

Public sector, open innovation, and collaborative governance in lockdown times. A research of Spanish cases during the COVID-19 crisis

J. Ignacio Criado and Ariana Guevara-Gómez
*Department of Political Science and International Relations,
Universidad Autónoma de Madrid, Madrid, Spain*

Abstract

Purpose – This paper aims to study the results of open innovation initiatives in Spain under the lockdown during the first stages of the COVID-19 crisis. Based on the most recent literature on open innovation in the public sector, this paper explores the following research questions, namely, what are the key features of collaborative governance processes that guided open innovation initiatives in the Spanish public sector during the COVID-19 crises? How open public innovation cases generated public value to the society during the COVID-19 crises in Spain?

Design/methodology/approach – The study is based on two in-depth case studies of open innovation in the public sector: the collaborative platform Frena la Curva and the hackathon Vence al Virus, both launched during the first moments of the COVID-19 crisis. The methodology is based on 13 semi-structured interviews, content observation and documentary analysis. The data were interpreted according to the dimensions described in the analytical framework: descriptive dimensions of both initiatives but also their degree of elaboration, incentives and objectives, characteristics of governance and collaboration between actors and challenges for the accountability processes; and finally, their procedural legitimacy, considering the COVID-19 crisis context.

Findings – The results of the study show that citizens have played a key role during the hardest stage of the crisis, collaborating with governments and advancing their innovative capabilities, mostly in the digital sphere. The analysis also identified different outcomes, including the improvement of citizen's involvement, deliberation practices or network building. Besides, this paper has identified some limitations and barriers to open innovation and collaborative governance processes in terms of accountability and legitimacy of these initiatives. Here, their contribution was constrained by the emerging stage of implementation and by the unique circumstances of the lockdown under the COVID-19 crisis.

Research limitations/implications – Future advancements of open innovation initiatives to consolidate collaborative governance processes will need further exploration. Although this paper diversified the contacts and the data collection in the fieldwork to avoid social biases, the results of the interviews might reflect very positive outcomes. Despite the case studies that took place during the COVID-19 crisis and their planned actions to maintain their existence, the post-crisis analysis will be needed to assess the impact of these open innovation cases in collaborative governance structures.

Practical implications – Open innovation is an emerging narrative and practice in the public sector requiring time and energy from public officials and managers. The study also highlighted the problem of how to legitimate open innovation cases in the public sector and the implications for their institutionalization. Public managers involved in these types of initiatives need to keep the momentum both inside and outside their organizations. Regarding the utilization of information and communications technologies (ICTs), open



innovation processes do not need technology to develop their full potential, whereas the COVID-19 crisis and the ongoing digitalization of work settings, accessibility, etc., could transform ICTs into a critical tool for public managers leading innovation initiatives within their organizations.

Social implications – The social implications of this paper are manifold. This study provides evidence of one of the future avenues of public management: open innovation. New avenues for the involvement and collaboration of citizens with public authorities are another social implication pinpointed by this paper. Democratic legitimacy and procedural accountability are assessed using the open innovation case studies during the COVID-19 crisis. Finally, transforming governments using collaborative platforms deserves social oversight understanding if they really contribute to build trust in political institutions.

Originality/value – Despite their differences, both *Frena la Curva* and *Vence al Virus* demonstrated the potential and limitations of public innovation and collaborative governance to cope with an unprecedented crisis such as the COVID-19. The special features of this emergency, including the long period of confinement, posed challenges and also opportunities to develop these initiatives: as several interviewees stated, these projects helped to channel the civic energy to co-produce solutions in collaboration with a wide range of actors. Data allow us to identify the key features of collaborative governance that guided open innovation initiatives in the Spanish public sector during the COVID-19 crisis.

Keywords Trust, Collaboration, Accountability, Open innovation, Public management, Citizens

Paper type Research paper

1. Introduction

During the first months of 2020, governments around the world have been fighting against a unique health crisis: the spread of the COVID-19 virus. Apart from the challenges for the public health sector, this period has entailed important economic disruptions, tentative social and political re-arrangements and especially, considerable technological uncertainties about privacy, personal data protection or how to use apps to track and trace contacts of potentially infected people. Therefore, governments and societies have tackled with wicked problems (Head and Alford, 2015; Peters, 2017), using open innovation and data strategies (Zuiderwijk *et al.*, 2016). In the case of Spain, we have witnessed initiatives to set up collaboration among governments and citizens at different layers of government. Despite the lockdown introduced limitations for the mobility of citizens and new boundaries for inter-personal interactions, also this period provided a unique opportunity to set up open innovation platforms and initiatives, including civic hackathons, crowdsourcing of ideas or challenges and contests, into digital platforms. In this paper, we suggest that the COVID-19 crisis has spurred open innovation in the public sector. Therefore, this article presents the key features of collaborative governance processes guiding these initiatives and how public value was created during the lockdown stage in the COVID-19 crisis in Spain.

Methodologically, this article analyzes two case studies, namely, *Frena la Curva* (Flattening the Curve (FtC)) collaborative platform and *Vence al Virus* (Fight the Virus (FtV)) hackathon. Here, we directly address these cases by answering the following research questions:

RQ1. What are the key features of collaborative governance processes that guided open innovation initiatives in the Spanish public sector during the COVID-19 crises?

and

RQ2. How open public innovation cases generated public value to the society during the COVID-19 crises in Spain?

Hence, both cases are analyzed to understand how the public value was created and shaped during these open innovation processes, including the attention to the key role played by

Information and Communications Technologies (ICTs), under circumstances with physical contacts and interactions limited to the minimum.

The remainder of the article is organized as follows. Section 2 develops our theoretical and analytical framework with a review of the state-of-the-art in the field of open innovation and collaborative governance. Then, the research design is presented, including case selection criteria, data collection procedures and qualitative methods for data analysis in Section 3. Section 4 is devoted to show the analysis of data regarding both case studies. After that, the discussion and conclusions present the findings of the article, its contributions to the existing literature on open innovation in the public sector, practical recommendations for public managers, limitations and future avenues for research are given in Sections 5 and 6.

2. Theoretical and analytical framework

Following the arguments made in [Criado et al. \(2020b\)](#), the COVID-19 crisis spurred the implementation of public innovation initiatives to cope with societal problems and enhance collaboration and co-production in Spain. Previous to this crisis, public innovation projects, as hackathons, have proved their potential to help promoting collaboration and solve public health challenges ([Bell et al., 2019](#); [Olson et al., 2017](#)). However, we argue that the unprecedented nature of the COVID-19 pandemics accelerated the implementation of innovative solutions, not only in the health sector. Here, we present our theoretical and analytical framework to study this topic in the Spanish case.

The notion of open public innovation, consisting in the use of external resources and knowledge to solve problems with an innovative approach ([Yuan and Gascó-Hernández, 2019](#)), is used here to gauge how governments and public administrations work together with other actors engaging them in public decisions and public outputs ([Kankanhalli et al., 2017](#)), creating some public value ([Pedersen, 2020](#)) and regarding to different potential outputs from the process ([Yuan and Gascó-Hernández, 2019](#)). At the same time, we assume that lockdowns during the first moments of the COVID-19 crisis encompassed a unique opportunity to explore these practices via digital means, following the previous experiences using ICTs in processes of collaborative co-production of public services and policies in different contexts ([Chen et al., 2019](#); [Mergel, 2015](#); [Mergel and Desouza, 2013](#)).

Despite the different forms that open innovation initiatives have taken in the public sector, here we focus on two types. First, i-labs, defined as *islands of experimentation where the public sector can test and scale-out public sector innovations* ([Tönurist et al., 2017](#)). Second, hackathons, competitive events aiming to promote innovation and creativity through the use of technologies ([Briscoe and Mulligan, 2014](#)). By developing these initiatives, public sector institutions expect to promote collaboration through the public-private-people partnership or 4P ([Shin, 2019](#); [Gascó-Hernández, 2017](#)), including citizens and organizations of the private and social sectors to the public policy cycle. They are platforms for experimentation in the public sector ([Criado et al., 2020a](#); [McGann et al., 2018](#); [Ruijter and Meijer, 2019](#)), meaning that there is room for flexibility, errors and creativity, which seems important during an unprecedented crisis as the spread of COVID-19. On the other hand, considering the doubts about the sustainability of these type of initiatives ([Tönurist et al., 2017](#)), the questions about inclusion and social gaps ([Briscoe and Mulligan, 2014](#); [Yuan and Gascó-Hernández, 2016](#)) and the risks of using these initiatives as marketing tools with no substantive changes in public organizations ([Criado et al., 2020a](#)), the analysis of open innovation in the public sector should consider the objectives, processes, legitimacy and outcomes with a critical perspective.

To gauge these elements within the framework of the COVID-19 crisis in Spain, we conducted an analysis based on in-depth exploration of different dimensions, and oriented to assess the performance of collaborative governance processes under a crisis scenario (assessing two open innovation cases in Spain during the lockdown period, from March 14th to June 21st, 2020).

- *Descriptive dimensions of open innovation cases in the public sector.* This group of dimensions cover essential information about our open innovation cases. First, the initial moments of the case (*origins*) are critical to understand the roots and potential institutional legacies emerging at a later stage of the case (Criado *et al.*, 2020a). At the same time, the *funding* scheme also provides key information about the size, scope and leadership of the case but also different options at stake or type of funding (government-controlled, government-enabled or independent) (McGann *et al.*, 2018). The *leading actors* and *coordination* among them delineate another dimension deserving attention to understand the nature of the case, as they could incorporate public organizations (local/municipal, regional/state or national/federal), private sector companies, social civic groups, universities or individuals (Yuan and Gascó-Hernández, 2019). Also, *target audiences* grant information about the orientation of the case to domain experts, semi-professionals, general public or civil society actors (Kollwitz and Dinter, 2019). The *utilization of digital platforms* is another dimension of interest, as open innovation cases can be focused on developing them as an essential part of the case (or the opposite) or just they can be used as an assistant aspect of the case (i.e. improving social communication and dissemination via social media) (Criado *et al.*, 2020a). Finally, other *resources*, apart from monetary funding, might play a direct role in the case if they are fully provided, partially provided or not provided at all (Kollwitz and Dinter, 2019).
- *Analytical dimensions of open innovation cases in the public sector.* Analytical dimensions contain key issues facilitating more in-depth study of open innovation cases in the public sector. They include the *degree of elaboration* of the case, ranging from the basic generation of ideas and broad concepts to finished products and services (Kollwitz and Dinter, 2019). Also, exploring the *type of incentives* is essential to discern either competition or collaboration lead the open innovation process (Kollwitz and Dinter, 2019). Identifying the objectives of the case is another key issue to adequately understand the case, mostly to compare them with the final outputs (Criado *et al.*, 2020a; Acevedo and Dassen, 2016; Mulgan, 2014; Puttick *et al.*, 2014). In addition, attention will be given to identify the governance mechanisms behind the case, mostly working on the extent to which the collaboration achieves (or not) the outlined goals (Yuan and Gascó-Hernández, 2019). Our two final dimensions pinpoint the most sensitive issues regarding to the democratic implications of open innovation projects in the public sector. In the first case, *democratic accountability* suggests whether the initiatives are legal and respond to authorities requirements (vertical accountability) or respond to partners and stakeholders (horizontal accountability) (Yuan and Gascó-Hernández, 2019). In the second case, *procedural legitimacy* refers to the extent these initiatives include procedural rationality (or the extent to which decisions are based on technically and administratively sound data, analysis and planning), procedural justice (the extent to which stakeholders perceive collaboration decisions and activities to be fair and transparent) and operational control (the extent to which collaboration uses requirements, budgets and schedules to oversee projects and activities) (Yuan and Gascó-Hernández, 2019).

3. Research methods

The main purpose of this study was to analyze the key features of collaborative governance processes guiding open innovation initiatives and how these cases generate public value to their communities. Following our theoretical approach, two research questions guided this study:

- RQ1.* What are the key features of collaborative governance processes that guided open innovation initiatives in the Spanish public sector during the COVID-19 crises?
- RQ2.* How open public innovation cases generated public value to the society during the COVID-19 crises in Spain?

To understand the dimensions of our study and answer the research questions, we selected two cases (open innovation initiatives in the public sector during the COVID-19 crisis in Spain), namely, *Frena la Curva* (FtC), a digital meta-lab ecosystem originated by the innovation lab of the Regional Government of Aragon (in collaboration with other governments and public administrations, private companies, non-profit and social organizations and activists) and *Vence al Virus* (FtV), a civic hackathon supported by the regional government of the Community of Madrid (with support of 12 public and private universities and collaboration with private companies and other social and civic organizations). Both cases emerged during the COVID-19 lockdown and deserved extensive coverage in Spanish (and Latin American) media. On the other hand, given the narrative of collaboration, explicitly stated by the main organizers, these two cases represented an excellent opportunity to better understand the interplay between public innovation and collaborative governance, as well as the real outcomes beyond the political and mediatic discourse during the crisis.

Methodologically, this article is based on a case study research strategy (Eisenhardt, 1989; Yin, 2004). This investigation used qualitative content analysis and semi-structured interviews to gather data and information about our case studies. First, we conducted a documentary and content analysis. Particularly, we reviewed official information published in the initiatives' websites, official documents and media outlets. This approach provided basic qualitative data to nurture our analysis of the descriptive dimensions, linked to the main characteristics and objectives of our open public innovation cases.

The utilization of semi-structured interviews facilitated the assessment of the main actors leading both cases. This second part of the research process entailed gathering data from policy entrepreneurs, both in public and private participating organizations (Creswell, 2009). Semi-structured interviewees were selected counting on the following assumptions, namely, our research design was based on two parallel case studies; open public innovation is an emergent and complex phenomenon requiring qualitative methods to ensure the quality of the analysis; and the data collection process stood out (mostly) under a situation of crisis with limited access to information and empirical data. Also, our study used an exploratory strategy to overcome the COVID-19 crisis limitations, prioritizing the collection of data and information about both cases.

The process of semi-structured interviews extended during the post-confinement stage. First, the procedure to select our interviewees was based on the chain sampling technique (Guest *et al.*, 2006): our initial interviewees endorsed other actors, generating a snowball effect. Despite we had a clear knowledge about the political leaders and private and social entrepreneurs in both cases, this technique was appropriate to confirm from inside our assumptions about the ideation and implementation in both contexts. Totally, we developed 13 interviews (4 in one case, 7 in the other and 2 for both cases), using video-calls via Zoom,

in some cases lasting more than one complete hour. The interviews targeted different types of actors, namely, public officials and managers and private company leaders and social innovation entrepreneurs. The questionnaires were designed following the descriptive and analytical dimensions explained in previous sections. The interviews were recorded in Spanish and manually transcribed and coded by the authors.

4. Results

In this section, we present the results of the study. The data collected during the semi-structured interviews were interpreted according to the dimensions described in the theoretical and analytical framework. In the first subsection, we present briefly the descriptive dimensions of both initiatives. In the second subsection, we show the first three dimensions, namely, the degree of elaboration, incentives and objectives. In the third subsection, we display the characteristics of governance and collaboration between actors, and the challenges for the accountability processes. In the fourth subsection, we explain the procedural legitimacy of these initiatives, considering the COVID-19 crisis context.

4.1 *Descriptive dimensions of frena la curva (flattening the curve) and vence al virus (fight the virus)*

Our first part of the analysis presents the most visible dimensions of the study. Regarding to the *origin*, both initiatives were launched during the first weeks of the lockdown. The design of *Frena la Curva* (FtC) started one day before the alarm declaration in Spain (Saturday, March 13th). This fact has been highlighted by some interviewees (Interviews 1 and 11) as one of the main advantages of this initiative, as it allowed offering an agile and rapid response to the crisis. Despite the case of *Vence al Virus* (FtV) was launched some days later, this project inception still appeared during the first weeks, gaining the impulse that was infused during the initial moments of the confinement.

In terms of the *funding* and *leading actors*, both projects received resources from public authorities. In the case of FtC, the Regional Government of Aragon provided human and economic resources but also other organizations contributed with their own resources to implement the collaborative platform. On the other hand, FtV was organized by the Ministry of Science, Universities and Innovation of the Regional Government of Madrid and the resources were provided by this institution. Other organizations collaborated with the initiative, but the coordination and monitoring were the sole responsibility of this subnational government.

Both initiatives showed remarkable disparities in the target audiences. In the case of FtC, the initiatives within its framework aimed to address various types of audiences, from the general public to innovation experts. In FtV, despite it was open to the general public, the organizers focused more on experts, professors, college students and people familiarized with the innovation and science ecosystem of Madrid. In both cases, the *resources* provided to the participants were mainly mentors and digital tools.

Finally, due to the limitations enforced by the authorities during the confinement, both initiatives used ICTs to coordinate the logistics, work and implement their activities. In the case of FtC, the use of social media was predominant to engage new actors in the collaborative structure (Interview 11). In both cases, all the organizations in the collaborative structure participated in meetings and conducted the decision-making processes by digital means. The participants from the general public also collaborated with the initiatives online, by social media, instant messaging services and digital platforms.

4.2 Objectives and degree of citizen's participation

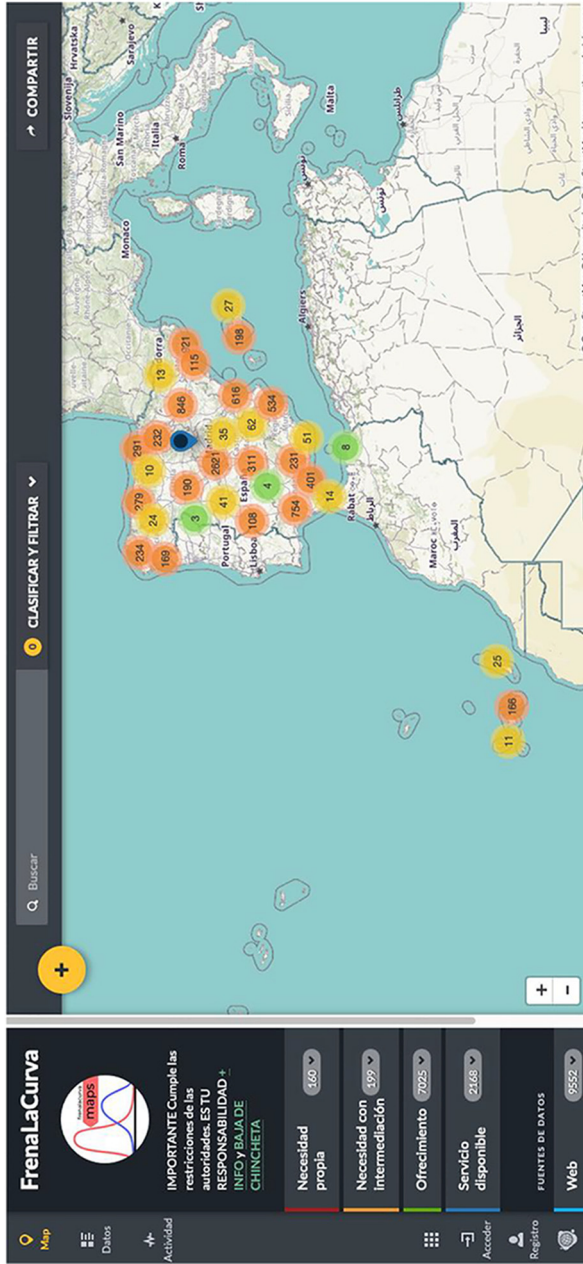
Both FtC and FtV expected to collect ideas about urgent issues from citizens, to transform them into solutions during the COVID-19 crisis. In the case of FtC, the initiative started launching a digital guide of citizen's ideas. There was a wide range of proposals, from online concerts and activities for children to networks in neighborhoods helping elderly people with basics (Interviews 1, 2 and 11). This first stage consisted in a website (frenalacurva.com), including a forum to exchange among the users.

Then, the leaders of the case decided to create a digital map to connect the needs and offerings of help during the confinement. *Kaleidos*, a private sector company, led the implementation of the map, as an adaptation of the Kenyan open source application *Ushahidi* (www.ushahidi.com). The participants could put a pin or post in one of these four categories, namely, offerings, available services, own demands and demands with intermediation (for people with low connectivity) (Figure 1). As of July 20, 2020, the map registered 9,551 pins in total, with more than 7,000 offerings pins. Regarding needs, they counted 199 demands with intermediation and 160 own demands (Figure 2). In this case, the primary objective was not to create solutions, but to build a network of aid through the collaboration among all kinds of actors, from individual citizens to social organizations, associations and private companies.

The hackathon FtV received 750 projects from citizens in three areas, namely, health, community-building and employment and business. From this initial group, 150 teams provided final proposals and 20 were selected as finalists. Some of these projects had been already developed or disseminated through media. However, the main idea was not collecting unpublished projects and foster the competition, but gathering ideas to solve complex problems and promote participation, co-production and collaboration (Interviews 8 and 9).

Another aspect is the implementation of projects suggested by contributing citizens. In the case of FtV, the selected 20 initiatives are still followed up by the public Knowledge Foundation madrid+d, a regional government agency to promote science, technology and innovation. Hence, 20 teams received consultancy services, training and support to further develop their proposals. It is expected that some of them will be implemented by the regional government, and others will receive support from other (public, private or social) institutions (Interview 12). In the case of FtC, two projects presented in *Desafios comunes* (common challenges) were implemented by LAAAB, the innovation lab from the Regional Government of Aragon, with collaboration across the private sector, public sector, individual volunteers and universities. One of them is *Ventanas que unen* (connecting windows), through which elderly residences received 566 tablets with an internet connection. The other is *Libros que Unen* (connecting books), an initiative to adapt 7 books and deliver 12,000 copies to children from 6 to 12 years old with low connectivity.

In the case of the other initiative in FtC, *Laboratorios ciudadanos distribuidos* (distributed citizen laboratories), the implementation process revealed much less attention. One of the interviewees (Interview 2) from the social participation sector, with a leading role and deep knowledge of the case, claimed that even both initiatives (distributed citizen laboratories and common challenges) had their specific objectives, they could also be seen as duplicated efforts. Other interviewees (Interviews 1 and 11) stated that the first laboratories were useful to define better the call for *Desafios comunes* (common challenges). At the heart of the structure of FtC, 63 multidisciplinary teams emerged with more than 1,000 activists participating in co-creation processes. As one of the interviewees stated,



Source: Image available in *Frena la Curva* website (August 15th, 2020)

Figure 1. Categories in Frena la Curva Maps

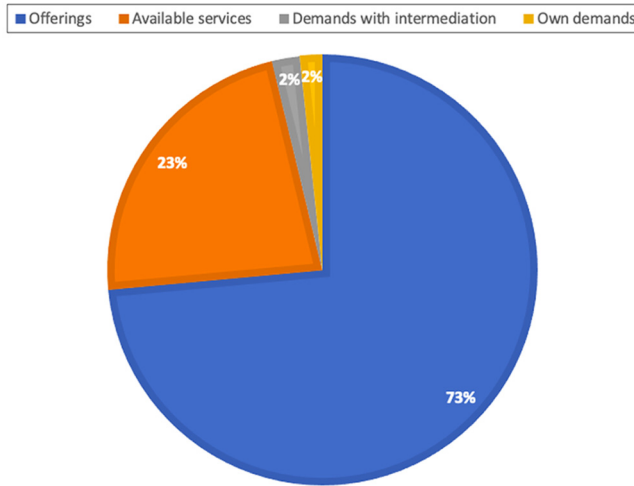


Figure 2.
Pins in Frena la Curva maps, in percentages

Source: own elaboration with data available on the website of *Frena la Curva* (July 20, 2020)

[...] the main objective was to give opportunities and tools for people who wanted to help and offer them a complementary activity to the public services. We wanted to see how to channel the citizen's energy (Interview 11).

4.3 Governance and accountability

Both FtC and FtV aimed at promoting the collaboration between different actors to create solutions for common societal challenges. As some interviewees (Interviews 1 and 7) explained, the involved public administrations were struggling to provide a comprehensive response to the COVID-19 crisis, mostly during the first stage of the lockdown, and they felt unable to deliver by themselves.

Despite both initiatives were promoted initially by public sector organizations, mostly under the umbrella of public managers' personal leadership in departments of innovation, interactions between involved actors and *governance* dynamics were completely different. From the beginning, FtC gathered agents from the public sector, the private sector and activists in a personal capacity. The participant organizations completed a list of 68 collaborators entities. From an early stage, some of these actors decided to build a governance structure specially focused on the initiative. The coordination group comprised 20 members, representing the different types of organizations and actors. During the growth process of the initiative and the emergence of new projects, some of these members created subgroups to coordinate the logistics for each activity. As several interviewees stated (Interviews 1–5, 10 and 11), the decision-making process was open to the participants and the institutions offered their specific support when required.

Regarding to the notion of *accountability*, some interviewees stated that each organization held accountable for their participation. One of them suggested (Interview 1) that participants offered their resources voluntarily, from work time to economic resources. The structure did not have any mechanism to build a common budget, which would demand a specific accountability process. Others explained (Interview 4) that there was a process of

social and horizontal accountability: all the activities' details and decisions were shared among the collaborators in real-time, and a great part of this information was published on the website. Other interviewees (Interview 6) said that this type of projects need new forms of accountability, adapted to the nature of open innovation processes and collaborative initiatives.

In the case of FtV, the responsibility for the implementation was held by the regional Ministry of Science, Universities and Innovation of the Autonomous Community of Madrid. Some interviewees explained (Interviews 7–9) that there were meetings between other actors from the ecosystem of innovation to discuss the details of the project and coordinate the collaboration. This case gained support from public organizations and private companies. Also, 12 universities of the region helped to disseminate the information about the initiative.

4.4 Procedural legitimacy during a time of crisis

Several interviewees from both cases (Interviews 1, 2, 5, 7–10) highlighted the agility and rapidity to decide and act according to the importance of the COVID-19 crisis. On the one hand, the agility helped them to offer initiatives promptly, considering the lockdown and the collective willingness to participate in the creation of solutions to emerging societal problems. However, the lack of time, energy, resources and planning also influenced the decision-making process (Interview 9).

Despite this issue remained at stake, all the interviewees took a positive view regarding the collaboration structure in both cases, and the experience encouraged them to reflect on the future. In the case of FtC, the creation of the *Colaboratorio* (Collaboratory) helped to boost the debates about the challenges and future of open public innovation itself. One of the interviewees (Interview 6) said that the main concern is to lose the opportunity to consolidate the ecosystem of innovation in Spain in the long term. In the case of FtV, the experience inspired the creation of the *Plataforma de Innovación Abierta* (open innovation platform), which is in process of design and it aims to promote experimentation and innovation through a collaborative perspective. Therefore, procedural legitimacy has emerged in both cases as a prospective exercise focused on the sustainability of open innovation processes in the public sector. Table 1 shows synthetically the analytical dimensions assessed in both cases.

5. Discussion

In this section, we highlight the main contributions of this article. Despite their differences, both *Frena la Curva* (FtC) and *Vence al Virus* (FtV) proved the potential and limitations of public innovation and collaborative governance to cope with an unprecedented crisis such as the COVID-19. The special features of this emergency, including the long period of confinement, posed challenges and also opportunities to develop these initiatives: as several interviewees have stated, these projects helped to channel the civic energy to co-produce solutions in collaboration with a wide range of actors, mostly during a time of hard confinement at homes and out of offices.

In line with our first research question (RQ1. *what are the key features of collaborative governance processes that guided open innovation initiatives in the Spanish public sector during the COVID-19 crises?*), data gathered for this study allow us to identify the key features of collaborative governance that guided open innovation initiatives in the Spanish public sector during the COVID-19 crisis. First, the use of technology was essential to implement both initiatives, especially considering the limitations imposed by the lockdowns of the population. The use of instant messaging services, videoconference apps and other technological tools was key to organize the activities. It was also important to launch the

Dimension	Flattening the curve	Fight the virus
Degree of elaboration	<ul style="list-style-type: none"> –First stage of frenalacurva.com: ideas and broad concepts. –Map: no elaboration of ideas, but collaboration and network–building. –Distributed citizen laboratories: ideas and broad concepts and conceptual and functional solutions –Common challenges: conceptual and functional solutions 	Conceptual and functional solutions
Incentives Objectives	Collaboration <ul style="list-style-type: none"> –Creating specific solutions –Engaging citizens, non–profits and companies 	Collaboration <ul style="list-style-type: none"> –Creating specific solutions –Engaging citizens, non–profits and companies
Governance	<ul style="list-style-type: none"> –Great extent of collaboration between public sector, private sector, civic society and professionals in the organization and implementation –Costs of collaboration shared among stakeholders 	<ul style="list-style-type: none"> –The organization was held by the public sector. Specific collaboration with private sector, universities and social organizations in different stages of the implementation. –Costs covered by public sector
Democratic accountability	<ul style="list-style-type: none"> –The initiatives were legal and respond to authorizers (vertical accountability) –The initiatives respond to partners and stakeholders (horizontal accountability) –The majority of the results were shared in media, social media and websites 	<ul style="list-style-type: none"> –The initiative was legal and responds to authorizers (vertical accountability) –The initiative responds to partners and stakeholders (horizontal accountability) –Some of the data was shared in official website, media and social media
Procedural legitimacy	<ul style="list-style-type: none"> –Procedural rationality: the decisions were made rapidly with minimum time to plan. Some data were used to guide the decision-making processes –Procedural justice: collaboration was perceived as fair, whilst there was a logic of power among stakeholders –Operational control: there were structures to decide and communicate in a rapid way. Minimum time to schedule, budgeting and planning 	<ul style="list-style-type: none"> –Procedural rationality: the decisions were made rapidly with minimum time to plan. There were some time devoted to follow the administrative procedures before the implementation –Procedural justice: collaboration was perceived as fair, whilst some considered the need of more organization between the stakeholders –Operational control: there were structures to decide and communicate in a rapid way. Minimum time to schedule, budgeting and planning

Table 1.
Analytical dimensions of *frenala curva* (flattening the curve) and *vence al virus* (fight the virus)

Source: Own elaboration with data gathered in interviews and official documents

initiatives themselves: both FtC and FtV were developed in the digital space, with the use of webpages, digital platforms and social media.

Second, the diversity of collaborators made possible the assumption of different perspectives enriching both experiences. In the case of FtC, the participation of social activists and professionals in their personal capacity helped to invigorate the initiative and fostered the creation of different groups with their own activities, all within the framework of the core project. Whilst this route encompassed a positive factor for the collaborative governance process, it also entailed some challenges, namely, the distribution of power was not equal and public sector organizations preserved the major responsibility and the coordination role. Some questions arise regarding these limitations: as the innovation

processes aim to foster open experimentation (Tönurist *et al.*, 2017), who should determine the limits and to what extent? This would be also the case of FtV, which was coordinated mainly by the public sector, with a very limited role of other private or third sector actors.

Third, the personal leadership of public officials made the design and implementation of both initiatives became a reality. However, it should be noted that both are public leaders of innovation departments in the public sector, meaning that they had the institutional support and the expertise required to launch these initiatives (Borins, 2000). Some interviewees claimed that, despite the fact that the personal drive of these leaders was key to implement the projects and gather support from different types of actors, both internal and external to the public environment, also some challenges emerged. In line with the one explained previously: how to capitalize these personal features and, at the same time, how to guarantee the fair distribution of power and the collaborative nature of open innovation initiatives in the public sector? These are open questions in open public innovation processes.

Regarding the second research question (*RQ2. how open public innovation cases generated public value to the society during the COVID-19 crises in Spain?*), our study showed how these two cases generated public value to the society during the COVID-19 crisis in Spain, mostly regarding to civic participation and collaboration processes. According to previous research about hackathons, this study has confirmed that *public value lies in the process of engaging external actors to initiate innovation processes rather than in the accomplishment of final innovation results* (Yuan and Gascó-Hernández, 2019, pp. 15). In the case of FtC, the objective was, precisely, enhance the participation of different types of actors through a range of activities and initiatives. Some of the initiatives (distributed citizen labs and common challenges) were expected to produce solutions to certain problems posed by the crisis, and some of them were implemented by the public sector in collaboration with other actors (i.e. connecting windows and connecting books projects). However, the prime goal remained gathering social and individual efforts and channel civic energy and the willingness to help during an emergency crisis.

Despite the impact of this open innovation case, doubts remain regarding the sustainability of civic participation and collaboration with public sector organizations with the same intensity in the medium and long term. In fact, the crisis context and the confinement not only entailed the availability of time for participating in these types of initiatives but also helped to highlight common values among the citizens and the organizations collaborating. Once the pandemic is over, it would be challenging to maintain the same energy and willingness. However, the experience of FtC demonstrated that it is possible to create a 4 P (Shin, 2019; Gascó-Hernández, 2017) if the objectives and common goals are clear. In the case of the hackathon FtV, the underlying objective implied not only to promote public participation and “collective intelligence” but also to produce innovative ideas for the crisis and, later on, lay the foundations for an open innovation ecosystem in the long term. In this case, it was made clearer the focus on tangible results: 20 teams are receiving support to develop their ideas and projects to the next level and, in some cases, they are expected to be implemented in public sector organizations, whereas at this stage, it is not possible to know whether this promise will be fulfilled. On the other hand, this open innovation experience during the crisis will help to advance in the objectives of the regional Ministry of Science, Universities and Innovation, at a later stage. This process will occur if the collaborative governance process including external actors is redesigned to promote more in-depth involvement and focused purposes, according to some interviewees.

In terms of accountability, each participating organization was self-responsible for its involvement in these collaborative processes, mostly because they did not share a common budget. Despite these economic issues, it would be necessary to design new accountability

strategies, taking into consideration the special features of these open innovation cases. As this study has pointed out, traditional accountability systems seem not to fit well with open innovation projects including different types of collaborators. At the same time, it will be important to create a new control and monitoring paths, considering that public resources will be used to support them. Thus, these cases contributed to public value creation by fostering conversation, debate and mutual learning among all involved parties and individuals, and then promoting social accountability and public openness. This aspect has been addressed as a key issue in the local context of smart cities (Neumann *et al.*, 2019).

6. Conclusion, limitations and future research

After the study of the collaborative platform *Frena la Curva* FtC and the hackathon *Vence al Virus* FtV, we found that citizens involvement, deliberation practices or network building are somehow more relevant than (outputs) physical items or implemented results. At the same time, this study has identified the potential of these cases to generate public value as they were mostly oriented to characterize societal problems of (and with) citizens during the COVID-19 crisis and for the post-crisis stage. Besides, they contributed (at some extent) to improve democratic accountability or procedural legitimacy in the political system, mostly during the first moments of implementation of these open innovation initiatives. At the same time, we have identified problems to maintain these types of processes when the experiences grow and involve an increasing number of actors and organizations from different contexts.

This article is not exempt of some limitations. We focused our attention on the policy entrepreneurs of open innovation initiatives. Although we diversified our contacts and the data collection in the fieldwork to avoid social biases, the results of the interviews might reflect more the positive outcomes. Future studies should include other not successful open innovation cases and the consideration of citizens as external informants. Technological platforms also played a central role during the first stages of the lockdown in Spain, and this was complemented with organizational and personal energy and time to participate and collaborate. Therefore, the scarcity of these resources in “normal times” need to be addressed to understand the amount of institutional and individual capacity that should be invested to consolidate these initiatives. Despite our case studies took place during the COVID-19 crisis and they planned actions to maintain their existence, post-crisis analysis will be needed to assess the impact of these open innovation cases in collaborative governance structures.

Future research avenues about open innovation and collaborative governance in the public sector arise in the near future. Here, international organizations, governments and public officials in different international contexts are promoting experiences to foster collective action and citizens participation using disruptive technologies (NESTA, 2020), mostly artificial intelligence and algorithms. Also, open innovation scholars in the public sector should find out more about the differences with similar processes in the private sector, identifying distinctive features in public settings derived from the singularity of political contexts and boundaries. Therefore, additional research on the connection between open innovation in the public sector and accountability or democratic legitimacy and public value is another source of future work in this field. Particularly, these dimensions will be critical to understand the potential sustainability of open innovation strategies in the public sector, as public value generation is not only a rhetorical instrument but also a carrier of good governance. Finally, the role of citizens as coproducers will also deserve future investigation in a comparative perspective. Here, diverse social, cultural or political traditions will need to be addressed to assess the meanings of co-production in different contexts. All in all, open innovation in the public sector research after COVID-19 will

continue as an emerging research trend with the potential to attract scholarly investigation from different disciplines, methodological traditions and regional contexts.

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Further readings

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About the authors

J. Ignacio Criado (PhD) is an Associate Professor/Senior Lecturer in Political Science and Public Administration, Department of Political Science and International Relations, at Universidad Autónoma de Madrid. His articles have been published in leading journals, including *Government Information Quarterly*, *Social Science Computer Review*, *First Monday*, *Information Polity*, *Local Government Studies*, *International Journal of Public Administration* or *International Journal of Public Sector Management*, etc. His research interests include open government and policies for transparency, participation and public innovation; algorithmic governance and artificial intelligence in the public sector; and social media and big data in government. J. Ignacio Criado is the corresponding author and can be contacted at: ignacio.criado@uam.es

Ariana Guevara-Gómez is a PhD candidate in the Department of Political Science and International Relations, at Universidad Autónoma de Madrid. She holds a BSc in Social Communication, as well as a Master's Degree in Governance and Human Rights and a Master's Degree in Democracy and Government. Her research interests include public innovation, gender and public administration and the use of ICTs in the public sector.