reliable.

Table 2 lists the documents published in the observed period that use a similar approach to the present article. These works reported substantial differences in the databases for research and keywords concerning the topics under review. For example, the article by Cho, No and Park (2020) is a scientometric work based on the keywords ‘participatory’ and ‘budgeting’; it is a review of selected studies conducted in three stages, where the first phase is a bibliometric analysis using Gephi (a visualisation and exploration software program). The study by Di Vaio et al. (2020) is related to the ‘participatory process’, which requires the collaboration of different actors from institutions and civil society to achieve sustainable development goals (SDGs).

This article is original because it uses the Web of Science (WoS) database, which has been helpful in research related to PB in public administration and accounting; for instance, Zhao, Tang and Zou (2019) used the WoS Core Collection to examine ‘smart cities’ in participatory governance.

The next step focused on the bibliometric methodology used to accurately select the articles.

METHODS

As stated by Aria and Cuccurullo (2017), the mapping process and tools were described by Börner et al. (2003) and Cobo et al. (2011). In addition, analyses by Zupic and Čater (2015) and by Secinaro et al. (2020) comprised the following rigorous steps: study design, data collection, data analysis, data visualisation and interpretation. This study adopted the mapping workflow method, while taking the five steps followed by Zupic and Čater (2015) into consideration.

The following research questions were examined (Zupic and Čater, 2015):

- Q1: What is the global thematic trend of academic publications on PB, and what information is revealed when applying a bibliometric analysis?
Q2: What are the future avenues of research in this field?

The bibliometric analysis does the following:

- (a) It provides bibliometric information on 319 academic studies extracted from the WoS database.
- (b) It uses the bibliometric R-package and the Biblioshiny application to obtain and record the quantitative data of different selected articles.
- (c) It uses variables such as authors per article and the author's dominance index to identify the leading researchers in the field.
- (d) It uses citations analysis and a collaboration map to understand the network of this research stream.
- (e) It studies countries to evaluate participatory budgets, citations and networks.

The main objective is to offer a clear analysis of relevant research outputs in the field of PB. The analysis is quantitative, and bibliometrics were used to facilitate identification of the essential quantitative variables of a particular research stream (Junquera and Mitre, 2007). This analysis can significantly contribute to the development of research on PB. In addition, it tries to formulate some directions for further research.

Firstly, the three research questions were defined. Subsequently, 'participator*' and 'budget' were selected as the primary keywords from the WoS database. The WoS meta-search engine was used, and it accessed the most well-known academic databases. This multidisciplinary database allows researchers to identify critical articles for academic research (Marsilio et al., 2011).

The bibliometric method used in this study can help readers quickly identify the main research domain variables, thereby contributing towards the integration of these elements into the relevant literature.

The evidence from the literature in Table 1 and from the disciplines highlighted by Ebdon and Franklin (2006) shows that the theme of PB is interdisciplinary and requires a particular multi-perspective vision. This bibliometric review study selected sources concerning the fields of political science (118), public administration (108), economics (54), environmental studies (51), management (42), environmental sciences (41), urban studies (41), interdisciplinary social sciences (40), computer science and information systems (39), regional urban planning (36), development studies (35), electrical and electronic engineering (34), sociology (28), computer science and interdisciplinary applications (24), computer science and artificial intelligence (23), business finance (20), green sustainable science technology (20), business (15), operations research and management science (9) and computer science and cybernetics (8). There were 533 results in total. The next step involved focusing on peer-reviewed articles, and the final sample was to contain only articles in English. In total, the final number of articles to analyse was 319. The progression of the theme spans two decades (2001–2020), and there were 319 documents as selected sources.

After the study design phase, the second step entailed using the R open-source statistical application to conduct the analysis. The data collection stage involved creating a .bib file for data analysis as the third phase. The R software and the bibliometric codes were used to perform a descriptive bibliometric analysis and create a matrix comprising all the documents. In addition, the Biblioshiny application was used for the creation of a conceptual map and co-citation network. The analysis of the results entailed a visualisation of the knowledge structure using the data reduction technique.

RESULTS AND ANALYSIS

The analysis of the bibliometric results began with a description of the main bibliometric statistics; the investigation included consideration of the authors, indicators, information and countries of research. Subsequently, each of the aforementioned categories was thoroughly analysed using the following elements: (1) type of document, (2) annual academic production, (3) academic sources, (4) source growth, (5) authors' keywords, (6) topic dendrogram, (7) factorial map of documents with the highest contributions, (8) article citations, (9) country production, (10) country citations, (11) country collaboration maps and (12) country collaboration networks.

Table 3 shows the main information about the data set based on the 319 articles published between 2001 and 2020. The overall number of keywords used among the documents is 921, which is approximately three times higher than the number of documents; this means that we can assume there were three keywords per document on average. The number of 'keywords plus' – words or phrases that frequently appear in an article's title (Campra et al., 2021) – was a bit lower than double the number of documents, which means there were two keywords plus per article on average.

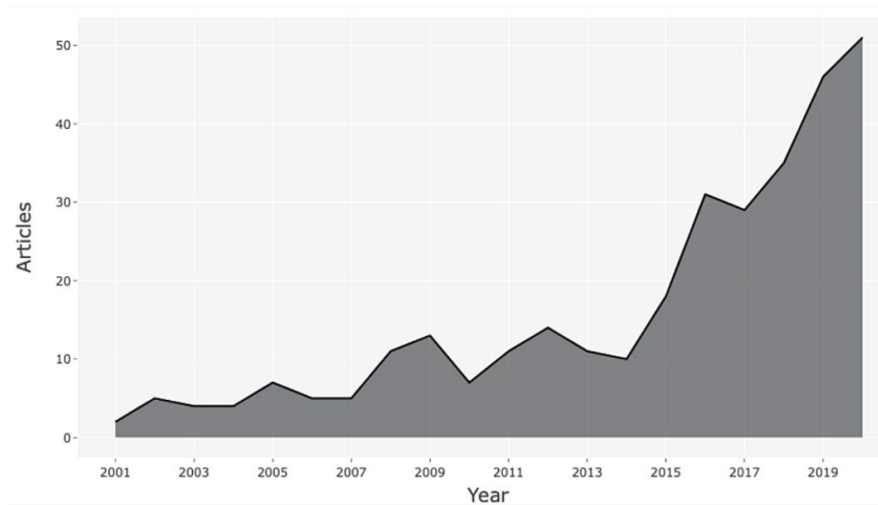
Looking closer at the authors' collaboration patterns, we can observe that two authors on average wrote each article (2.09). The collaboration index was calculated from multi-authored articles and did not take single-authored articles into account. More precisely, it is a rate of involvement of co-authors calculated only using a multi-authored article set. It showed that the average number of authors in a team was between two and three (2.77) per article.

Tab. 3: The main information about the data.

Description	Results
Main information about the data	
Timespan	2001–2020
Sources (e.g. journals and books)	195
Documents	319
Average number of years since publication	6.05
Average number of citations per document	14.56
Average number of citations per document per year	1.7
References	12.17
Document types	
Article	300
Article: book chapter	11
Article: proceedings paper	8
Document contents	
Keywords plus (ID)	448
Authors' keywords (DE)	921
Authors	
Authors	668
Author appearances	773
Authors of single-authored documents	86
Authors of multi-authored documents	582
Authors' collaboration	
Single-authored documents	109
Documents per author	0.478
Authors per document	2.09
Co-authors per document	2.42
Collaboration index	2.77

Source: the present authors

Fig. 1: Academic production.



Source: the present authors (based on the WoS database)

Figure 1 illustrates the annual production of academic publications on PB. The number of published articles has grown considerably. Notable growth in research output can be identified in 2008, 2011, 2014 and 2020. Interestingly, most of these years were turbulent (2008 from an economic standpoint; 2011 from a political standpoint with turmoil due to the Eurozone crisis and anti-government protests in the Middle East and North Africa, often referred to as the Arab Spring; and 2020, which featured a global pandemic that had impacts far beyond the health sector). One year that did not follow this logic is 2014, which saw a visible growth in academic production connected to PB topics and with a peak occurring in 2016. Indeed, interest in PB grew considerably because the number of PB participants and allocated financial resources in the United States roughly doubled each year from 2011 (Gilman, 2016), and initiatives introducing PB reached other regions (Kersting et al., 2016). From 2014, Josh Lerner, the co-founder and executive director of the PB Project, pushed for the adoption of the project in Canada and the United States, which, taking the experience of Porto Alegre as an example, has spread across the American continent (Gilman, 2016). By 2021, the diffusion of PB could be identified in over 7900 municipalities (Dias et al., 2021); these were mainly developed ones with over 50,000 inhabitants (Spada, 2014; Gilman, 2016).

The study analysed 319 articles published in peer-reviewed journals. As Table 4 shows, the distribution of the articles was concentrated in five journals. *Environment and Urbanization* published 10 articles on PB topics in the 20-year period and mainly focused on dealing with the roles of the public sector in urban housing and on the impact of climate change on cities. *New Political Science* also published 10 articles; it focused on topics such as social justice, political and cultural development, human rights and sustainable democratic society. *World Development* is a multidisciplinary journal that published nine articles on PB. *Sustainability* is a peer-reviewed journal focusing on economic, environmental, cultural and social sustainability topics; it published eight PB-related articles. The *International Journal of Urban and Regional Research*, which is a peer-reviewed academic journal covering social science and urban and regional research, also published eight PB-related articles. The analysis highlights the transversality of the theme. PB has been addressed by different disciplines and adopted in social, environmental, managerial, accounting and sustainability contexts as well as the contexts of economic development and social policy.

The distribution frequency of articles in these journals is shown in the loess regression in Figure 2. This method is flexible and suitable for modelling complex processes for which no theoretical models exist. In addition, it sufficiently fits our sample, since it requires large and densely sampled data sets. The number of articles on PB in *Sustainability* has rapidly increased; the journal is indexed in Scopus, Science Citation Index Expanded, Social Science Citation Index, WoS, Geobase, Research Papers in Economics and other databases, achieving an SJR 2020 of 0.612 and a Q1 ranking on SCImago for Geography, Planning and Development. The journal seems to have become a fundamental source of knowledge on PB and has aided in the discovery of many aspects and

Tab. 4: Studies on PB.

Sources	Articles
Environment and Urbanization	10
New Political Science	10
World Development	9
International Journal of Urban and Regional Research	8
Sustainability	8
Journal of Civil Society	5
Local Government Studies	5
Administration and Society	4
Chinese Public Administration Review	4
Comparative Politics	4
Latin American Politics and Society	4
Politics and Society	4
Public Administration and Development	4
Public Performance and Management Review	4
Widening Democracy: Citizens and Participatory Schemes in Brazil and Chile	4
Accounting, Auditing & Accountability Journal	3
ACM Transactions on Intelligent Systems and Technology	3
Biodiversity and Conservation	3
European Journal of Operational Research	3
Habitat International	3

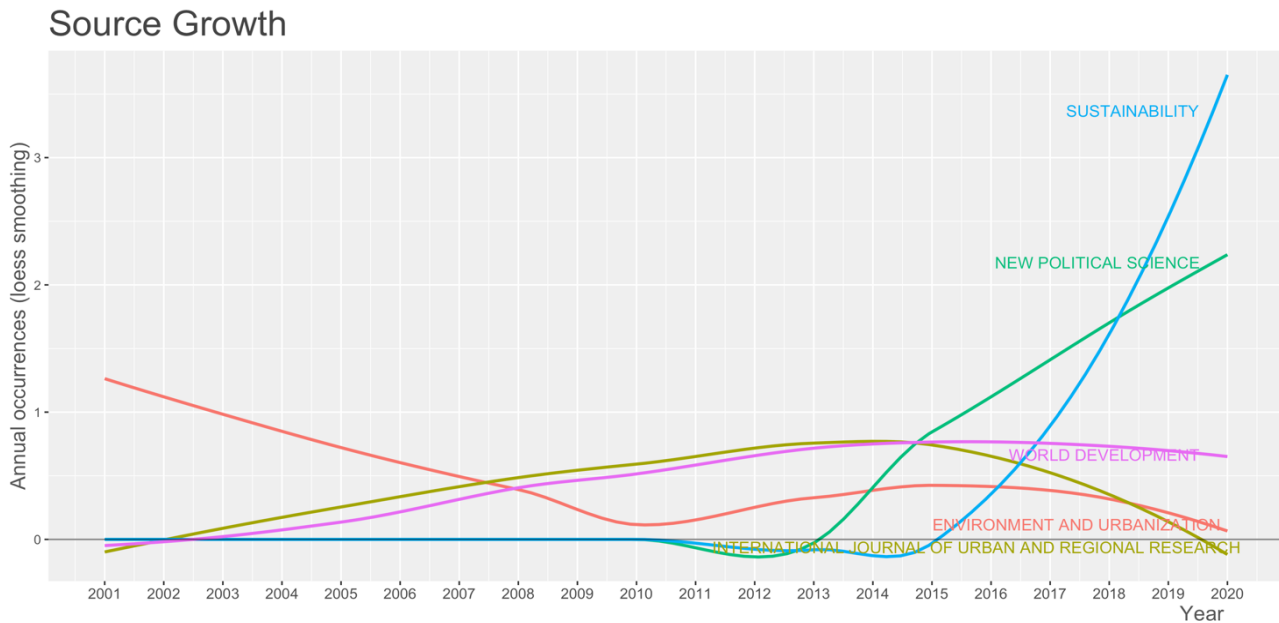
Source: the present authors

environmental benefits related to various SDGs, such as in waste management and in health. The fast growth in the number of articles in Sustainability since 2014 indicates that environmental issues and the challenges related to sustainable development were increasingly in the hands of citizens, and that the public and private sectors could find suitable approaches to socioeconomic, academic and integrated problems through PB. It is essential to develop participatory forms of governance to avoid the unequal distribution of environmental ‘goods and bads’, and PB is treated as a practical and tangible solution to democratic problems by theories on deliberative democracy (Calisto Friant, 2019).

The increase in articles published in New Political Science and in Sustainability reflects the increase in the production of research articles connected to PB in Figure 2.

This section analyses the keywords most often used by the authors. As shown in Table 5 and in the tree map in Figure 3, ‘democracy’ is the most frequently used word, having 46 occurrences. The term is mentioned in many contributions and mainly refers to the union between direct participation and representative democracy, thus defining the concept of ‘participatory democracy’ (Aragones and Sánchez-Pagés, 2009). The involvement of all actors in the democratic process provides a balance between the power of citizens and politicians. The first contributions refer to the case of Porto Alegre and then cover other Latin American cities such as Montevideo and Mexico City (Postigo, 2011; Cabannes, 2004). Subsequently, PB became a model that was spread by representatives of non-profit organisations which promoted it for adoption in the United States, Canada, Europe and Asia (Porto de Oliveira, 2019). In some studies, PB acquired different uses and concepts of democracy. In Russia, it has been used to reach and involve the inhabitants of decentralised rural areas in processes (Beuermann and Amelina, 2018). There is a similar use in American countries, where PB has been able to reach poor communities which suffer from a low level of education and a low involvement in democratic life (Pape and Lim 2019). The applicative translation of democracy can translate into a neoliberal approach (the post-military regime in Brazil) or a new dialogic model of response to new needs and limits (Aleksandrov et al., 2018), often with the use of new technologies (Touchton

Fig. 2: A loess regression.



Source: the present authors (based on the WoS database)

et al., 2019). Democracy and the use of PB are adopted to protect specific interests, such as sustainability and urban regeneration, and are also associated with SDGs and new tools for protecting a population’s well-being (Weymouth and Hartz-Karp, 2015). The studies show how the new democratic process and PB are supported and strengthened by the younger sections of the population in particular (Cabannes, 2006). With 31 repetitions, ‘governance’ is second in the ranking. These keywords from political science are then followed by keywords from public administration and management: for example, ‘policy’ (21), ‘government’ (18), ‘management’ (12) and ‘accountability’ (11). These terms and strands are directly connected with the meaning and trends defined by democracy. In particular, this concerns the redefinition of the policy process; the involvement of all actors in the decision-making process – including citizens, who acquire a role of direct participation and the capacity for the governance and resolution of social issues such as democratic equality (even for the poorest); the involvement of rural areas, sustainability, and the use of water and other resources; and financial sustainability in the processes of the rationalisation of spending and austerity. All these acquire an essential role with the sharing of responsibility and accountability.

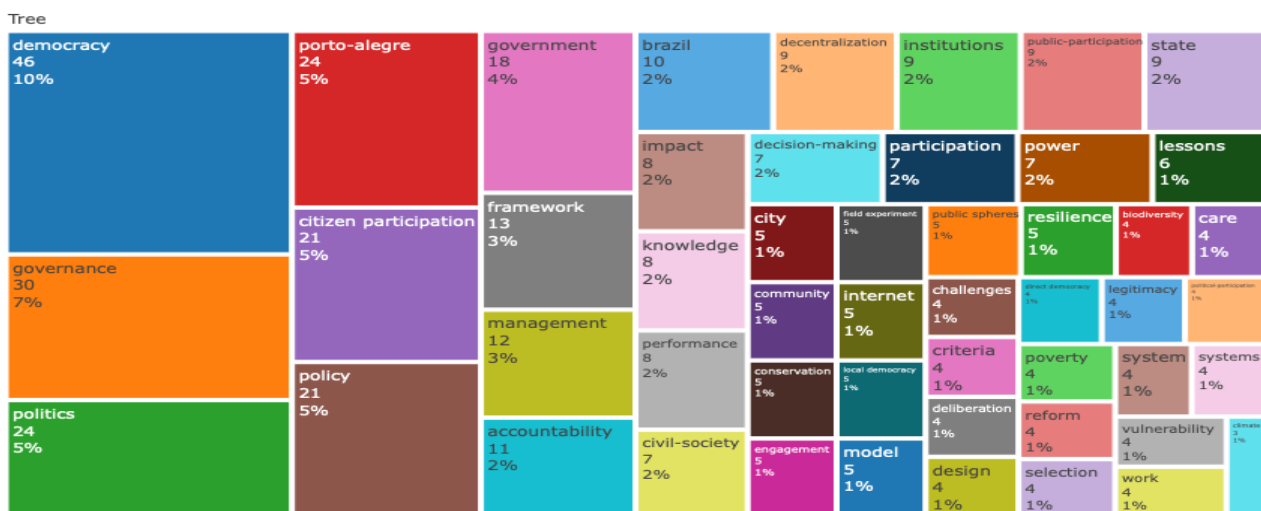
Figure 4 shows the research trends based on the analysed keywords. In the WoS database, the frequency of the topics dealt with before 2012 is not sufficient to reach a common cluster showing an evolution of common topics; however, from 2012 onwards, the frequency certainly shows a common trend. The figure shows the data gathered from 2012 to 2020. In 2012, PB presented the measurement of performance of entities in the public sphere, indicating more decentralisation and less of a focus on community participation than today. PB is associated with deliberative forums in which citizens’ consultations include the training of participants oriented towards the achievement of specific performances translated into resource allocation objectives and efficiency with a consequent legitimation of choices (Ganuza and Francés, 2012). In 2013, the role of PB in the participatory governance process started with the involvement of all actors in the decision-making sphere (Allegretti et al., 2013), and the definition of ‘democracy’ from a neoliberal point of view was revived (Sintomer et al., 2013). The foundations for the identification and political approach of the PB process were laid down in 2014 in a period of budget cuts and redefinition of allocative powers in the legitimacy of spending (Baiocchi and Ganuza, 2014). At the same time, approaches through gamification and the educational process in involving citizens were studied (Lerner, 2013). In 2016, field research trends appeared, which discussed Brazil and Porto Alegre in terms of the adoption of new technologies to manage PB processes and participatory governance (Spada et al., 2016; Barros and Sampaio, 2016). In

Tab. 5: Authors' keywords in articles on PB.

Words	Occurrences
Democracy	46
Governance	30
Porto Alegre	24
Politics	24
Citizen participation	21
Policy	21
Government	18
Framework	13
Management	12
Accountability	11
Brazil	10
Public participation	10
Decentralisation	9
Institutions	9
State	9
Civil society	8
Impact	8
Knowledge	8
Performance	8
Decision-making	7

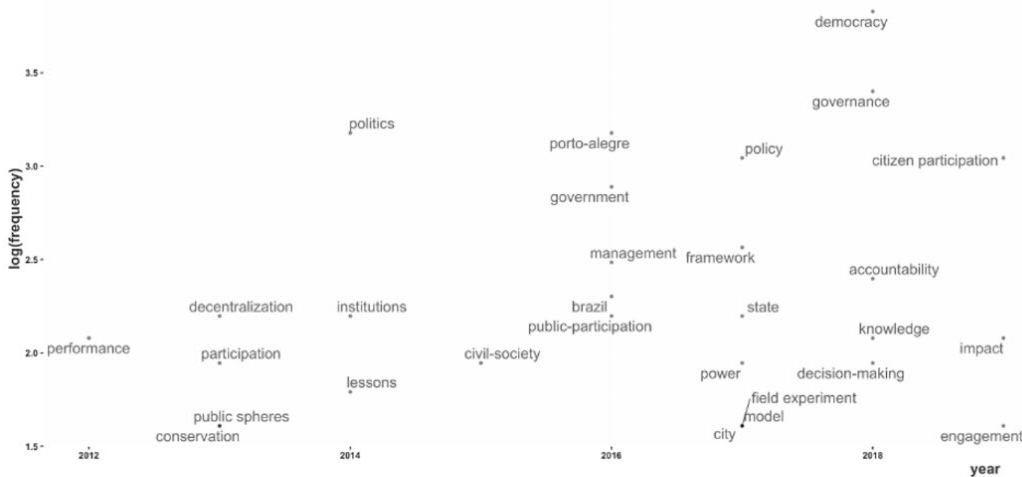
Source: the present authors (based on the WoS database)

Fig. 3: A tree map.



Source: the present authors (based on the WoS database)

Fig. 4: Trending topics.



Source: the present authors and Biblioshiny (based on the WoS database)

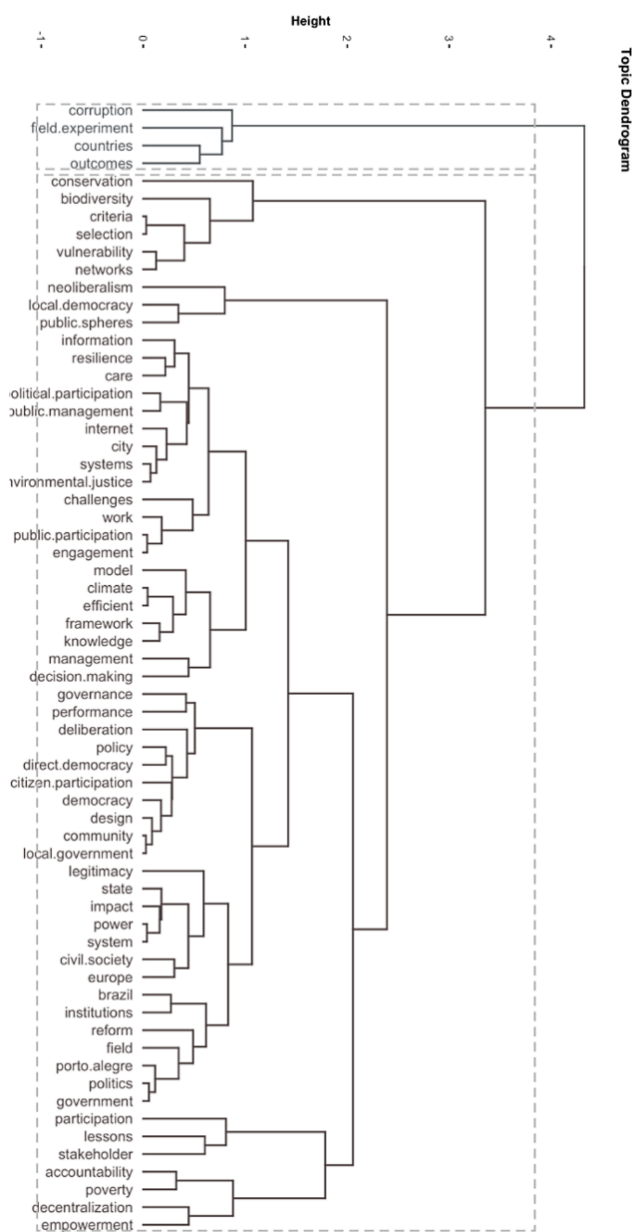
2017, the study of new frameworks suitable for guaranteeing the correct adoption of PB was started, and a technocratic process was launched to increase the transparency of state and local policies (Cabannes and Lipietz, 2018). In 2018, new solutions appeared that were related to the adoption of PB in cities globally, and the concept of co-governance and the involvement of all actors was redefined to eliminate access barriers to participation through smart solutions and the adaptation of tools as required (Aleksandrov et al., 2018). There are cases where the internet has been very useful in developing participatory forms, as shown by Mitozo and Marques (2019). However, there have also been cases which presented unexpected results; a case in point is the i-voting case presented by Mellon, Peixoto and Sjoberg (2017), where online voting was not as productive as expected. Emerging themes include the impact generated by PB on the well-being of the local community (O’Hagan et al., 2020; Kempa and Kozłowski, 2020; Wampler and Touchton, 2019) and community engagement (Touchton and Wampler, 2020; Holler et al., 2020). A community’s involvement is a necessary condition for the performance of PB. Only in cases of real involvement is there a greater efficiency in the allocation of resources and a more significant impact on the efficiency and effectiveness of adopted public policies.

As one of the keyword analysis techniques presented herein, the dendrogram analyses detected keywords and categorises the connections between them in different clusters. Figure 5 shows a topic dendrogram where it is possible to identify groups dealing with topics in various fields. In one field, researchers identify PB as a tool for visualising vulnerabilities in the environment, such as in the articles by Topp-Jørgensen et al. (2005) and Sandker et al. (2009), which touch on themes such as ‘biodiversity’ and ‘selection’. This demonstrates that, in addition to considerations on human capital, PB is also being used as a tool to select targets for mapping conservation priorities across features related to landscape conservation and environmental vulnerability (Didier et al., 2009). Thus, PB assumes a strategic relevance to show citizens the biodiversity of cities.

There is a cluster that is different and longer because there are many topics to deal with. The first of these highlights the importance of participation by citizens – who are the main actors in PB – in countries where PB is already widespread and where direct democracy allows for a relevant participatory policy. Citizens are not obliged to participate, but their self-recognition as citizens should lead to engagement and participation in many local government decisions (Oh et al., 2019).

The relationship between the public and private sectors is fundamental and must positively impact the community, giving importance to civil society and the power of the decision-making of citizens. With acts of parliament such as the Localism Act (2011) and Scotland’s Community Empowerment Act (2015), the United Kingdom has assigned powers to local communities by relying on them and involving civil society and residents in the decision-making process regarding the allocation of public funds. This is an example of PB as a political tool that is nonetheless sustained through the capacities and trust assigned to citizens (Wilkinson et al., 2019). Many articles explain their objective to use frameworks to solve and manage problems related to PB (Rios and Insua, 2008). A support framework is proposed to solve the problem of the knowledge of decision-making and negotiation rights in the participatory system.

Fig. 5: Topic dendrogram.



Source: the present authors (based on the WoS database)

The internet, and especially its social aspect, is a very powerful form of communication which deviates from traditional modes in the public sphere in promoting PB and society’s approach to knowledge and the deepening of awareness. Kim (2008) talks about a model for supporting PB and presents e-democracy as a form of participatory and direct democracy that uses modern communication technologies to play an essential role in public decision-making.

Another important issue is poverty and the decentralisation of decision-making power related to PB. The situation has improved over time because communication channels have multiplied and become accessible to many citizens; however, this always depends on the political context in which a population finds itself. Several examples can support this argument, including PB in Peru, which also deals with gender diversity, and PB in Bangladesh (McNulty, 2015; Chowdhury, 2017).

Tab. 6: The total number of articles published in each country.

Region	Frequency
The United States	291
The United Kingdom	103
China	60
Spain	47
Canada	42
Brazil	37
Australia	36
Poland	31
Italy	23
Sweden	23
France	22
South Korea	19
Germany	17
The Netherlands	17
India	16
Thailand	16
Japan	13
Indonesia	12
Norway	12
Ukraine	11

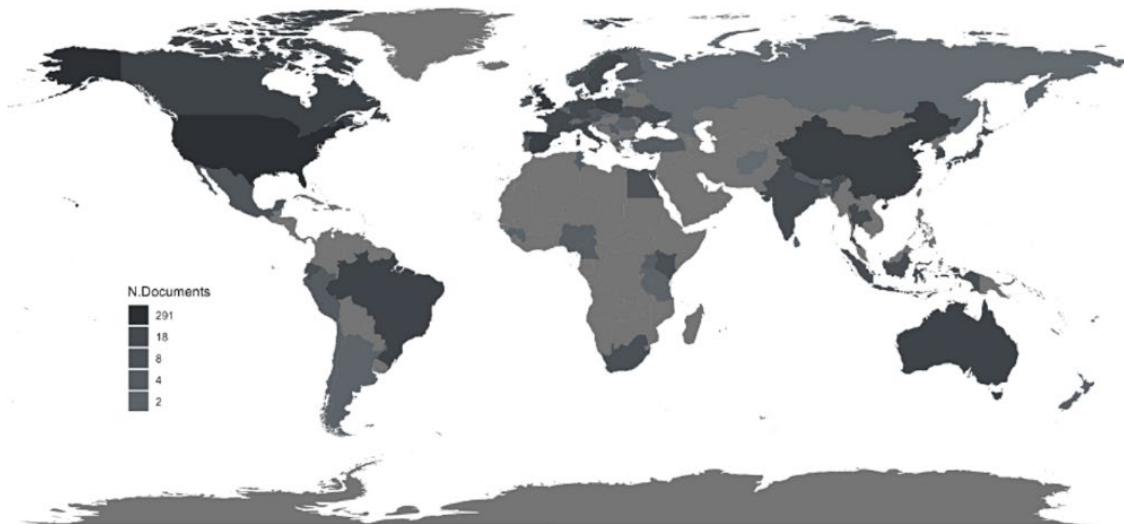
Source: the present authors (based on the WoS database)

Figure 6 shows the diffusion of PB themes and highlights individual countries to show the research geographies. It defines the largest concentration of publications in each country. Table 6 includes the total number of articles published in each country and the collaboration network. The following subsections start with an analysis of the total number of published articles. Figure 6 and Table 6 show the countries where published research has presented PB as a topic of interest. The United States has the highest number of publications on the topic (291). As already highlighted, the diffusion of PB in Latin America was well known, given that PB had originated in Brazil. The United Kingdom (103), China (60), Spain (47), Canada (42) and Brazil (37) follow the United States in terms of publication output. It is immediately evident that this research area developed similarly in countries that are on different continents; Spain and Canada had an almost equal number of articles, much like Brazil and Australia. There is a lag in research in Central and Eastern Europe, which can be explained by the late introduction of this budgetary innovation to that region; however, Poland is an exception because the first experiments with PB occurred there much earlier than in neighbouring countries (Dzinic et al., 2016; Kukučková and Bakoš, 2019). The Americas are the most prolific region, with South America, in particular, helping to draw attention to participatory politics and citizen engagement in the fight against inequality and poverty.

Figure 7 shows worldwide partnerships. The shades of grey on the map indicate the intensity of research collaboration. The countries highlighted in dark grey have the highest intensity of creating associations in publishing articles regarding PB. The lines show the collaboration connections between countries, and the width of these lines indicates the extent of that collaboration.

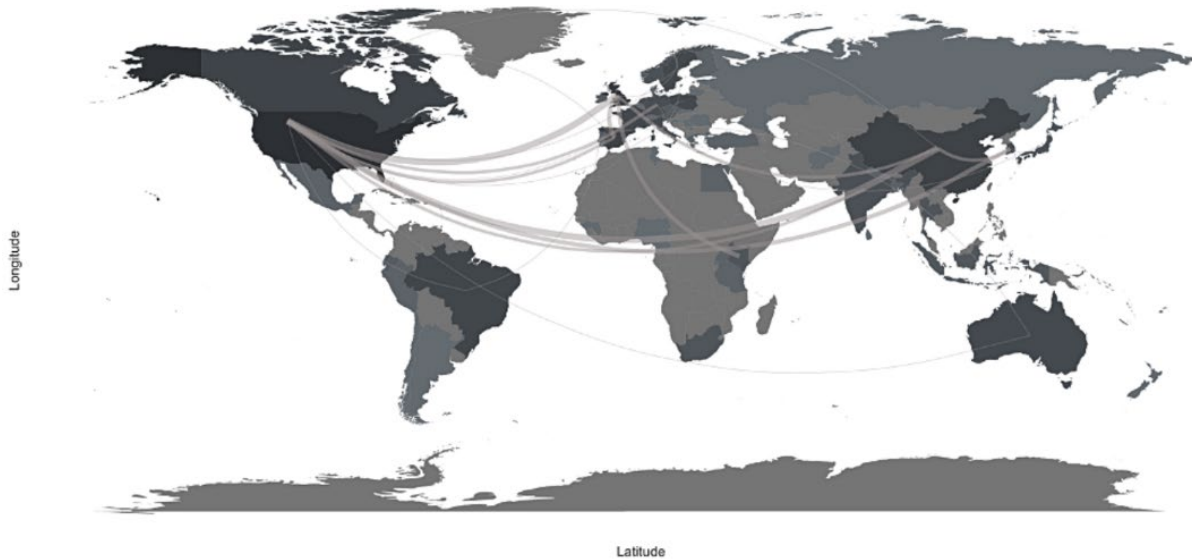
Figure 7 highlights how the countries with the highest number of publications on PB have engaged in such collaborations. Without a doubt, China, Australia, the United States and Brazil have engaged in critical collaborations with distant countries. As we can see, the greatest frequency in collaboration is between the United Kingdom, the United States, China and South Korea, which are the countries with the highest total number of published articles and the most developed research in this area. Since 2007, a national and international PB network has been built with collaboration between municipalities and governments; this has also influenced the study and dissemination of collaborations between academics (Nelson, 2018).

Fig. 6: Production in individual countries.



Source: the present authors and Biblioshiny (based on the WoS database)

Fig. 7: Country collaboration map.



Source: the present authors and Biblioshiny (based on the WoS database)

DISCUSSION AND CONCLUSIONS

This study is based on 319 articles and book chapters which were published in 195 journals and books over two decades. PB spread in Porto Alegre after the military regime legitimised and involved citizens in direct decision-making. This led to a diffusion firstly in Brazil and then to other Latin American countries before becoming a worldwide phenomenon, thanks to projects and networks aimed at the adoption of good practice. Since 2012, PB has evolved due to temporal needs and has led to the verification of performance and results in response to the corruption of regimes and the processes and administrative changes of the neoliberal

period. The reformulation of the European Union's budget from 2014 to 2020 and the American federal budget crisis of 2013 led to a certain relationship developing between budget cuts and the correct allocation of PB resources. The process of involving citizens that had started in 2014 developed from 2016 to 2018 into the adoption of new technologies aimed at increasing citizen participation and voting and eliminating the governance barriers created by public managers and other actors – which was where decision-making power in the past had been concentrated.

The PB approach is aimed at involving actors in the co-planning process of public services. The association of PB with new civic participation tools provides new perspectives involving the definition and assessment of impacts; it goes beyond a mere vision of the tool's performance and the commitment of resources. The dendrogram revealed two families of topics connected to PB. The first of these is associated with sustainability and biodiversity and reflects the outcomes of PB; the second is more robust and more populated, being aligned with deliberative democracy as such and with a tight connection to government, policies and reform. This is also reflected in the figure showing trending topics – from conceptual ones such as democracy, decentralisation and participation through to the more administration- and execution-oriented topics of decision-making, management and administration. The global spread of the argument can explain this phenomenon. The dominant strands include 'democracy' as a term associated with PB, which touches on different themes and changes the theoretical approach adopted over time from involvement and collaborative participation to a neoliberal approach orienting PB towards technocracy and dialogic approaches in response to a need for greater transparency and accessibility to allocative choices and the planning of services of public interest. The democratic approach of PB involves the processes of governance and representation, the levels of involvement of actors and a degree of accountability.

Based on the analysis of journals and the trend of publications, there is an increasing prevalence of issues related to environmental and social sustainability (overcoming marginalisation and differences in elective and participatory participation) with repercussions on the impact and adoption of SDGs and a lower prevalence of studies associated with accounting aspects, orienting more studies towards participatory and decision-making processes. This multidisciplinary theme was highlighted by the journals with the highest number of articles; these journals dealt with developing environmental topics, urban development, social sciences, political science, and management and accounting.

The main journals identified by the bibliometric analysis on management and accounting are the *Accounting, Auditing & Accountability Journal*; *Public Performance and Management Review*; *Chinese Public Administration Review*; and *Public Administration and Development*. There is a prevalence of issues concerning public management, legitimacy theory, dialogic accounting and new approaches to new public management that follow the trend concerning new technology and administrative capacity to locate resources and evaluate the impact of the results. The analysis highlights how diffusion and collaboration between countries are more significant in some places than others; however, the adoption and study of PB is present worldwide with different characteristics, thanks to new work and projects emerging from the experience of Porto Alegre and its diffusion in Brazil (Gilman, 2016; Nelson, 2018).

In terms of future research on the diffusion and adoption of PB, a few avenues can be put forward for consideration. The first of these is to use a micro-level approach and to employ behavioural theories (Ajzen 1991). Researchers could then deal with local public servants, policymakers and decision makers and their intentions in adopting PB. Taking into account the conclusions of Felin et al. (2012), any analysis of collective phenomena, including PB, cannot avoid aspects on the micro- and individual levels, such as the skills, attitudes and experiences of those directly involved (e.g. public servants, policymakers and decision makers at the local level). Nowadays, this research avenue is underdeveloped because the micro-level approach is usually used to address the attitudes or motives of citizens (Gustafson and Hertting, 2016), politicians, public officials, consultants, auditors and other stakeholders (Holdo, 2016; Porto de Oliveira, 2017). This approach would uncover the constraining and enabling effects of formal and informal rules that influence the behaviour of various stakeholders within PB. In this avenue of inquiry, there is quite a strong body of literature aimed at political constraints and enablers (Baiocchi, 2005; McNulty, 2015; Montambeault, 2019; Holdo, 2020). However, research focused on constraints and enablers of an administrative or managerial nature is somewhat fragmented (Gerlit et al., 2017; Falanga et al., 2020), and this field requires more intensive and systematic activity. A third avenue would be to use a macro-level approach and employ much broader theories and concepts. A better understanding of PB diffusion and adoption in different economic, political, social and cultural environments may require diverse research streams and room for an interplay between political leadership and collaborative innovation (Torfing and Ansell, 2017), as well as local autonomy and discretion by local decision makers in introducing PB innovations (Ladner et al., 2019). Some researchers have already offered all-encompassing typologies presenting several models that reflect the diverse diffusion and adoption of PB (Sintomer et al., 2008; Krenjova and Raudla, 2013); however, a much more

common approach has been a research-based one focusing on separate country studies (Baiocchi, 2001; Hernández-Medina, 2010; Stewart, 2014; Célérier, 2015; Hajdarowitz, 2018). Within this context, it would be interesting to compare international experience, and therefore, more comparative studies are necessary to understand the similarities and differences in PB around the globe (Bartocci et al., 2023: 769). Last but not least, it would be useful to compare empirical contributions from regions where research focusing on PB has lagged with empirical results from countries and regions where this research has much stronger roots. For example, even though recent research focused on PB in Eastern European countries includes numerous interesting publications (Baláz Benzoni and Gašparík, 2023; Balážová et al., 2022; Boc, 2019; de Vries and Spacek, 2023; Dzinic et al., 2016; Klimovský et al., 2021; Klimovský and Hrabínová, 2021; Kukučková and Bakoš, 2019; Murray Svidroňová and Klimovský, 2022; Svaljek et al., 2019; Sześciło and Wilk, 2018, etc.), it remains significantly fragmented in terms of topics.

In addition, our analysis uncovered a dominance of qualitative methods. There is an evident need for systematisation and a comparison with standard methods. This article has highlighted the main trends and theoretical implications that future academics will need to investigate. The adoption of experiments related to the impact assessment and adoption of PB and the overcoming of the obstacles generated by some actors in the collaborative governance process and in citizen participation are issues which practitioners should invest more in to increase diffusion and output of PB as a tool. This conclusion is also confirmed by Milosavljević et al. (2023), who pointed out that the research focused on PB had already reached the point of saturation, and it would require further specialisation, which will make PB an advanced tool for direct democracy implementation.

At this juncture, it is important to acknowledge the limitations of the presented approach. First of all, this article is focused on publications indexed or abstracted in the WoS database. There are numerous journals on other bibliometric databases (e.g. Scopus) that can provide an implemental and integrated vision of the results obtained in the WoS database. These journals include the Journal of Public Budgeting, Accounting & Financial Management; Public Money & Management; and Financial Accountability & Management. In addition, the bibliometric analysis does not highlight the events that have followed the coronavirus disease 2019 (COVID-19) pandemic. Our main intention was to analyse the global spread of PB outside its region of origin. This period started at the beginning of the 2000s and lasted up to 2020, when the pandemic started to influence its further spread. On this matter, some research-based reflections on pandemic events in terms of the resilience or durability of PB have already been published (Grossi et al., 2020; Bardovič and Gašparík, 2021). In addition, Bartocci et al. (2023) have already stressed that return to a new normal (i.e. after the global crisis) can revive a great potential of PB. In certain cases, we worked with absolute numbers instead of share indicators. It is obvious that populations of researchers in individual countries vary a lot, but this is not a mainstream research field, and shared indicators could offer distorted data. We did not look at the impact factors of analysed journals or any other quality metrics, which opens avenues for further analyses. It might be interesting to see when this topic attracted the attention of the most influential international research journals and whether this has been supported by the gradual global spread of this budgeting innovation.

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