

Fitting The Public Consortia Phenomenon in Brazil: A Bibliometric Review

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Introduction

The last few decades have increasingly been demanding more actions from the public administration. The rising population, the globalization processes, and the integration of different values (e.g., ethical, moral, religious) have added complexity in many social aspects. In regard to these aspects, the mediation of conflicts and interests may be attributed to governments. The related topics widely range on diverse occasions, such as in political questions, administrative resolutions, economic situations, and so on (Przeworski, 1985).

In this sense, the federalist system has supported these complex situations underpinning nations in their political-administrative organization. From local instances to national decisions, from sectoral to international resolutions, federalism has been used to develop more cooperation within governments to solve peculiar situations that emerge from the modern society (Elazar, 1994; Schultze, 2005).

Since its creation, "The Federalist", the discussion between Alexander Hamilton, James Madison, and John Jay inspired many nations to adopt this political-administrative configuration. In the Brazilian case, its use has been constituted since the fall of the monarchy in 1889. On different occasions, the system has been proven to be consistent. With the advance of technology and the significant social changes that the country confronted in the last hundred years, new patterns of federalism started to appear, changing the traditional Weberian administrative establishment (Cardoso & Marengo, 2019).

Specifically, at military dictatorship (1964-1985), the government was responsible for a major centralization of competencies in different areas of public policy. After this period, the re-democratization pushed up the promulgation of the new Magna Carta conferring protagonist roles to the municipalities (Arretche, 1999, 2004, 2005). These processes also followed worldwide trends as they helped to refurbish how local governments dealt with public policies (Cardoso & Marengo, 2019; Dunleavy et al., 2006; Secchi, 2009).

The 'brand new' establishment had an intense agenda to pursue as democratic demands were flourishing. At the same time, a stationary inflation process embedded the Brazilian economy, which was only solved in 1994 (Franco, 2004). The public administration urged for a more effective and responsive service to better attend to the population (Abrucio, Pedroti, et al., 2010). The endless challenge also had to create a social consensus among a multiplicity of actors, each of them holding their strategy (Abrucio & Soares, 2001; Arretche, 1999; Leite & Fonseca, 2011; Ocké-Reis et al., 2001).

In this new scenario, cooperation between municipalities emerged as an additional option for managing budgetary constraints in cases with the same scope activities or could gain scale in costly demands. This idea was revisited within establishing an interfederative arrangement, called in Brazil as "inter-municipal public consortia" or just "public consortia" in a national law enacted in 2005 (Probst, 2018).

Based upon these facts, the study seeks to evaluate the literature of inter-municipal public consortia's performance. For pursuing this, two main assumptions are invoked: i) the idiosyncratic reality of federalism induces the creation of qualitative studies, with different concepts of performance; ii) there are few quantitative studies with uniformized confirmatory proofs of efficiency for public consortia.

1. Why study public consortia performance?

In academic research, inter-municipal public consortia phenomena have been explored in many directions. Recently, a report produced by the economic consultancy Pezco for the United Nations for Development Programme (UNDP) and the Ministry of Economy (ME)

explored the importance of public consortia in Brazil and can be pointed as a good summary about the state of the art of public consortia practices (UNDP & ME, 2020). Other references include Spink (2011), which evaluated the cooperative arrangements, showing mixed results. The diversity of actors, problems, and different kinds of situations promote a 'see-saw' confrontation, swinging from cooperation to competition among federative entities. The solution pointed for these cases demands more flexible governance structures (Spink, 2011). Garson (2009) reaches similar results, turning towards the importance of coordinating policies in metropolitan areas.

Grin and Abrucio (2017) discuss the main driving factors for settling public consortia structures. Strelec and Fonseca (2011) showed the motivations of consortia managers in São Paulo that did not adopt the arrangements according to the law 11.107/05, exposing their deficiencies in the organizational models' consortium structure. Teixeira (2019) analyzed public governance's maturity level and the fiscal expenditures quality in public consortia and their municipalities. The general results showed that the greater the Audit Court's maturity, the better is the fiscal result of each consortia member.

Laczynski (2012) essayed to answer two main questions of public consortia. The first was to verify if the regional arrangements were capable of carrying out income inequality. The second addressed question was if the regional governance created by the consortia could improve the redistribution context.

Bresciani (2011) describes the evolution of one of the experienced public consortiums in Brazil, CIGABC. In the essays, the author discusses the achieved results from a historical perspective to the disclosure paper's date and the importance of political leadership as a mandatory element for coordination processes at federative arrangements. Following the CIGABC case, there are plenty of other case studies as proof of its contribution to the public consortia phenomenon (Archipavas, 2018; Doin et al., 2020; Henrichs & De Meza, 2017; Leal et al., 2019; Morais & Chaves, 2016; Piterman et al., 2016; Simão et al., 2017; Thesing et al., 2018).

Albeit substantially informative, the earlier studies suffer from the same shortcoming: they contemplate only a tiny fraction of the disposable universe of public consortia. Roughly speaking, they cannot offer a broader overview of the public consortia phenomenon besides their surgical contributions because of their methodological approach, focused on case studies.

Also, despite all authors' efforts, only a few show quantitative data with confirmatory proofs of efficiency on public expenditures done by public consortia and effectiveness of policies delivered to the population. Based on these shortcomings, this study intends to contribute to the literature by doing a bibliometric analysis to understand the importance of public consortia in Brazil under a generalist and efficient approach.

2. What are public consortia and consortiation?

2.1. Federalism overview

The spread of federalism concepts occurred just after its enactment in the United States during the 18th century. For idiosyncratic reasons, its application serves each reality where the system is used and considers heterogeneous economic, cultural, historical outlooks, and other factors. The primary outcome is to coordinate multiple objectives among governments to provide multiple interpretations about how federalism works.

The 'covenantal federalism' gives a broader federalist vision. According to this perspective, the federalist relationship consists of mutual reliance among the different levels of governments based on tolerance and, at the same time, respect (Franzese, 2010).

Its main exponent is Elazar (1994). His ideas go beyond from federalist concept and approach a macro theoretic overview. The author entails the federalist concepts in a political locus, driven by a covenantal basis (Elazar, 1994). Its principles emphasize the collectivity deliberations in this pact, meaning that the established deals reflect the constitutional will and the majority participation. With this, the democratic resolution is a requirement that supports federalist concepts, also reinforcing the republican definition. Elazar's federalist principles are focused on the covenantal spread of constitutional power. The negotiation between powers is the basis of all deliberations and all their competencies and policy executions. It is an endless combination of autonomy and interdependence.

Covenantal federalism offers the theoretical background for cooperative federalism (Elazar, 1994; Grodzins, 1966). In this sense, the political-administrative decision does not hold upon one central power and is shared among several players, conceiving the federalist matrix concept of power. This view identifies all the possible settings of cooperative and non-cooperative views. From the citizens' view, cooperative federalism is policies and functions that sometimes are misunderstood. Metaphoric speaking, Elazar mentions the covenantal federalism as a 'marble cake', which is impossible to identify where the contrasting colors begin or end precisely. It goes against the 'layer cake', the example where federalist entities are identified and have more formal definitions (Franzese, 2010).

Based on this frame, the present study will focus on same-level government studies (i.e., horizontal cooperation), specifically the cases of inter-municipal cooperation that occurs in the context of public consortia.

2.2. Public Consortia: evolution and current status in the Brazilian's federalism

The public consortia were created under the context of more autonomy of municipalities, just after the promulgation of 1988's constitution. Their immense majority are still composed of medium and small-sized populations and an inherently small tax collection capacity. The need for scale and cooperation stood as a viable alternative to strengthen subnational governments, at least within the same purpose public policies, giving room to the public consortia as a feasible instrument (CMN, 2016).

According to Junqueira (1990), the idea of municipal cooperation is antique with bottom-up bias, which was already presented in São Paulo's Constitution in 1891. Although, its effective shape has been only used from 1983 at the same state within the enthusiasm and under the democratic context of Governor André Franco Montoro. Hence São Paulo has begun to be a reference and practical lab of federalist cooperation and public consortia (Cruz & Batista, 2019; Probst, 2018).

Even so, the legal regulation to discipline public consortia was deficient in providing stability to the long-term purposes and projects of inter-municipal consortia. Before the Public Consortia Law of 2005, the administrative consortia were composed by municipalities and held most of the time a mere administrative agreement and did not undertake as a contract, as an instrument of rights and obligations or others perennial legal act and formal. Any time the administrative agreements can be denounced by the signatory parties without legal ties on rights and obligations by or on behalf of the administrative consortium (Cunha, 2004; Probst, 2018).

One specific problem about the administrative consortia was their possibility to contract obligations and expenses. Even if they had a juridical personality, their relational duties were fragile, as their contracts were considered incomplete as they did not have the discipline to problems related to the consortia itself and for third parties (Azevedo, 2004; Probst, 2018). Thus, to better adapt to the long-term purposes required for consortium operations, it was necessary to change the constitution through Constitutional Amendment 19/1998, later complemented by Federal Law 11,107 / 2005, the so-called Public Consortia Law.

The new law materialized the cooperation between governments, which may be under public (public-public consortia) or private law (private-public consortia). Due to the double attribution of legal regimes conferred for the public consortium under private law, complexity, and doubts of the public agents regarding the rules to follow-up of this type of consortium, formalizations for this type occurred in a smaller volume when compared to formalizations of public law consortia (Silva, 2007). The new law also allowed a period of adaptation to decide which modality the consortia could be transformed. Three modalities co-exist (i) administrative consortium; (ii) public consortia under public law; and (iii) public consortia under private law (Probst, 2018).

The public consortia started to spread after the institution of law 11.107/05. There are some relevant factors to constitute consortia: (i) the previous existence of regional identities; (ii) regional leadership, even during adverse context; (iii) "tragedy of commons" situations where cooperation emerges as a reasonable solution; (iv) pre-set arrangements for determining public policies induces the consortium process; (v) support from state and federal governments to reduce political uncertainty; (vi) mutual benefits from political agreements; (vii) convergence that cooperation by the consortium between governments can surpass previously set of legal restraints (Abrucio et al., 2013; CNM, 2016).

Currently, public consortia information can be easily acquired on the website hosted by the National Confederation of Municipalities, the so-called "Municipal Observatory of Public Consortia". According to the system, there are currently 487 public consortia, 427 public, and 60 private law, of which 17 are framed by Law 11.107/2005, while the others remain in the legal regime before this law (CNM, 2020).

The geographical distribution of public consortia is sparse, although 73.2% of municipalities are participants in consortium, totaling 4,082 municipalities. Regionally speaking, public consortia spread as follows: Midwest (51), Northern (10), Northeast (65), Southeast (211), Southern (150). In terms of scope, the sectoral composition of consortia has more than 30 types of activities, varying from accounting, communication, housing, infrastructure projects, tax administration, IT, among others.

Summing up, the most notable objectives of being part of a public consortium are the cost division made possible by providing services or products of common interest, their regional integration in policies, and the unification of executive decisions.

2.3. New Public Management overview

The managerial movement called "New Public Management" (NPM) occurred after the disruption of traditional bureaucratic Weberian understanding occurred in many locations around the world (Secchi, 2009). For its diversity, it is a broad model that can be synthesized as improvement of accountability terms, focused on measurement of results and performance indicators, management of contracts among complex suppliers' networks, outsourcing of administrative functions, and the transformation of traditional state-related functions to market structures (Dunleavy & Hood, 1994).

According to Cavalcante (2019), the bureaucratic Weberian model started to contest civil society after World War II due to its inefficiency, morosity, and detachment of social needs (Barzelay, 1992; Hood, 1995; Pollitt & Bouckaert, 2002). Cardoso and Marengo (2019) historically depict the context during the 1970s and 1980s. After the oil crises at the end of the 1970s, the paradigms of rational choice, public choice, and agent/principal were proof.

Adopting concepts such as the minimal state and market practices for the public administration intensified the debate about how the state should function and how its institutions could influence the achieved results (Walker et al., 2011). At the beginning of the 1980s, the institutions' role became the focus of the discussion, and a new direction was fostered

(Acemoglu & Robinson, 2008; Dunning & Lundan, 2008; Evans & Rauch, 1999; Hall & Jones, 1999; North, 1990).

The fact was that the new organizational models undermined the Weberian modeling for the public administration and stated the post-bureaucratic models. Consequently, two main divisions were established: the managerial models and the public governance, also known as post NPM (Secchi, 2009; Cavalcante, 2019).

Regarding NPM, for Abrucio et al. (2010) and Peci, Pieranti and Rodrigues (2008), its central point consist of emphasizing the adaption and capability of transferring knowledge of managerial practices acquired in the private sector to the public service. The main goals of NPM are to fit the administrative resources of the public services, promote more competition among different players (towards public biddings, for example), and push up the general efficiency by easing bureaucratic processes and making the public acts more transparent and responsive.

Following the conclusions made by Cavalcante (2019), the NPM movement and the new trends adopted in recent years called the "Post-NPM" were built on the same basis, changing some aspects on the focus, inspirational source, beliefs, strategic orientation, and vision of the state. In the author's words: "(...) rather than disaggregation, integration; instead of competition, emphasis on collaboration, and finally, the substitution of pecuniary motivation by the professionalization of bureaucracy and inclusion of social actors in policymaking" (Cavalcante, 2019, p.211).

All in all, the focus of Post-NPM slightly changed from treating citizens as clients and shifted it as partners. The inspirational source passed from the private sector to network enhancing. The beliefs on efficiency, competition, and contracts added confidence and reciprocity. Strategic orientation put aside the values of disaggregation, competition, and pecuniary incentives and promoted a holistic and integrated vision, collaboration, and the professionalization and inclusion of social actors in policymaking. Finally, the assumptions of the state and the idea of administrative superiority of the private sector gave room for a more interactive view, strengthening the bureaucratic capacity of the state and its partners (Cavalcante, 2019).

In this sense, we understood the public consortia as a tool of reciprocity governance among entities, which holds a particular way of integrating and developing answers to certain public policies. More importantly, its results are supposed to be easily accounted for by the population.

3. Research design and framework

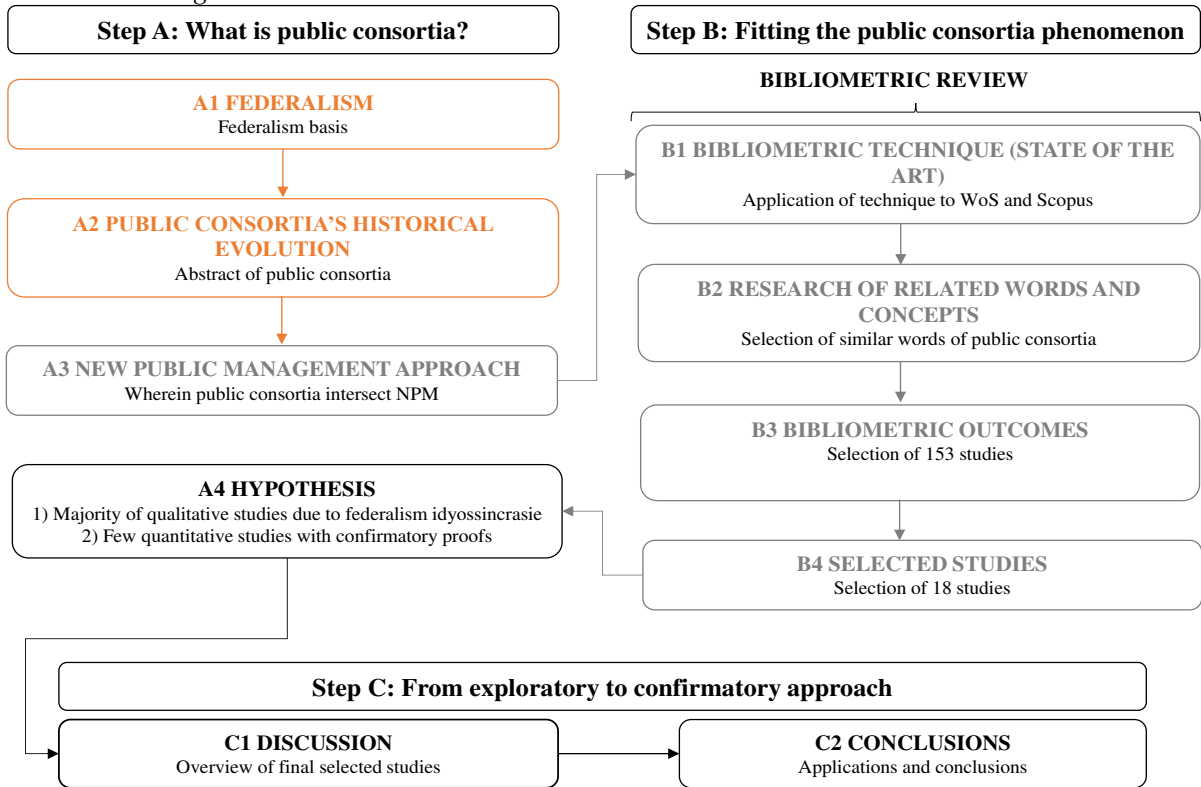
To initiate the discussion of inter-municipal public consortia's performance, it is necessary to address it in the current context. To provide this answer, Steps A1 and A2 posed in this research as mainstream theories to study the public consortia phenomenon.

Step A3 brings the concurring theory, NPM, through the concept of shared governance and performance measurement in public administration. To verify the intersection among all theories, we applied the Bibliometric technique. In this part, we chose to put the innovation and complementary information through the bibliometric approach. It helps to see state of the art (as it is going to be unveiled in the next session) for the theme and organize the every day topics that can be used under the assignment of NPM, reproduced by Step B1. After several filters, the skimmed documents resulted in 18 studies.

By this strategy, the research is brought again to Step A, specifically to A4. The first hypothesis sustains that most studies consist of the idiosyncrasy of federalism, allowing authors to depict more qualitative information about public consortia performance. In contrast, the second hypothesis sustains few quantitative studies with confirmatory proofs of efficiency for public consortia. The development of discussion, conclusions, and settlement of agenda inherently follows the analysis described at Step C.

Figure 1

Research design.



4. Fitting the public consortia phenomenon

4.1. Public consortia related words and concepts

We have chosen to perform a different approach to select the public consortia-related keywords. As an initial technique, we had access to the primary database with 296 pages of interviews carried out with 26 public consortia specialists in the recent report released by the United Nations Development Programme (UNDP) and the Ministry of the Economy (ME) (UNDP and ME, 2020). We prepared through software Atlas.ti (version 7.5.7), a word cloud to the consolidated interviews (within a 45 words minimum filter), selecting only meaningful substantives and exempted verbs, conjunctions, monosyllables, and other morphological classes of words. Furthermore, within this selection, we removed words inflected in the plural (or singular, whichever came first) to assess the words most frequently commented during the interviews. We depicted the result obtained by the word cloud in Figure 2. The five most cited words were: consortium (636), municipalities (366), law (241), state (179), and public (159). Similarly, for the established cut, the five least cited words are: personal (46), federative (46) issues (46), politics (46), and problems (45).

consórcio municípios lei estado público região

problema metropolitana governo direito cooperação contrato relação saúde pública forma tema regiões contas política poder brasil federal constituição programa gestão tempo privado ente saneamento experiência pessoas regional união jurídica maneira área político modelo recursos estrutura governança prefeito estatuto abc municipal serviço pessoal federativa questões políticas problemas

Figure 2 - Word cloud extracted from interviews in the UNDP and ME study (2020)

Finally, we decided to perform a hybrid method of choosing the keywords, taking into consideration: (i) the identification performed a priori was considered sufficient to start a bibliometric research work; and (ii) identification of existing concepts in words highlighted by the cloud of words in the two analyzes, that is, in the one obtained through the documents and in the transcriptions.

Thus, we obtained the following words at the end: consortium, government, municipality, regional planning, federative cooperation, and public policy. After making the necessary adaptations for a broader search of words with the same radical and inflection of gender, number, among other specificities, the final list was as follows: "consort*", "cooper*", "federa*", "govern*", "munic*", "regional planning" and "public polic*". Finally, after a first trial, we added the word inter-municipal to consider the previous background of interviewing specialists and reading the essential documents cited. With this, the final list was: "consort*", "cooper*", "federa*", "govern*", "munic*", "intermunic*", "regional planning" and "public polic*". Concerning the term "Performance", the literature treats "performance" and "efficiency" sometimes as exchangeable words. The management of relationships within public organizations may vary depending on each actor's objectives under the different settlements (Medeiros, 2021). With this, we added both terminologies in order to aggregate broader results.

Table 1 - Number of studies found using WoS and Scopus databases

Search #	Main Keywords			WoS - Principal Collection	Scopus
1	cooper*	consort*	performance / efficiency	7	12
2	federa*	consort*	performance / efficiency	10	30
3	federa*	cooper*	performance / efficiency	56	73
4	govern*	consort*	performance / efficiency	9	11
5	govern*	cooper*	performance / efficiency	103	93
6	intermunic*	consort*	performance / efficiency	2	1
7	intermunic*	cooper*	performance / efficiency	6	-
8	intermunic*	federa*	performance / efficiency	3	-
9	intermunic*	govern*	performance / efficiency	4	1
10	munic*	consort*	performance / efficiency	16	8
11	munic*	cooper*	performance / efficiency	38	34
12	public polic*	consort*	performance / efficiency	4	4
13	public polic*	cooper*	performance / efficiency	31	32
14	public polic*	intermunic*	performance / efficiency	3	-
15	public polic*	regional planning	performance / efficiency	17	19
16	regional planning	consort*	performance / efficiency	1	2
17	regional planning	cooper*	performance / efficiency	3	8
18	regional planning	federa*	performance / efficiency	11	14
19	regional planning	govern*	performance / efficiency	20	25
20	regional planning	intermunic*	performance / efficiency	-	-
21	regional planning	munic*	performance / efficiency	14	15
Total Found Studies				358	382
Unique Studies				241	277

To contribute to the literature, we proceed with intensive work in this study. A bibliometric review used two international databases: Web of Science and Scopus. Both systems have multidisciplinary approaches and reunite different editors, providing a broader research scope for the scientific community. Also, the selected databases offer tools that allow

more precise citation of studies, impact factors' analysis, instantaneous bibliographies' statistics, among other benefits. To better address the keywords for the search engine systems, we added the keywords performance/efficiency, limited the studies for the Brazilian region, and considered 21 combinations of words. We added all mentioned searches to the research and later refined it. Hence the total number of studies obtained at WoS was 358, while for Scopus, the number was 382. Subsequently, the unique studies for each base were 241 for the first and 277 for the latter (see Table 1).

After the search, we started the skimming process of evaluating the text data about what could be considered and included as academic findings for cooperative arrangements and, ideally, what texts directly approach the public consortia theme. To fulfill this purpose, we had read the text titles, and for doubtful names, we also read their abstracts. We got a total of 99 texts for WoS and 89 for Scopus. In all, we filtered works related to the following fields: business, industry areas, fisheries, radiofrequency, drug testing, ecology and biology, planting techniques, health treatments, cooperation between universities and companies.

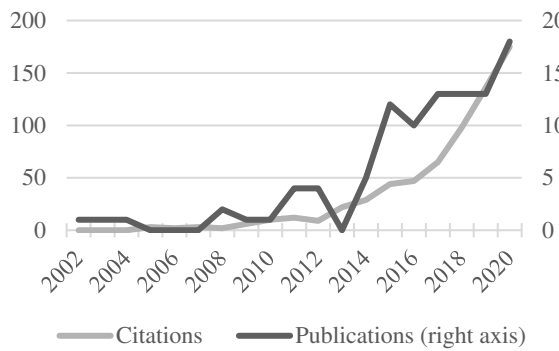


Figure 3 - WoS publications and citations.

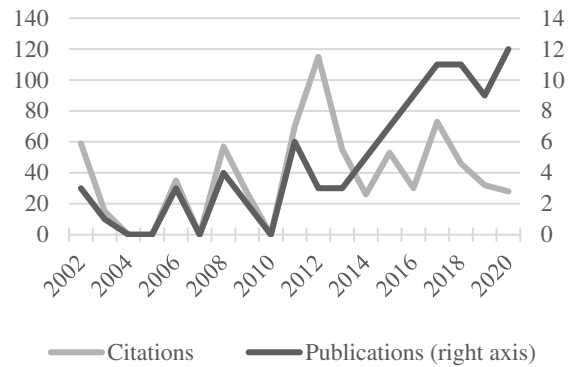


Figure 4 - Scopus publications and citations.

For WoS, the trend of publications and citations showed increasing numbers in recent years, as shown in Figure 3. For Scopus, **Erro! Fonte de referência não encontrada.** showed an upward movement for publications, while for citations, it appears to have a more stable frequency.

4.2. Bibliometric outcomes

We generated a secondary database from the retrieved information of WoS and Scopus databases. The file contained the complete record with variables author, year of publication, keywords, type of search, language, search field, country, and references cited in each of the research publications. The bibliometric reviews “analyze an extensive amount of published research by using statistical tools, thus to figure out trends and citations and/or co-citations of a particular theme, by year, country, author, journal, method, theory (...)”(Paul & Criado, 2020, p.2). Concisely, bibliometric analysis is responsible for examining bibliographic material through an objective perspective, quantifying the organization of information within a specific line of study. Through this mapping, identifying keywords related to the theme allows the detailing of these particular lines of research, linking them to the micro-level of the concepts (Castillo-Vergara et al., 2018; Rey-Martí et al., 2016).

To perform the bibliometric analysis, we used the VOSviewer software. According to Vergara, Alvarez-Marin, and Placencio-Hidalgo (2017), VOSviewer is an open-access information technology program developed by Waltman and Van Eck in 2012 for the construction and visualization of bibliometric maps. The main advantage of this program over most information technology software available for bibliometric mapping is that it focuses on

graphical representations of maps. It is beneficial when visualizing large maps, easing the interpretation, and mainly creating maps based on network data (Castillo-Vergara et al., 2018).

Among the uses made in this document, VOSviewer allowed the creation of term maps and evaluated two-dimensional maps in which the frequencies of the occurrence of certain specific terms. We interpret the term's size on the map and distance from the other terms as an indication of the relationship of these terms. It is based on the number of co-occurrences in the articles (Cardona & Sanz, 2015). In this case, the analysis made with this software considered authors' keywords and also the keywords defined in the databases. According to this set, the minimal co-occurrence was defined as two words, and to better display the bibliographic map, the words “Brazil”, “human”, “humans”, “article”, and “priority journal” have been cut-off.

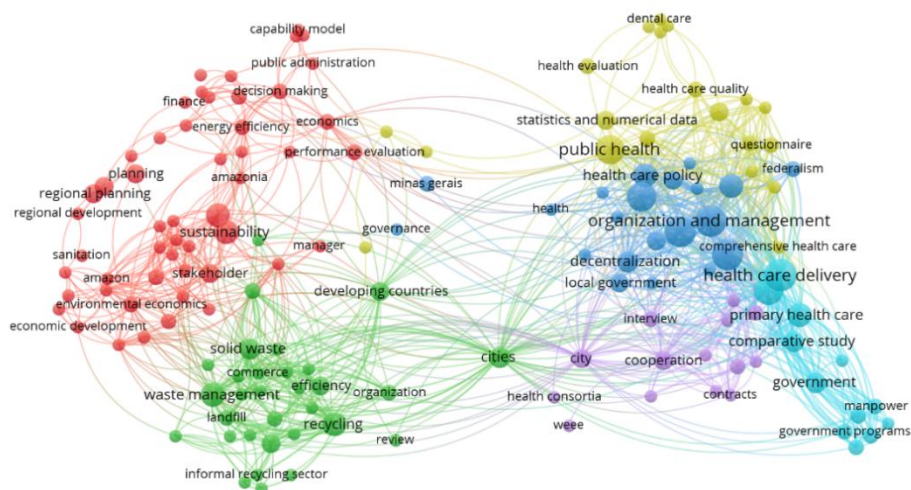


Figure 5 - Cluster groups, according to co-occurrence.

Figure 5 depicts the clustered analysis. There are, in total, 6 clusters. The green color shows what we defined as “Solid Waste Cluster”, the red color unveils the “Sustainability Cluster”, the yellow reveals the “Health Care Evaluation Cluster”, the cyan exposes the “Health Programs Cluster”, the blue discloses the “Health Federalist Cluster”, and the purple depicts the “Cooperation Cluster”. The evaluation shows that the concepts linked to regional planning are closer to Solid Waste and Sustainability Clusters. In contrast, Health Care Evaluation, Federalist and Programs clusters are more alike cooperation and public consortia concepts.

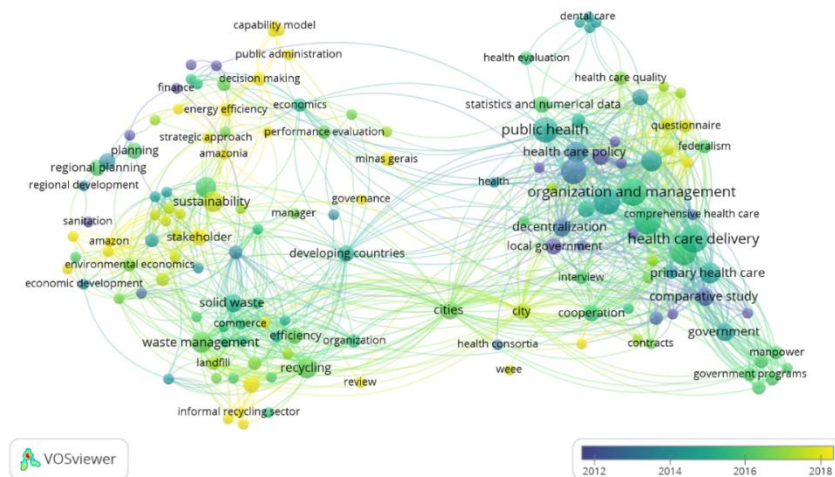


Figure 6 - Year of publication, according to co-occurrence.

Finally, Figure 6 exposes the co-occurrence according to the publication's year. The yellows-colored units show the most recent ones, while blue depicted the opposite situation. The main co-occurrence stays in the middle of the settled data range. The new combinations locates at Sustainability Cluster, Solid Waste Cluster, and Health Care Evaluation Cluster.

5. Discussion

Going even more in-depth on the skimming process disclosed was necessary due to the still broad varied content of academic subjects. For this process, we have read all the abstracts and selected only texts that appeared straightforwardly the subject of cooperative arrangements.

For the bibliometric approach, we extracted 153 unique studies from WoS and Scopus. The cream-skimming process provided more accurate perception and refinements for the research. In total, we skimmed twice the selected studies.

To perform the first skimming, we chose to discard non-related studies which still have been in the sample. These studies referred to cooperative interactions; however, they focus on sectoral overviews, programmatic systems, decentralization processes at public administration, collective associations (private consortia), educational programs, regional comparisons, agricultural and fisheries cooperatives, recycling cooperatives, and its governance, among others.

We held the second skimming by selecting proper cooperative arrangements specific to public consortia. The selected studies had explicitly at their abstracts the terms "public consortium", "public consortia", or the concept itself (e.g., inter-municipal arrangement, public partnerships, and so on). In total, we got eighteen studies.

Starting with the qualitative ones, Galvão (2015) analyzes the importance of shared-based local administrative planning for local autonomy, attributing it to executive effectiveness and efficiency developing essential roles in the process of public governance, while Farias (2017) provides a broader view to public consortia, studying the main aspects of their legal regime.

Concerning health policies, Freitas and Oliveira (2015) report the perception of health managers in Zona Da Mata (Minas Gerais) regarding public consortia for health planning. Neves and Ribeiro (2006) examine the dynamics of cooperation and the reasons for the sustainability of the Penápolis Consortium, a health consortium. Vargas et al. (2015) analyze the content of Integrated Healthcare Network policies in Brazil and the factors that influence policy implementation from the policymakers' perspective. Flexa and Barbastefano (2020) aim to understand how health consortia reach better performance in the procurement and hiring of services by cooperative action through a narrative literature review.

Regards to solid waste consortia, Peralta and Antonello (2019) examine whether the public consortium is a functional instrument for the small cities, taking into account the case of Joaquim Tavora Cias (north of Paraná) to conduct the final disposal of their solid wastes in landfills and reflect on the contribution of the consortium management. In their view, Nascimento Neto and Moreira (2012) seek to evaluate theoretical and conceptual questions about the impacts of waste generated by municipalities that require instruments of joint action, making the Public Consortium enable microregional organization oriented according to local demands.

The quantitative studies showed eight cases in total. Generic studies like Alvares and Branco (2018) analyzed the collection of federal funds via voluntary transfers, carried out by municipalities that make up the Intermunicipal Public Consortium of the Metropolitan West Region of São Paulo (Cioeste) and its distribution through the consortium.

Broiatti et al. (2020) study sought to verify the influence of public environmental consortia in the south of Brazil in the environmental expenditures of the municipalities between 2012 and 2016. The results indicate that there are twenty consortiums in this region, made up

of 308 municipalities. They found that the consortiums have a positive and statistically significant influence on environmental expenditures.

With the studies of the solid waste area, Guabiroba et al. (2014) studied how eco-efficiency measurement and financial performance should measure environmental performance to decide how many public consortia should be created to provide effective door-to-door selective waste collection. Silva et al. (2017) study aimed to determine the optimum electrical power of a Thermal Power Plant (TPP) theoretically by biogas from sanitary landfill using the maximum net benefit (MNB) methodology and to take into consideration the economic, demographic, and regional aspects of the Inter-municipal Consortium of the Micro-region of the High Sapucaí for Sanitary Landfill (CIMASAS).

Deus, Battistelle, and Silva (2017) developed a hypothetical scenario for managing household solid waste in small Brazilian municipalities. The study aimed to evaluate the Greenhouse Gas emissions and energy use of six scenarios in two landfills contexts (private and consortium) for small municipalities (less than 100,000 inhabitants as per Brazilian standards) located in the state of São Paulo. In another study, Deus et al. (2020) developed an aggregate indicator to assess the environmental impact of municipal solid waste management in the small municipalities of the state of São Paulo. Additionally, the study aimed at the classification of the municipalities considered best at management practices.

Regarding multi-sectoral studies, Silvestre et al. (2019) investigated cooperative agreements in urban development services, including urban development, housing, and sanitation for small local governments in Brazil. The results find that public expenditure on urban development can be explained by horizontal (inter-municipal cooperation) and vertical (public-public partnerships) cooperation. The results showed that housing and sanitation services are less costly under inter-municipal cooperation. By contrast, urban development services are less costly when local authorities do not cooperate with other public entities. Silvestre et al. (2020) contributed to the empirical literature on inter-municipal agreements and public-public partnerships by comparing their impact on costs with 'stand-alone' provision in a range of non-waste local services. The results consist that cooperative provision is less expensive than the 'stand-alone' provision for the services studied. Finally, Grin et al. (2018) show that political nature variables are the ones that have the most robust effects on municipal tax management. They observed that municipal functionalism's magnitude and technical preparation, measured by its formal education, positively impact financial results. However, modern management tools supported technologically on the Internet are not related to better fiscal performance. The same goes for the institutional arrangements that regulate the behavior of economic actors and society.

6. Final considerations

This study evaluated the literature of inter-municipal public consortia's performance based on two main assumptions. First, the majority of studies of public consortia performance depict qualitative studies because federalism reality is idiosyncratic. Second, few quantitative studies exist with uniformized confirmatory proofs of efficiency for public consortia.

Regarding the qualitative studies, with the exemption of Flexa and Barbastefano (2020), which consists of a literature review focused on the health sector, the other studies bring study cases to illustrate their works and collaboration within the literature. All the studies maintain efforts to describe specific mechanisms of inter-municipal public consortia concerning their local activities and/or sector. Moreover, these results can be attributed to specific views of efficiency (or performance) by the authors that do not show quantitative proof. In this sense, the studies treat efficiency as a discourse or an achievement to be pursued or even an ideal (Medeiros, 2021).

This diagnostic corroborates the first assumption of this study, as these studies can be understood as essays for the comprehension of local reality's efficiency and corresponds to the majority of studies found in this sample (ten from eighteen in total). In other words, the prevalence of qualitative studies for public consortia's performance occurs due to the federalist framework (and its wide range of cooperation between governments).

When analyzing the quantitative studies, we observed different trends. Alvares and Branco (2018) and Guabiroba et al. (2014) used multi-variate tools to evaluate their research. The basic assumption relates that the inequalities present in each municipality were responsible for their outcomes, or the diversity of components could be smoothed through cooperation.

Deus et al. (2019), Deus et al. (2020), and Silva et al. (2017) used engineering techniques to verify the production of energy in all studies. However, all studies were theoretical. After compared among structures and the public consortia, the results appeared as one viable arrangement due to the enactment of Law No.12305 (2010). In these cases, public consortia are posted as a secondary component of the research, an agenda to be pursued. Broietti et al. (2020), Grin et al. (2018), Silvestre et al. (2019), Silvestre et al. (2020) used panel techniques to develop comparisons among municipalities that participate in public consortia or similar arrangements.

Despite some unique sectoral studies, the majority of published articles showed multi-sectoral approaches. While focused sectoral views contributed more with theoretical approaches, the multi-sectoral showed essential techniques and results to measure inter-municipal consortia outcomes.

We questioned the second assumption as its number is almost the same as the qualitative ones (eight from eighteen). Although this is not a statistical comparison (what is 'few' quantitative studies at all?), it was possible to verify one trend to evaluate the outputs of inter-municipal public consortia, meaning that it exists a consensus when using quantitative methodologies, which is panel data and pooled OLS. For natural reasons (i.e., their availability of data and econometric techniques), these methods should be more explored for researchers in future studies.

Finally, the innovation brought by bibliometry verified the state-of-the-art for the research. The combined settle of words showed an exhaustive intention to address this topic better in the literature. Initially, the analysis obtained diffuse results due to the broad sense of cooperative arrangements—the most recent co-occurrence located at Sustainability Cluster, Solid Waste Cluster, and Health Care Evaluation Cluster. While for Solid Waste and Sustainability Clusters, the studies focused on solid waste landfills and gas production, the Health Care Cluster was analyzed along with other sectors. The detailed analysis also showed other important sectors which were not disposed at the bibliometric approach: housing, culture, social assistance, and urban development.

The outcomes of the bibliometric approach imposed a further skimming process to entail the research focused on public consortia. For this reasoning, the analysis pointed towards the straightforward concept of "public consortia" itself, explaining the unique use of this arrangement in federalism and comprehending that the authors who intend to drive attention to their studies must specifically use this keyword. Also, with more evident concepts in future research, it will be possible to explore some bias in literature better and disaggregate public consortia's studies from other federalist structures.

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