Towards increasing citizen engagement in participatory budgeting digital tools

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ABSTRACT

In this paper, we compile and describe features of participatory budgeting digital tools, and propose a number of potential future directions for those features that could increase citizen engagement.

CCS CONCEPTS

• **Applied computing → Computing in government**;

KEYWORDS

participatory budgeting, citizen engagement, open government, e-participation, e-governance

1 INTRODUCTION

Participatory budgeting (PB) allows citizens to contribute in the spending of public budgets and in city decision making, thus fostering a greater sense of democracy. Electronic participatory budgeting (ePB) tools constitute an added dimension whose aim is to support, improve and innovate traditional (offline) methods –such as meetings, committees and councils– with virtual (online) services [2]. Studies have shown that citizens recognize benefits in ePB [4, 8]. In general, however, the levels of participation are still very low. Motivated by this issue, in this paper, we compile and describe features of ePB tools, and propose a number of potential future directions for those features that could increase citizen engagement.

2 FEATURES OF PARTICIPATORY BUDGETING DIGITAL TOOLS

The report presented in [6] scores over 60 worldwide PB digital applications and platforms. From them, six tools were selected and analyzed according to a number of requirements, such as the ease of setup and reuse by administrators, use for the citizens, and integration with offline participation processes. In addition to such tools, we have also considered several software frameworks to build online PB platforms, such as CONSUL citizen participation

tool (http://consulproject.org/en) –an open-source framework supported by the City Council of Madrid (Spain), which is used in tens of cities in Spain, Italy, France and South America–, Stanford Participatory Budgeting tool (https://pbstanford.org) –an open-source framework used in PB digital platforms of major cities in the USA, e.g. New York, Chicago, Seattle, Oakland and Boston–, and EU Open Budgets participatory budgeting tool (http://openbudgets.eu/tools).

Analyzing the selected tools and surveying the literature on ePB, we have compiled a number of features that are commonly present in digital tools, and may have a strong impact on the citizens' engagement. Next, we briefly discuss the identified features, distinguishing between generic, system features that are not related with the budgeting participation processes, and features that enable online mechanisms to participation.

The following are major **non-participation features**:

F1. Security and verification. ePB tools should provide security in a balanced way with accessibility. Their proposal voting and budgeting allocation services should be secure, e.g. requiring citizens' ID and e-mail verification. Too much security, however, may impose barriers to the citizens' engagement.

F2. Usability and accessibility. ePB tools should be easy-to-use, providing user friendly interfaces. Moreover, they should be adaptive to different devices, citizen segments, and accessibility needs.

F3. Search, filtering and ranking. ePB tools may provide information access and exploration mechanisms, such as keyword-based search, category- and geographical-based filtering (e.g. by means of interactive maps), and ranking/sorting according to different criteria (e.g. date, popularity and budget).

F4. Feedback and support. ePB tools should allow citizens to be informed and make enquiries about the tools and the PB processes, e.g. via e-mail. This should ensure timely, personalized responses, appropriate to maintain the citizens' engagement.

The following are popular **participation features**:

F5. Citizen proposals. Some ePB tools allow citizens submitting proposals to discuss and vote. Through the tools, both citizens and city administrators should be allowed to ensure a rich provision of heterogeneous data beyond proposal descriptions, such as annotations, categories, pictures and videos.

F6. Debates. Some ePB tools allow citizens to post opinions, and read and comment others' posts in online forums. Although some of the analyzed tools have no debate restrictions, it has been shown that moderation is necessary to avoid misuse and to keep the focus of the discussions on subjects related to the PB [4].

F7. Proposal voting. ePB tools may impose constraints on the number of votes or on the proposals that can be voted by a particular citizen, e.g. limiting them by city districts.

F8. Budgeting allocation. Instead or in addition to voting, ePB tools may allow citizens to assign/allocate budgets to particular proposals or themes (e.g. health, education and transport).

F9. Deliberation. Certain ePB tools enable deliberations about the final implementations of funded proposals. The tools should ensure participants to be exposed to a diverse variety of opinions and perspectives, enabling the dialogue and discussion.

F10. Collaborative legislation. In ePB tools, public administrators and other stakeholders distinct to citizens may be allowed to participate in debate, deliberation and co-production tasks.

3 FUTURE DIRECTIONS

In this section, we propose a number of future directions for improving some of the features discussed in section 2, aiming to increase citizen engagement in participatory budgeting digital tools.

Reducing the gap between offline and online participation (*F5-F10*). Existing ePB tools have been commonly designed to offer virtual counterparts of traditional processes, such as meetings, working groups, questionnaires and forums [2], or to have online communication mechanisms, such as e-mail/SMS notifications and video streaming. We envision the possibility of bridging the gap in the opposite direction, that is bringing to the physical world electronic mechanisms for participation. Hence, physical devices with interactive digital displays located in certain points of the city may allow citizens to be informed and participate in both offline and online processes. In this context, other forms of integrating the physical and virtual worlds may arise with the increasing adoption of new technologies in ubiquitous/pervasive and urban computing, thanks to the progress of the Internet of Things. For instance, augmented reality –which allows superimposing computer-generated images on a user's view of the real world to show a composite view in her mobile device–, may allow citizens to find out and interact with information about proposals related to their current location (e.g. street or neighborhood) in the city.

Enhancing discussion and deliberation (*F6-F9*). In general, online forums in current ePB platforms are based on discussion threads where citizens post personal opinions and comment others' posts about proposals. The generated discussions are usually shown in a tree-based representation, usually sorted by date or by popularity. However, such visualization may be overwhelming for the users when there is a large amount of posts. For this reason, special effort has to be done to improve and enhance the debate features. In our opinion, online forums should offer more structure and alternative visualizations, e.g. providing categorization, clustering or summaries of discussions based on the polarity of the citizens' opinions, enabling thus an easier identification of arguments that have been posed in favor or against certain proposal.

Making digital tools more adaptive and personalized (*F2-F4*). Personalization is a key aspect to engage people. In ePB tools, it could be implemented in features at any level: information, communication, consultation and co-production. In this context, besides considering the users' interests and demographic data, the tools interfaces and some of their services should be adapted to particular needs, such as those related to people with certain disabilities.

Making digital tools more social and collaborative (*F5-F10*). Socialization and collaboration are engaging aspects for many people. Some of the analyzed ePB tools allow sharing proposals and ideas through social media. Additionally, the own tools may include inner social network and collaboration features. Visible communities around a particular proposal or debate, and real-time chatting and messaging services are examples of such potential features.

Improving search and filtering (*F3*). In our analysis, we observed that the majority of ePB tools have limited keyword-based searching services. We believe there is large room for improvement on this aspect; the research on semantic-based and context-aware search and recommendation is extensive.

Facilitating co-production (*F6, F9, F10*). The involvement of other stakeholders than citizens in PB may promote engagement. The participation of government officers as well as business and institutions would not only help to improve proposed ideas, but also could increase the citizens' reeling of responsibility, trust on government, and convince of the importance and effects of their participation [1]. The ePB tools thus should allow governments to ensure interaction and feedback, sustaining the citizens' trust.

Providing online budget data (*F5, F6, F8-F10*). Accurate, timely and useful budget information is critical for government and citizens to make the right budget choices [5]. Moreover, it increases government transparency, and consequently the citizens' trust. Thus, for example, ePB tools should ease the integration and linking of Open Data related to submitted proposals and debates.

Incorporating gamification mechanics (*F5-F10*). As done in other areas, such as e-commerce, gamification mechanics could be exploited in ePB to increase citizen participation and engagement [7]. Gaining virtual points/badges or real prizes, such as discount vouchers in local businesses, for being among the most active participants are examples of popular mechanics.

Originating/maintaining engagement before/after the participatory budgeting programs. Considering the stages of engagement [3], in addition to maintaining citizens engaged during PB programs, it is important to attract new users to participate, and keep participants engaged for further participatory events. SMS/e-mail subscriptions and social media updates are common strategies used in digital marketing and e-commerce. Keeping citizens informed about the implementation and results of funded proposals shows them that their opinions and contributions really matter.

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