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BRAZILIAN JOURNAL OF PUBLIC ADMINISTRATION

Interactivity and policy cycle within Electronic Participatory Budgeting: a comparative analysis

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Participatory initiatives have increasingly used Information and Communication Technology, such as the Electronic Participatory Budgeting (ePB) to expand and improve participation. This research analyzes ePB platforms emphasizing interactivity aspects, as well as evaluating – in political terms – their functions regarding the dissemination of political information, sharing opinions, agenda-setting, and decision-making. This analysis examined the platforms' tools types of interactivity based on two variables: the level of the receiver's control and communication direction. The research identified ePB models and how the platforms' functions are connected to each of them. The study also recognized in which phases of the decision-making process and the policy cycle the electronic participation is more likely to occur. Case studies in a comparative perspective were used to understand the variety of experiences of ePB.
Keywords: electronic participatory budgeting; interactivity; information and communication technology; participation; public budget management; public policy cycle.

Interatividade e ciclo de políticas públicas no orçamento participativo digital: uma análise internacional

Contemporaneamente, verifica-se a apropriação de tecnologias de informação e comunicação (TIC) por iniciativas que têm como meta a participação cidadã, cujo exemplo emblemático é o orçamento participativo digital (OPD). O objetivo deste estudo foi analisar plataformas de OPD, buscando identificar seus modelos de interatividade e avaliar quão profícuas são as funcionalidades oferecidas em termos políticos no sentido de transmissão de informação política, formulação da agenda pública, emissão de opinião, negociação da diferença e tomada de decisão política. Essa análise possibilitou enquadrar as ferramentas disponibilizadas em seis níveis de interatividade, com base nas variáveis nível de controle do receptor e direção da comunicação, e identificar a quais modelos de OPD as diversas funcionalidades correspondem, bem como quais fases do processo decisório e do ciclo de políticas públicas são contempladas em cada experiência em foco. Foram desenvolvidos estudos de caso em perspectiva comparada, buscando contemplar a diversidade de formatos de OPD existentes.
Palavras-chave: orçamento participativo digital; interatividade; participação; gestão pública orçamentária; ciclo de políticas públicas.

Interactividad y ciclo de políticas públicas en el Presupuesto Participativo Digital: un análisis internacional

Contemporáneamente, se constata la apropiación de las tecnologías de la información y la comunicación por parte de iniciativas que tienen como meta la participación ciudadana, cuyo ejemplo emblemático es el Presupuesto Participativo Digital (PPD). El objetivo de este estudio fue analizar plataformas de PPD, buscando identificar sus modelos de interactividad y evaluar en términos políticos cuán ventajosas son las funcionalidades ofrecidas en el sentido de transmisión de información política, formulación de la agenda pública, emisión de opinión, negociación de la diferencia y toma de decisión política. Este análisis permitió encuadrar las herramientas disponibles en seis niveles de interactividad basados en las variables nivel de control del receptor y dirección de la comunicación, e identificar a qué modelos de PPD corresponden las diversas funcionalidades, así como qué fases del proceso de decisión y del ciclo de políticas públicas están incluidas en cada experiencia analizada. Se desarrollaron estudios de caso en perspectiva comparada, tratando de considerar la diversidad de formatos de PPD existentes.
Palabras clave: presupuesto participativo digital; interactividad; tecnologías de la información y la comunicación; participación; gestión pública presupuestaria; ciclo de políticas públicas.

DOI: http://dx.doi.org/10.1590/0034-761220180272x
ISSN: 1982-3134
Article received on August 15, 2018 and accepted on August 14, 2019
[Translated version] Note: All quotes in English translated by this article's translator.
The authors are grateful to the blind reviewers who contributed to improve the research and this article.

1. ELECTRONIC PARTICIPATORY BUDGETING, E-PARTICIPATION AND INTERACTIVITY

Initiatives of citizen participation have used information and communication technology (ICT), to promote the diversity and modernization of participatory channels. An emblematic example is an institutional arrangement around electronic participatory budgeting (ePB), an innovative format of managing a public budget that involves citizen participation and the use of the Internet. The main objectives of this arrangement are a) to include segments of the population that rarely participate; b) to reduce the costs of political participation; and c) to expand citizens' access to information and decision-making processes (Coleman & Sampaio, 2016). The main advantages of conducting ePB are reduced cost, convenience, aggregate results for managers, clear and interactive presentation of information, and the possibility of centralizing information (Luehrs & Heaven, 2013).

The use of ICT in ePB processes may vary widely. In some cases, citizens can only suggest topics or only vote. In other cases, citizens can debate the proposals presented and create networks within the platforms to discuss and support proposals. There are ePB working exclusively online, as well as hybrid models that combine face-to-face and online phases (Abreu & Pinho, 2014; Ferreira, 2012; Miori & Russo, 2011; Nitzsche, Pistoia, & Elsäßer, 2012; Sampaio, 2014; Sampaio & Peixoto, 2013; Spada & Allegretti, 2013).

Innovative ways of using ICT include engaging citizens to actively participate in the process and recognizing them as actors in the political debate. The use of ICTs may materialize the possibility of active citizenship (Coleman & Sampaio, 2016; Pineda Nebot & Iasulaitis, 2016; Smith, 2009). However, technological changes do not immediately influence broad political transformations, as the problems of democracy are not only practical or solved by the application of technology (Iasulaitis, 2012). Technological determinism must be avoided by recognizing the complex interaction of politics with technique. The social and technical dimensions have a mutual recurrence that technical thinking is not able to identify (Latour, 1992). The technological apparatus is not the cause of social change, but, according to Ortiz (2000), it has the potential to promote it by influencing social contexts. Technological resources alone cannot hinder or make political promises, as they are instruments available to social agents. The Internet, devices, systems, and agents can serve or hinder democracy; while its use can enhance freedom and citizen participation, "it can serve to reinforce Leviathan" (Vera, 2006, p. 32, our translation).

The Internet and social media have become an "echo chamber," with much public noise. Numerous positions are defended from a plurality of voices involved in participatory experiences. These experiences hinder the possibility of people to influence the process of agenda-setting and debate topics discussed in this process, potentially discouraging citizen participation. According to Coleman (2017), citizens are currently skeptic of mainstream and populist politicians – those who claim to speak 'on people's behalf.' The population now wants to speak by itself. Citizens feel undervalued by the division between those who can speak, who set the political agenda, and those relegated to be a "passive bystander." The public has an active role in social media, and when participating in politics, citizens want a voice (not just to listen or choose from topics previously selected by the government). In this sense, Coleman (2017) discusses whether the Internet offers space for citizens to 'flex their democratic muscles' and give politics a new configuration in order

to create a more participatory and committed democracy. For a long time, it was granted that the unheard would simply fade into silence; now there are platforms where these voices emerge. People from social segments who have never had a voice can now produce political content, instead of just receiving it top-down. Thus, the rules of the game have changed, and that still shocks political agents. New ways of talking about politics are emerging, challenging the codes of technocratic administration. This phenomenon poses the challenge of creating participatory channels that are open to listening to citizens' demands, allowing people to set the political agenda, particularly the stigmatized part of the population that has always been distant from democratic processes and from the discussion of public policies. A path different from this one will lead to an unbridgeable gulf between mere symbolic attention and sensitive understanding. This research, therefore, intends to evaluate whether and to what extent the interactive potential of the Internet is being used by political agents, and whether and to what extent it has been impacting on the improvement of representative and participatory functions of modern democracies.

Participatory budgeting is based, in theory, on citizen empowerment to engage in the decision-making process. It is an approach that implies greater interaction and dialogue between citizens, public managers, and politicians. Therefore, a key aspect for the success of ePB experiences is the government-citizen interaction, which results from a two-way relationship between the actors involved in the process, the technological tools, and the functions to facilitate interaction, as well as the format of the communication produced in the process.

The Internet offers technical resources that may enable the expansion of participation channels and change the structure of social interaction. Interactivity is the most emphasized feature of Web 2.0, also called Social Web.

A communication is considered interactive when it is characterized by information exchange, conversation, or dialogue (Ferber, Foltz, & Pugliese, 2007), in which the user can influence the form and content of the mediated experience (Stromer-Galley, 2013). Kiousis (2002) defines interactivity referring to a mediated environment in which participants can communicate in different formats: one-to-one, one-to-many and many-to-many, synchronously and asynchronously, participating in reciprocal message exchanges (Kiousis, 2002).

Interactivity, therefore, enables the individual to influence and be influenced by others, with the possibility of taking control of technology, thus "users and creators can become the same" (Castells, 1999, p. 51). Therefore, dialogic interactivity is a distinguishing element in electronic participatory platforms with considerable democratic potential (Stromer-Galley, 2000).

Since ePBs are designed to promote broader interaction between citizens and government, they may be interesting objects for a specific analysis of electronic interactivity. Therefore, this study analyzes ePB platforms, examining forms of communication and types of interactivity, and assessing a) when in the policy cycle and the decision-making process the electronic tools facilitate citizen participation; b) the interactive tools the platforms offer; c) what and how efficient are the functions offered to citizens in electronic participatory processes[1]. The aim is to identify the correspondence

[1] Sampaio (2014) conducted a study in this direction. The author identified cases of ePB but did not offer a deep analysis on each process. This study, in this sense, is similar to the work by Nitzsche et al. (2012), who evaluated the use of Web 2.0 tools in several initiatives of ePB in Germany.

between the ePB models and the forms of communication, as well as the diversity of functions. Also, the study examines the phases of the public policy cycle and the decision-making process that offer more opportunities for e-participation in each initiative analyzed.

The corpus of analysis was composed of ePB platforms from a range of municipalities across South America, North America, and Europe, namely: Amadora (Portugal), Fortaleza (Brazil), New York (USA), Bristol (UK), Braga (Portugal), Madrid (Spain), Paris (France), Rosario (Argentina), Reykjavík (Iceland), Porto Alegre (Brazil), Ipatinga (Brazil), Belo Horizonte (Brazil) and Hamburg (Germany).

The criterion to select the corpus was the possibility to include different types of experiences of ePB, based on the classification by Sampaio (2014) and making comparisons using the method of concomitant variations with emblematic cases of ePB. The comparative method makes it possible to perceive similarities, and particularly the differences, in the development of a specific issue in different cultural and social situations. According to Sartori (1994), 'comparing' implies finding and classifying similarities and differences that have two series of similar nature, taken from different social environments and from two moments inherent in the comparative method; a moment related to the identification of similarities between the phenomena, and a moment of contrast, analyzing the differences between the cases (Przeworski & Teune, 1970) and the potential intervening variables. This study is based on the principle of concomitant variations from the choice of designs of most different systems, to cover at least one case of each case of ePB studied. This approach, called by Skocpol and Somers (1980) "contrast of context," consists of comparing two or more cases, trying to highlight their reciprocal differences. Skocpol and Somers (1980) propose the notion of a cycle of inquiry, which allows situating the use of the comparative method within a broad theoretical-methodological field, composed of multiple strategies for approaching empirical objects. It is undeniable, however, that proving and formulating specific hypotheses remains, for most authors, one of the main purposes of the comparative method.

The study analyzed the most recent ePB experiences in the municipalities selected. In cases where the ePB was discontinued, the research analyzed the last budgeting process conducted. The essential characteristics of the cities examined are as follows:

- Amadora is a Portuguese city of 177,407 inhabitants. The city implemented the ePB in 2009;
- Braga is a Portuguese city of 181,800 inhabitants. The participatory budgeting was implemented in 2014;
- Madrid is the capital of Spain and has 3,174,000 inhabitants. The ePB was implemented in 2015;
- Paris is the capital of France and has 2,141,000 inhabitants. The ePB was implemented in 2014;
- Bristol is an English city with 535,907 inhabitants. The city adopts the participatory budgeting since 2010;
- Reykjavík is the capital of Iceland and has 122,853 inhabitants. The ePB was implemented in 2012;
- Hamburg is a German city with 1,810,000 inhabitants. The city implemented the ePB in 2006;
- New York is the most populous city in the US, with 8,623,000 inhabitants. The experience of participatory budgeting started in 2011;

- Fortaleza is a Brazilian city with 2,643,000 inhabitants. The city implemented the ePB in 2015;
- Rosario, in Argentina, has 1,198,528 inhabitants. The ePB was implemented in 2002;
- Porto Alegre is a Brazilian city with 1,409,000 inhabitants. The city implemented the ePB in 2001;
- Ipatinga is a Brazilian city with 257,315 inhabitants. Its experience with ePB started in 2001;
- Belo Horizonte is a Brazilian city with 2,500,000. The ePB was implemented in 2006.

2. METHODOLOGY

The research adopted a set of techniques forming a specific methodological apparatus. It included testing the ePB platforms, observing the possibilities of computer-mediated interactions, data collection, and content analysis, working on a comparative perspective.

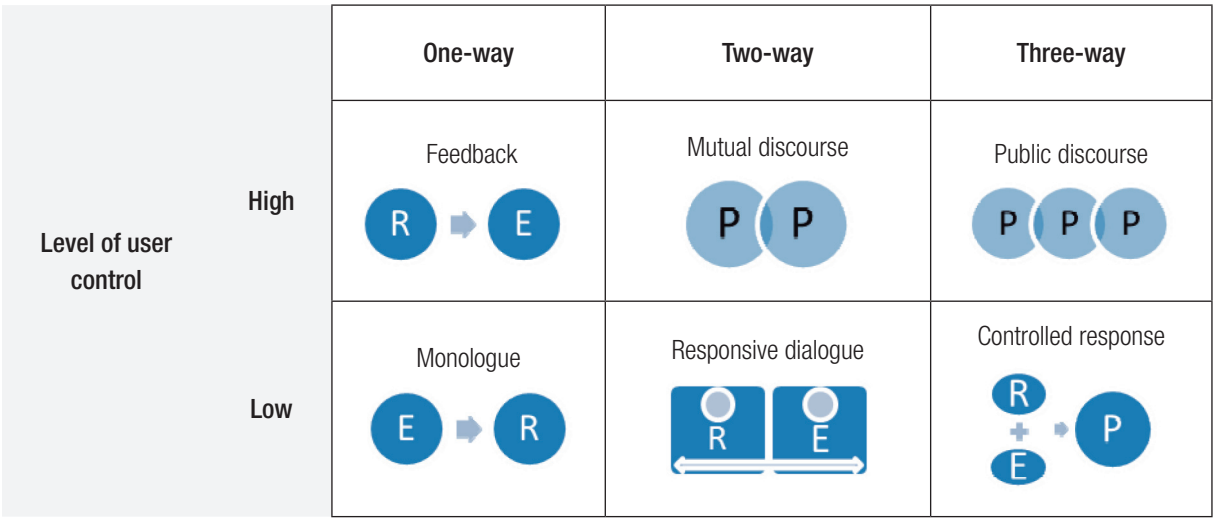
The tools and functions on the ePB platforms were analyzed according to the form of transmission (synchronous or asynchronous) and form of communication (one-way, two-way, or three-way), based on two variables: a) level of the receiver's control; and b) communication direction. This analysis made it possible to frame the available tools in six types of interactivity: a) monologue; b) feedback; c) responsive dialogue; d) mutual discourse; e) controlled response; and f) public discourse (according to models developed by McMillan, 2002; Ferber et al., 2007).

The first form of communication is 'one-way' (such as providing information). The types of interactivity in this form are 'monologue,' which is essentially a one-direction communication, and 'feedback,' which allows limited participation since there is no guarantee that messages sent will be replied (email, for example, is one of the tools used in this type of interactivity). As for the two-way form of communication, the types of interactivity are 'responsive dialogue,' in which the sender has control over the process; and 'mutual discourse,' where the roles of sender and receiver are interchangeable (both parties send and receive messages). In this case, participants have greater control over the dialogue process (chat rooms and panels are examples of tools in this type of interactivity) (McMillan, 2002). Finally, the first type of interactivity in the three-way form of communication is 'controlled response' (by using polls, for instance), where the user participates, but the platform manager keeps significant control over the content – the questions are previously established, and the website coordinators determine the presentation of results. The second type of interactivity is the 'public discourse,' expressed in tools such as forums and chat rooms, where participants have almost unlimited opportunity to determine content (except where moderation and exclusion of offensive and defamatory comments apply). The three-way form of communication allows participants to interact with each other and influence others, potentially providing mechanisms for public deliberation (Ferber et al., 2007).

In the most elementary form of communication, managers of ePB platforms are considered 'senders,' and users are 'receivers,' but users may play active roles in other forms of communication. When there is low-level interactivity, the ePB tends to be used to provide information about the face-to-face participatory budgeting process. A model with medium level interactivity tends to offer tools such as surveys, with closed questions and agendas that the government formulate previously, prioritizing interactivity with controlled response. Finally, a model with high-level interactivity adopts tools such as chat rooms and forums in which citizens and public managers can hold quality public debates in a type of interactivity known as 'public discourse' (Ferber et al., 2007).

Therefore, considering the variables 'communication direction' and 'level of user control," the analysis of functions of ePB platforms carried out in this study adopted the model of interactivity illustrated in Figure 1.

FIGURE 1 MODEL OF INTERACTIVITY



Source: Elaborated by the authors, based on Ferber et al. (2007, p. 393) and McMillan (2002).
Key: E = Sender; R = Receiver; P = Participant (interchangeable sender-receiver roles).

In this model, the circles represent the roles that individuals and platforms play in the process. Arrows and overlapping circles indicate the communication direction.

After analyzing the interaction tools available, the functions present in the ePB platforms were identified as a) information; b) engagement and mobilization; c) submission of proposals; d) area for opinion and deliberation; and e) voting, based on the work by Sampaio (2016).

The interactive tools are related to the model of participatory budgeting adopted. Thus, the study identified the format of the ePB, and the public policy cycle and the decision-making processes influenced by the participatory budgeting approach. A complete process of public policy formulation using ePB would encompass various phases of the decision-making process: a) agenda-setting; b) policy formulation; c) decision-making; d) policy implementation; and e) evaluation of the process (Brugué & Subirats, 1996; Tooth & Subirats, 2014; Hill, 2013; Sabatier, 1999; Secchi, 2010). However, ePB processes do not necessarily encompass all these phases.

Based on this model of interaction, case studies were conducted to identify the technological architecture and the functions of ePB platforms, adopting a compared perspective. The method allowed to compare the differences between the types of interactivity in the ePBs studied and the differences and similarities among the municipalities and their experiences on participatory budgeting.

The cases studied included a variety of existing formats of ePB, and identified based on the typology elaborated by Sampaio (2014): a) online mobilization and face-to-face participation; b) online submission of suggestions and face-to-face participation; c) submission of suggestions online, with face-to-face participation and online voting; d) online deliberation; e) online deliberation and online voting; f) face-to-face participation and online voting; g) between e-voting and e-decision-making, and online suggestions; and h) face-to-face participation and online control.

3. RESULTS

3.1 Decision-making process and public policy cycle

Government resources are scarce and, assuming that public policy is "anything a government chooses to do or not to do" (Dye, 1984), it is evident that the development of public policy is about a government establishing priorities. As Lowi stated, "policy creates politics" (as cited in Souza, 2006, p. 28).

The public policy cycle starts with the identification of emerging issues. This is a strategic moment, as it influences the government's agenda-setting, i.e., the problems in which the government will focus its attention. However, only the ePB initiatives in Reykjavík and Hamburg engaged the citizens in identifying issues and problems in the moment of agenda-setting.

A problem becomes part of the government's agenda when it gains attention and interest of policymakers and is included as an item of the decision-making process. At this point, the issue is ready to be submitted to policymakers for active decision-making, and it is about to turn into a policy (Kingdon, 2003). In this sense, in the pre-decision-making stage as well as in the stage of agenda-setting, the study evaluated whether there were opportunities for citizens to influence decisions regarding policy formulation, actively participating in the dynamics between issues and problems, policies and solutions. The cases of Amadora, New York, Madrid, and Paris offered citizens the opportunity to choose among themes the government had pre-set.

The phase of public policy formulation consists of the preparation of the political decision when the problem to be included in the agenda is examined, and possible solutions are considered. It is a moment to establish priorities and assess the costs and possible effects of each alternative. The study observed that governments took on the responsibility of formulating policies, rarely consulting the population, except in the cases of New York, Bristol, and Braga, where citizens could participate in formulating projects and designing programs. Although public policies formulation is a strictly technical phase, it can be transparent for citizens, both in the face-to-face and ePB processes.

The decision-making process is the moment where policies are selected, and it is also the phase where ePB stands out. It is a process carried out democratically, with citizen participation; or in a monocratic way, by the manager in charge and their team (Sampaio, 2016). Some ePB experiences begin in this phase, preventing citizens from participating in agenda-setting and policy formulation processes. In exclusively electronic participatory budgeting, governments previously choose topics and projects, submitting them to online voting. In experiences of hybrid participatory budgeting, the

population participates, face-to-face, in the choice of works and priorities, which are then submitted to voting in an online process.

The government is responsible for the implementation of the selected policies since this phase demands a set of executive actions. However, implementation of public policies often involves not only technical criteria, but also ideological disputes both within a government and between interest groups in a plural society pervaded by the confrontation between different political projects, conceptions, and interests, whose relations are often marked by power asymmetries. The population can monitor the phase of policy implementation, which is essential for social accountability. Access to information about the institutional arrangement for implementation, the activities regarding human and financial resources, materials, information on bidding processes, amount invested, deadlines, the entities or people responsible for the work, is essential to build a systematic monitoring process. Also, this information and the monitoring process are elements to allow social accountability and to point out when adjustments are required. Although this is a phase that gives ePB processes considerable legitimacy, not all cities presented the use of the approach at the period of implementation policy. It was observed in the cases of New York, Braga, Rosario, Porto Alegre, Belo Horizonte, and Ipatinga. The absence of this stage in some of the cases studied highlights a fundamental tension at the heart of democracy between inputs and outputs; political demands; and outcomes in the form of public policies. A political system that encourages public participation in the political process but ignores the citizens' contribution when it comes to delivering the policy lacks democratic legitimacy (Coleman, 2017).

Finally, policy evaluation is the phase completing the cycle. Despite its importance, none of the cases studied adopted the ePB encompassing this phase. The ePB initiatives studied did not include the dissemination of indicators on the policies implemented and works executed (for example, how many children were assisted with the construction of a Center of Early Childhood Education). Also, none of the initiatives conducted an assessment of the process in order to evaluate anticipated and unforeseen consequences, which would lead to improving the policy.

BOX 1 POLICY CYCLE AND DECISION-MAKING PROCESS WITHIN THE ELECTRONIC PARTICIPATORY BUDGETING

	Agenda setting	Policy formulation	Decision-making	Implementation/ transparency	Evaluation
Amadora			X		
Fortaleza			X		
New York		X	X	X	
Bristol		X	X		

Continue

	Agenda setting	Policy formulation	Decision-making	Implementation/ transparency	Evaluation
Braga		X	X	X	
Madrid			X		
Paris			X		
Reykjavík	X		X		
Rosario				X	
Porto Alegre				X	
Ipatinga				X	
Belo Horizonte			X		
Hamburg	X	X	X		

Source: Elaborated by the authors.

3.2 Interactive tools

The analysis of the digital apparatus in the cases studied evidenced the use of basic tools, with priority to low technological sophistication. Since the ePB processes, in general, involve online voting, the registration of participants is an important step to avoid duplicate voting. Citizens must provide information such as the voter registration number (which proves the voter electoral jurisdiction). In the cases of Madrid and Belo Horizonte, in addition to the online registration, the system sends a security code to be used in the voting process to the email the citizen provided. Participants' registration was used to identify comments in proposals (in Bristol, Madrid, Rosario, Reykjavík, and Hamburg), stressing the participation of real people, committed to a responsible debate.

Almost all initiatives provided contact forms and other asynchronous tools, such as email. Also, it was common the use of links leading citizens to reports and technical data available in different parts of the platforms, providing access to specific information about the process and the cities' budget.

All platforms offered internal search engines. The initiatives in Amadora, New York, Madrid, Paris, Reykjavík, Porto Alegre, Belo Horizonte, and Ipatinga used georeferenced location tools, displaying maps of territorial units to locate projects.

BOX 2 INTERACTIVE TOOLS OBSERVED ON THE EPB PLATFORMS

	Amadora	Fortaleza	New York	Bristol	Braga	Madrid	Paris	Rosario	Reykjavík	Porto Alegre	Ipatinga	Hamburg	Belo Horizonte
Email	X	X	X	X	X		X			X	X	X	X
Contact form	X	X	X	X	X			X		X	X	X	X
User registration	X	X	X	X	X	X	X	X			X	X	X
Facebook			X			X	X	X	X	X			X
Twitter			X			X	X	X		X			
Flickr										X			
Comments							X					X	X
Collection of comments							X					X	X
YouTube channel						X		X	X				
Post video			X						X				
Explanatory videos							X	X	X	X	X	X	
Maps	X		X				X		X	X	X		
Budget simulator				X								X	
Creation of individual profile, similar social media												X	
Creation of polls													
Voting polls	X	X	X	X	X		X						
Recommend the page, invite friends						X	X		X	X	X	X	X
Send proposals	X						X					X	
Comments reply (response from the government)												X	X
Chat room with a representative from the government												X	X
Collection of the chats												X	
Thematic forums				X								X	X
Collection of the forums												X	X
Delicious													
Sonico													

Continue

	Amadora	Fortaleza	New York	Bristol	Braga	Madrid	Paris	Rosario	Reykjavík	Porto Alegre	Ipatinga	Hamburg	Belo Horizonte
Use of cell phones (SMS or apps)	X												X
RSS Feed										X		X	
Web radio										X			
TV Web										X			
Search engine	X	X	X	X	X	X	X	X	X	X	X	X	X
Google +			X										

Source: Elaborated by the authors.

The experiences in Bristol and Hamburg provided applications for budget simulation so that citizens could understand the budget process (in Bristol) and even send their own simulated budgets to the government, contributing to define priorities (Hamburg). Online polling tools were adopted in Amadora, Fortaleza, New York, Bristol, Braga, and Hamburg.

The use of cell phones was observed in the case of Belo Horizonte, where citizens could vote through an application; and Amadora, where participants could vote through sending a free SMS after registering their cell phone number on the participatory budgeting website. In the case of New York, citizens could receive text messages with updates and information.

The city of Porto Alegre adopted sophisticated tools from the point of view of technological convergence, using web radio and web TV. These facilities allowed real-time monitoring of the face-to-face activities related to the participatory budgeting process.

The possibility of customizing the content accumulated throughout the process was not well developed, except in the cases of Hamburg and Porto Alegre. The German city was able to provide the outcomes of the process for users, organizing the content according to the user's interests. As for Porto Alegre, the city used RSS technology, which allowed citizens to subscribe to receive notifications whenever the website goes through modification.

Web 2.0's collaborative and digital social networking tools that enhance participatory processes were timidly employed. The experience that led to greater citizen involvement and individualization was the Hamburg ePB, which made it possible to create online social media profiles. New York's participatory budget enabled profile registration for representatives elected for the City Council, from each of the 51 districts. These elected members could display their biography and map of their territory of influence. These possibilities for personalizing and creating individual profiles in the social media made ePB a more attractive process to citizens, offering the possibility to connect like-minded citizens, to approximate people with strong identification with the Internet platform, fostering digital social relationships, bringing people with similar interests together, and facilitating the debate among them.

Analysis of the use of social media showed that microblogging Twitter was used in the cases of New York, Madrid, Paris, Rosario, and Porto Alegre; Facebook was used in New York, Madrid, Paris,

Rosario, Reykjavík, Belo Horizonte, and Porto Alegre; YouTube was used in Madrid, Rosario, and Reykjavík; and Porto Alegre was the only one that used Flickr imaging application. Overall, social media was used as a vehicle to disseminate ePB and engage users, attracting them to processes and the online platform. The use of Twitter in Paris and in New York stood out. In the first case, the city used the microblogging social media to discuss projects and to campaign at the voting phase, promoting the hashtag #NotreBudget. In the case of New York, the ePB platform adopted the Twitter embedded timeline, offering the opportunity to follow the updates in the participatory budgeting twitter's account in real-time. Professional social media networks such as LinkedIn, and social bookmarking such as Delicious were not observed in the cases studied. The literature shows that the use of social media strengthens collaboration and attracts users, increasing participation and engagement (Spada & Allegretti, 2013).

The interactive tools are related to the type of interactivity adopted, as examined in the following pages.

3.3 Functions of the platforms and characteristics of the ePBs studied

Boc 3 shows the different functions of ePB platforms regarding the user's capacity to influence in the participatory processes. In the cases studied, almost all ePB platforms prioritize the functions of informing, voting, receiving proposals, and mobilizing. The functions observed indicate that the platforms aim, firstly, to increase citizens' knowledge or attention to participatory budgeting and, secondly, to engage them in decision-making and the face-to-face activities related to the process. The study reveals that digital tools are often used to receive suggestions and proposals for works, which tend to be evaluated throughout the process. As for the phase of decision-making, Box 3 demonstrates the importance of the voting function in the digital platforms. The fact that only a few of the cases studied did not offer the function of voting is probably linked to the very logic of citizen's empowerment, inherent of participatory budgeting. However, the use of digital tools to encourage conversation and deliberation was not observed as often in the cases examined. In some of the few cases where deliberation tools were available, the function was still being tested. Although it is possible to infer that opening the process for broader conversations and deliberation on online platforms is a sensitive political decision made by ePB managers, it is important to consider that the participatory budgeting experiences also have face-to-face phases that were not examined in this research. Therefore, deliberations may have occurred in these moments and were not adequately captured or evaluated here.

BOX 3 FUNCTIONS OF THE EPB TOOLS

	Information	Mobilization	Receiving proposals	Deliberation	Vote
Amadora	X	X	X		X
Fortaleza	X				X

Continue

	Information	Mobilization	Receiving proposals	Deliberation	Vote
New York	X	X	X		X
Bristol	X		X	X	X
Braga	X		X		X
Madrid	X	X	X		X
Paris	X	X	X	X	X
Rosario	X				X
Reykjavík	X	X	X	X	X
Porto Alegre	X	X			
Ipatinga	X	X			
Belo Horizonte	X	X	X	X	X
Hamburg	X		X	X	

Source: Elaborated by the authors.

The analysis of the functions of the platforms evidences different types of ePB:

- **E-vote: Fortaleza, Rosario, Belo Horizonte:** This is a type of ePB based on the choice of projects through citizen voting. In Belo Horizonte the process is exclusively online. The city government defines the projects, and citizens vote to establish the priority of implementation. Fortaleza and Rosario have hybrid participatory budgeting that is face-to-face, with a complementary phase of online voting (citizens can vote online or in-person). In Fortaleza there was a participatory consultation to elaborate the city's *Plano Plurianual* (PPA) (multiannual plan) for the period 2014-2017. In the last phase of this consultation, citizens could vote online. In addition, the local government used digital technology (electronic ballot boxes) distributed around the city.
- **E-consultation + e-voting: Braga, Amadora, Madrid, and New York:** It is a hybrid type of ePB in which the citizen sends suggestions and votes online, with face-to-face and online phases. Braga, Madrid, and New York combine online and in-person voting, while in Amadora, the voting process takes place exclusively via the Internet. After collecting proposals, there is an intermediate moment, in which the government analyzes the technical feasibility of the suggestions (observing aspects such as available budget, time, legislation, and merger of similar proposals). After this process, the feasible proposals are disclosed and submitted to vote. Citizens register their preferences and participate in the decision-making process, selecting the options approved by the local government.
- **E-consultation + e-deliberation + e-voting: Bristol, Reykjavik, Paris:** It is the type of ePB with the broadest range of functions. Citizens can submit proposals, discuss them and, after deliberating, choose from the proposals presented and defended. Deliberation takes place through digital forums and chats. The literature reveals that, although being one of the least types of ePB used, it is the most durable due to its credibility – which can be observed in the experience of Berlin-Lichtenberg, studied by Sampaio (2014). Nevertheless, in Bristol (called "It's my Bristol") the process can be considered a pilot since it has been performed only once. These experiences show that the

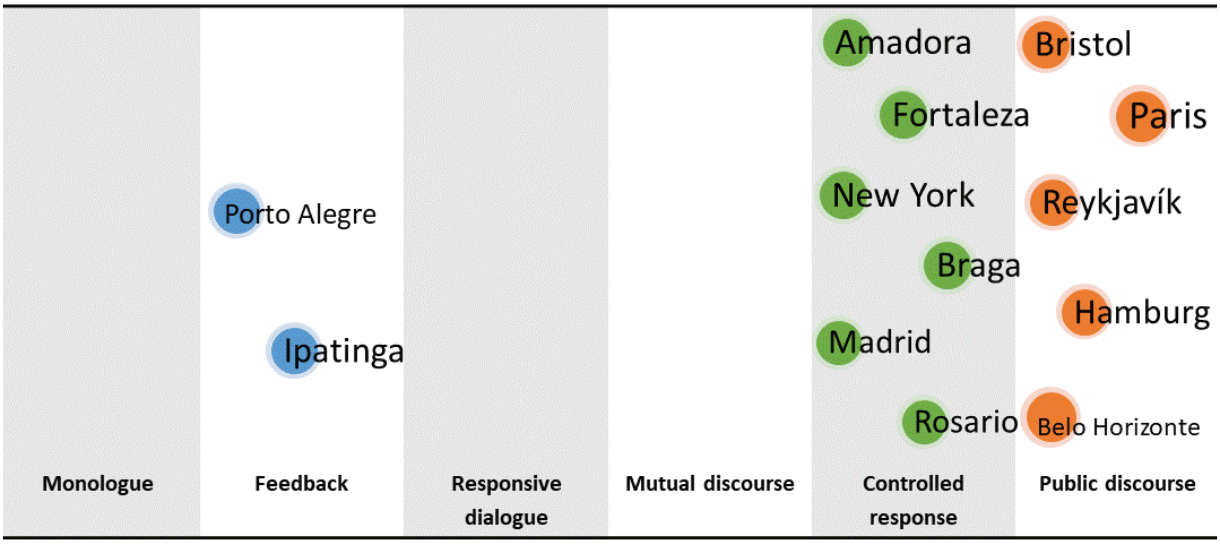
most robust types of ePB, considering the functions observed, are those that consider the ability of participants to intervene in all nuances of participatory processes: information, mobilization, receiving proposals, deliberation, and vote.

- **E-mobilization + e-follow-up: Porto Alegre and Ipatinga:** These participatory budgeting processes are based on face-to-face stages. The Internet works to engage and mobilize participants for the plenary sessions and accountability practices during the post-decision-making stages so citizens can follow the progress of the voted projects. The ePB processes in Porto Alegre and Ipatinga began as e-consultation models, but with the successive changes in government, they were converted into e-mobilization and e-follow-up processes.
- **E-consultation + e-deliberation: Hamburg:** The central aspect of this process is the presentation and debate of proposals by the public. The government implements the proposals considered the most viable, and the process does not involve online voting. In the case of Hamburg, discussions focused not only on the investment budget but, more importantly, on cutting and resizing public spending. The case of Hamburg used a digital budget simulator.

3.4 Types of interactivity

In the different types of interactivity observed in the ePB platforms, it is possible to observe one-to-one, one-to-many, and many-to-many communication, occurring synchronously and asynchronously.

FIGURE 2 TYPES OF INTERACTIVITY



Source: Elaborated by the authors.

The analysis of the government-citizen interactivity and dialogue capacity within the ePB platforms demonstrated Porto Alegre and Ipatinga adopted a one-way form of communication, using 'feedback' as the type of interactivity (limited participation, no guarantee that messages sent will be replied). The tool used in these two cases was email, which means that the platforms provide information and also offer the opportunity for users to be the sender. However, there are no tools for two-way communication in the platforms, such as panels or chat rooms, which also would allow participants to interact with and influence each other. The priority objectives of these ePBs are the dissemination of the face-to-face processes and monitoring policies, projects, and services implementation, as decided in plenary sessions. Therefore, the Internet is a complementary tool to the face-to-face participatory budgeting process.

In the case of Porto Alegre, the system enables different types of search: by demand, by year and agency in charge of the work or service under implementation, by region, by the cycle of the participatory budgeting process, and by topic. These options facilitate accountability, transparency, and the population's control over the participatory budgeting. During the period from 2001 to 2003, it was possible to send demands via the Internet. In the period analyzed in this case study, however, this option was not available. The cycle of 2017 also received proposals via the Internet, between April and June, concurrently with face-to-face preparatory meetings.

The ePB in Ipatinga allowed citizens to send demands through the Internet between 2001 and 2003. Currently, the decision-making is based on face-to-face participation, and the digital platform is used only as a monitoring tool, through which citizens obtain information via email or customized search combining one or more categories among name of the project/work, neighborhood, region, type of project/work, status, and year of approval. Email is the interaction tool connecting user and government. It can be used to request improvements and efficiency when works are not progressing adequately. The platform uses georeferenced tools, showing a map of worksites and photos showing their progress. Also, it informs the year the work was selected in the ePB process, its status, and amount budgeted.

In addition, the analysis indicated that the most used type of interactivity in the ePB platforms was "controlled response." The cases of Amadora, Fortaleza, New York, Braga, Madrid, and Rosario emphasize this type of interactivity, as it allows citizens to participate, but the platform manager maintains significant control over the process.

The tools used to offer controlled response were mainly online surveys, through which managers asked citizens to choose from pre-defined themes and investment areas. In Amadora, for example, the themes citizens could choose from to submit proposals were gardens, education, leisure, roads, and other infrastructure, restricting the participation and the possibility of indicating other issues. This kind of dynamic influences the success of ePB experiences. The restrictions show the managers' interest in keeping total control of agenda-setting, which may inhibit citizen participation (when, for instance, the citizen does not feel motivated by the investment agenda the government unilaterally pre-defined).

The ePB in Amadora used interactive tools such as comments and panels, where messages were posted asynchronously and controlled by moderators (who filtered the comments of participants

before publication). Participants' proposals were also previously filtered and, when released, they were able to influence third parties. It was, therefore, a three-way form of communication, but it did not involve synchronous debates. Also, managers controlled the process but did not participate in the discussion.

The local government analyzes the technical and financial feasibility of citizens' proposals and, despite the fact that cities usually do not explain the reasons for rejecting proposals, the Portuguese city of Amadora is an exception. It publishes the rejected proposals on the platform and receives appeals from supporters within one day of the publication, by email. The analysis showed that the appeals have not resulted in changing the decision for rejecting the proposal, and there are complaints regarding the short deadline for appealing the decisions, for example:

> Proposal 45: Building a wall around the substation of REFER, at Rua de Díli/Av. do Ultramar, Freguesia de Mina de Água. Building a wall to continue the existing one around the substation of REFER at Rua de Díli/Av. do Ultramar, Freguesia de Mina de Água.
> Appeal: **To start, it is not right, in my point of view, that after changing the deadline of appeal, the proposal supporters are informed of the proposal's rejection on the 22nd and have until the 23rd to appeal (sic)**, and the period of voting the proposals starts soon after, on August 24. Even so, I would like to mention, regarding proposal 45, that [...] once again the justification for rejecting it [the proposal] states that the area belongs to EDP, and we are aware of that, we wrote that information in the proposal. Actually, the work is the responsibility of EDP, but as the company does not do it, we would like to have the support of the House, because it is a construction within the problem? (sic). Have you met with the company to evaluate the intervention? Does EDP not authorizing building the wall?
> Response to the appeal: The justification for rejecting the proposal remains the same. The intervention area is owned by EDP (Amadora Electronic Participatory Budgeting Platform).

The citizen is likely to understand that a proposal needs to be assessed regarding its technical feasibility and, if their suggestion is rejected, they are likely to maintain motivation to participate if receiving a transparent justification. The lack of justification for rejected proposals by the majority of the cases studied shows that, although the interactive tools of the Internet are widely emphasized, the fact that the platforms do not make use of more advanced technological tools, represents their most important deficiency. This phenomenon may indicate that public managers are still suspicious of interactivity, fearing that open access to the platforms would generate criticisms from opponents or the process would receive several unworkable proposals that could lead them to lose control of the government agenda. It turns out, however, that citizens are skeptical of the anodyne language of the technocratic managerialism that permeates modern politics.

Institutional openness to civil society participation has been followed by a significant process of government control (Silva, 2012). It is worth mentioning how the literature deals with the issue of secrecy as a fundamental element of state power, reproduced in the lack of enthusiasm regarding the community's influence in the policy cycle (even in experiences designed to expand democracy). Norberto Bobbio (2015) stresses the fact that secrecy, over time, is connected to the essence of power. Throughout the Middle Ages, such a phenomenon was not substantially questioned because

of the understanding of power as something related to divinity. With the collapse of the medieval and the emergence of the modern state, this phenomenon did not disappear but increased. In this new context, marked by the domain of technical (or specialized) knowledge, the state bureaucracy is now controlling this secrecy. When discussing the Italian political reality of the late 1980s, Bobbio (2015) pointed out that democracy was not fulfilling its ideal of publicizing acts to facilitate citizens monitoring.

Thus, in the 'controlled response' type of interactivity, the interaction tools of the three-way model are represented by areas where citizens express opinions, post comments, and collect information rather than instruments that promote the debate and facilitate deliberation on policy proposals.

Nevertheless, five of the ePB cases studied adopted the 'public discourse' type of interactivity model: Paris, Bristol, Reykjavík, Hamburg, and Belo Horizonte. These initiatives adopted the three-way form of communication, providing forums and chat rooms where participants could create content and interact with each other. This type of Web 2.0 interactive tool offers mechanisms for public deliberation (Ferber et al., 2007).

Thematic forums are important to emphasize specific issues that mobilize citizens and discuss issues concerning agendas of groups that have difficulties in gaining space for their preferences in the political system (Abreu & Pinho, 2014; Coleman & Sampaio, 2016; Ferreira, 2012). Platforms that adopt the 'public discourse' as a type of interactivity have enabled governments to attract and meet the needs and opinions of targeted audiences. This level of interactivity allows to collect ideas, reports, and data from citizens, learning about issues originated in a diversity of geographical and social contexts.

In Paris, the ePB demonstrated situations in which the interests of groups commonly excluded from the political process were represented, for example, with the winning proposal of shelters for homeless people. The proposal reached 20,298 votes, receiving an investment of €5 million from the city's budget.

Regarding the format of deliberation, in the experiences of Reykjavík and Hamburg, there was a genuine debate between government and population representatives. The participants discussed in forums, with the participation of public managers in a three-way communication, exchange of messages and discursive reciprocity, with the possibility for citizens to challenge public officials. In the experiences of Paris, Bristol, and Belo Horizonte, the priority was given to channels of civic conversation, and to debates among citizens in spaces where the government was not present. The way the government promotes citizen integration and processes their demands and suggestions is essential in the ePB initiatives, both for building deliberative processes and strengthening democracy, and for the success of the experience. Government feedback is desirable and demonstrates to citizens that they are taken seriously and have the opportunity to influence decision-making (Coleman & Sampaio, 2016).

In the "Better Reykjavík" online forum, citizens had the opportunity to present their ideas on topics related to the city's services and works. The forum was open for readers, and users interested in participating must register to engage in the debate presenting ideas, expressing and rating opinions, and supporting or opposing projects. When the user submitted an idea in the forum, it was automatically considered as publicly owned, or propriety of the residents of Reykjavík, and the city had the right to use it. The original proposal could be changed during the consultation process, which occurred

through the online forum. At the time of this case study the voting system was quite different and did not work by poll, as in other cases, but by tools where users could 'like' or 'dislike,' proposals presented in forum messages (similar to Facebook and YouTube). To 'like' the proposals, the user should log in with their Facebook profile account, which facilitated usability.

In the cases of Hamburg and Reykjavík, moderators worked as managers (organizing the forum around topics, highlighting the most commented proposals and appointing representatives for each theme), as mediators (proposals were systematized, generating a participation report, with the main proposals and profiles of the participants), and referees (in this role, they worked filtering the messages to avoid non-argumentative clashes (flames and trolls).

4. ANALYSIS AND DISCUSSION OF RESULTS

The analysis about the phase of the policy cycle and the moment of the decision-making process where citizens are engaged showed that only in the cases of Amadora, New York, Madrid, and Paris, could the population participate from the beginning of the process, but the participation was limited to choosing among topics pre-selected by the government. The analysis also observed that governments avoid citizen participation in the phase of public policy formulation, preferring to prioritize technical aspects in this phase.

In the decision-making process, most of the cases studied focused on offering citizens – in terms of electronic participation – the possibility to send suggestions about works and projects and to participate in the decision-making process via online voting. In some cases, the online voting was part of a purely electronic participatory budgeting, while in others voting was just a phase of a more complex hybrid process, where much of the participation was face-to-face, and voting was the online part of the process. Evidence of this dynamic was the fact that only five of the thirteen cases offered tools for online deliberation and discussion, indicating that the debate and negotiation about the works took place in face-to-face. In some cases, even when there were tools for online discussion, there was no evidence of how municipalities would make use of the content shared in the platforms, highlighting the excessive control of the government over decision-making (even with all investment made to organize a ePB process). It is noteworthy that the models that followed the pioneering example of Porto Alegre prioritized the face-to-face participatory budget, so they did not provide tools for a more robust electronic participation. This aspect will be explored further below.

As for public policy implementation, the cases studied showed that governments tend to consider this phase as primarily executive, inhibiting citizen participation. The fact that the citizens were not included in this phase of the policy cycle indicates a potential divergence between policy demands and the public policies delivered. The research demonstrated that none of the experiences examined offered the citizens the elements to evaluate electronic participation, the results of the ePB process, and possible indicators adopted.

The findings show that most of the analyzed ePB allowed participants to make interventions in the decision-making process, adopting a "controlled response" type of intervention with no effective interaction between citizens and government. This means e-participation not based on debate and, therefore, usually reduced to voting for specific works or projects.

Regarding the form of communication, most cases were considered three-way communication. The use of a basic type of interactivity such as the "feedback," in the cases of Ipatinga and Porto Alegre deserves specific analysis. Although the literature on e-participation seeks to explain these cases by stating that these are more information-based than participatory ePB (Sampaio & Peixoto, 2013), as the online environment is basically used to provide information about the face-to-face process (and thus strengthen it), there are other explanatory variables, as discussed below.

The cases studied offered elements to explain the use of tools and different types of interactivity based on the architecture of participation observed in the ePB models adopted. It was possible to identify three ePB models. The first is the ePB for participatory budgeting activism, created from the pioneering face-to-face participatory budgeting developed in Porto Alegre from 1989. The model presents characteristics such as redistributive purposes, power-sharing, and collective decision about the application of funds in public works and policies. The experience in Porto Alegre is widely studied in literature and became a model celebrated worldwide after awarded with the Habitat II of the United Nations (UN). In 2001, the face-to-face experience was complemented with the electronic participatory budgeting approach, to include segments of society that did not participate in face-to-face meetings. The implementation of the ePB inspired other cities in Brazil and around the world. The cases inspired by the experience of Porto Alegre and examined in this research are the ePBs of Ipatinga (2001), Rosario (2002), Amadora (2009), Belo Horizonte (2013), Braga (2014), and Fortaleza (2015).

Over the years, and for various reasons, the literature indicates that the experience of Porto Alegre has gone through a decline (Azevedo, 2019; Bezerra, 2017; Fedozzi & Martins, 2012). European cities, which until then imported the Porto Alegre model, a movement that Giovanni Allegretti called "the return of the caravels," starts to develop its own models (Sintomer, Herzberg, Röcke, & Allegretti, 2012). The first model developed in Europe is the OPB for the modernization of public management.

The ePB for the modernization of public management is grounded on the assumptions of the New Public Management (NPM). It has a different logic of participation and different priorities (Aberbach & Rockman, 1999; Aucoin, 1990; Centro Lationamericano de Administración para el Desarrollo [CLAD], 1999; Hood, 1991; Ramió Matas, 2001). The primary objective is to modernize public management following ultraliberal precepts, by incorporating market innovations into policy, including the use of ICT. This model has no redistributive purposes. The use of the tool becomes an end in itself, because the main purpose is not the participation to decide about the public budget and the process' redistributive effects when including the most vulnerable segments, but the communication aspects that may increase the legitimacy of governments while offering the opportunity to assess the public opinion. It should be emphasized that European countries have a much lower digital exclusion rate compared to Latin American countries, which makes this model more strategic for that context.[2] Within this model are the experiences of Hamburg (2006) and Bristol (2010), in which the central aspect was the possibility for citizens to present and debate proposals. In these cases, only the most

[2] Indicators about Internet access in the countries of the cases studied: Germany = 92%; France = 88%; Spain = 86%; Iceland = 99%; Portugal = 75%; United Kingdom = 95% (The Economist; Intelligence Unit, 2019).

viable proposals were considered by the government, and the process did not involve online voting. In the case of Hamburg, the discussions focused not only on the investment budget but also and more importantly on reducing costs in public spending and reducing the state apparatus. The city adopted the digital budget simulator tool to guide this discussion.

A third model of ePB was created in Europe, the ePB for digital activism. The model was originated in a movement that discussed the importance of the Internet, free software, and the widespread use of digital tools. The experience of Reykjavík was developed from this process. As a project of digital activists, it emerged in 2011 following a major economic crisis in Iceland, and the city government incorporated the project in 2012. The model was awarded by the UN and gained notoriety inspiring ePB experiences, now designed with an architecture for online participation (not as a complement to the face-to-face participation, as in the case of Porto Alegre). This model influenced experiences in North America, such as the case of New York created in 2011. In New York, the ePB is only active in some districts; however, this model functions as a hybrid of participatory budget activism models and digital activism. Reykjavík's model was gaining space in Europe and influenced the ePB of Paris, started in 2014, and Madrid, in 2015. The case of Madrid generated the Consul platform, awarded by the UN. Observing the developments in Europe and worldwide, Porto Alegre started a process to reinvigorate its process of participatory budgeting. However, the city lacks technical expertise regarding the use of digital tools (and their functions related to the interaction between citizens, politicians, and public managers), as well as the lack of creativity in participatory activities of the ePB (Abreu & Pinho, 2014; Coleman & Sampaio, 2016; Miori & Russo, 2011; Nitzsche et al., 2012). In addition to these aspects, the analysis of these participatory budgeting models guiding the electronic experience leads to further reflections exposed in the final considerations.

5. FINAL CONSIDERATIONS

This study analyzed electronic participatory budgeting (ePB) platforms in thirteen different cities in South America, North America, and Europe, examining different forms of communication and the use of information and communication technology (ICT) in processes of citizen participation. The research focused on assessing a) when in the policy cycle and the decision-making process the digital tools facilitate citizen participation; b) the interactive tools offered by the ePB platforms; c) what and how fruitful are the functions offered by participatory processes.

The analysis of the use of digital tools during the policy cycle and decision-making process identified that governments were not willing to use the ePB platforms in the phase of agenda-setting. The phase of policy formulation was subsumed to the codes of technocratic administration, even though, according to Coleman (2017), citizens are deeply skeptical of the language of technocratic managerialism that permeates modern politics. Regarding the decision-making process, the cases studied presented different types of interaction, including combinations generating hybrid formats. As for the phase of policy implementation, the study highlighted a fundamental tension at the heart of democratic politics between inputs and outputs. This is a fundamental aspect, considering Coleman's (2017) statement that a political system lacks democratic legitimacy when it encourages public participation in the political process, but ignores its contribution when producing a public

good. Finally, the analysis of the inclusion of digital interactive tools in the decision-making processes shows that the evaluation phase was neglected in the cases studied, which may indicate that the governments were not inclined to be evaluated.

The results pointed to a divergence between technical and political aspects. The cases of ePB showed that, even when digital instruments do not favor the most sophisticated types of interactivity, citizens have been empowered to make decisions. The cases analyzed showed both simpler/controlled types of interactivity, and sophisticated levels of public debate between citizens and public managers. The majority of cases could be considered as adopting a three-way form of communication, where there was a relationship between citizens and public and political agents. As for the type of interactivity, of the 13 municipalities studied, 06 were classified as "controlled response" and 05 as "public discourse," which is the highest level of interaction.

The element of 'control' was a common feature to all cases studied. In different measures, the ePB experiences sought to allow the government to control the process of participation. The literature shows that online interaction can expose candidates, politicians, and public managers to a generally unwanted form of scrutiny (Stromer-Galley, 2013). In this context, it is important to notice that more transparent mechanisms may not only imply in losing control but, also losing (or reducing) the power that sometimes uses strategies to hide processes and networks, in order to cover obscure and not always lawful acts; hence the interest in maintaining the "secrecy" and opacity of citizen participation processes (Bobbio, 2015). According to Gomes, Amorim, and Almada (2018) a transparent institution "can be seen, there are no armored accesses or invisible, secret, or mysterious governments; there are no reasons that cannot be shared (the old 'Reasons of State')." The analysis of institutional experiences of community participation, such as the ePB, both openness and control are sides of the same coin. The institutional designs favoring transparency of government actions are the same ones that maintain institutional control over the participatory process.

These theoretical aspects help to evidence the use of e-rhetoric on the part of the governments. The study observed that two of the cases adopted the "feedback" type of interactivity; six adopted "controlled response;" and five "public discourse" (high-level interactivity). Even in the cases of high-level interactivity and declared intention to engage citizens, the governments, in practice, sought to control and establish the terms for participation. The atmosphere of centralized institutionalism prevailed, which represents a challenge for the revitalization of democracy since the representative institutions are distant and unintelligible to the average citizen. However, mechanisms such as a robust ePB can be a solution to improve democratic processes, making citizens feel included in increasing legitimacy (Coleman, 2017).

This empirical study of cases in different continents made it possible to identify three major ePB models: a) ePB for participatory budgeting activism; b) ePB for modernization of public management; and c) ePB for digital activism. The explanatory variable for these models, based on data and context analysis (Mitozo & Marques, 2019), was the architecture of participation designed in each participatory budgeting model observed. The architecture of participation emerged from the context and history of the researched objects, as well as from their classification into models that allowed to understand not only the tools but the ways citizens are engaged and participate, which is what matters. Therefore, to explain the use of tools and the forms of communication, the study observed both the electronic and

the face-to-face participatory budgeting, and the premises of participation and democracy on which they were based. This analysis revealed another explanation for the different ePB, besides the lack of technical expertise and the prioritization of informational over participatory issues, as pointed out in the literature. The findings emphasize that, behind these differences, there are different formats of face-to-face participatory budgeting, different models of participation and democracy, and, therefore, different priorities: redistribution, sharing power, modernization of public management, incorporation of market innovations in politics, communicative aspects, legitimation of governments and politicians, or digital activism and participation. These aspects explain the different tools used in each initiative and the phase of the policy cycle where citizens are engaged.

Finally, this study leads to the conclusion that it is not appropriate to associate the potential of new technology with the revitalization of democratic institutions and practices, as the tools do not cause political change, even though they may be an element to facilitate such changes. New technology can be used in different ways and for different purposes, generating impacts that change according to the context where it is applied. Thus, the important aspect of the revitalization of democratic institutions and practices is the model of participation rather than the tools adopted.

This research recognizes that there are more elements to explore and understand in the cases studied, and intends to contribute to explain the phenomenon of electronic participation, which are inserted in a new field of studies. The issue of electronic participation is a debate that deserves more attention, understanding the complexity around the interaction between the political and technical dimensions.

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