Open data co-creation, a path for better public services

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Abstract

Stakeholders of the quadruple helix have new expectations about how data and public services should act in our digital world paradigm. Governments should understand that value and release open data accordingly and help stakeholders shape new and improved data-driven public services. OGD-driven co-creation can then help shape better public services closer to user needs, with its horizontal nature. A combination of societal and technical solutions is needed to achieve the best result. The technical solution should come from expanding currently used tools. Little implementation has been seen, with more theoretical solutions proposed so far.

Keywords

co-creation, open data, public services

1. Introduction

More and more raw data than ever is being collected with the development of science and technology [1]. However, data sharing, openness, and availability differ across domains [2, 3]. Open Data (OD) is defined as available as a whole, free of charge, with an open license, and in a machine-readable open format [4]. Opening up these ever-growing number of datasets to the public can unlock its true world-changing potential.

Digitalization has become part of our daily life, with a more than ever connected society. However, there is still a lack of understanding about what does it mean and its implications [5]. Governments have to adapt to this new paradigm and offer digitalized services, that cater the needs of their users. This digitalization is still in the making, rather than a reality [6].

This paper aims to provide an overview of the potential impact of OD and how it can drive co-creation, fostering collaborative efforts between various stakeholders in shaping public services. A literature review will determine which stakeholders are currently included in OD co-creation, and extract relevant factors for improving the current situation.

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2. The path towards Open Data driven co-creation

2.1. Co-creation against co-production

Several definitions of co-creation have been proposed over the years, sometimes intertwining with co-production ideas. Co-creation started in the business environment as a way for customers to take a more active role in developing products and services [7], and can be considered central to generative value creation [8]. It can also be defined as "the involvement of outside, non-typical, stakeholders in the initiation, design, implementation and evaluation of public services" [9, 10].

The most relevant definition, as it makes a distinction over co-production and expands on previous definitions, is that co-creation is a process that involves multi-actor collaboration, where both providers and users play an active role in shaping services, defining common problems, and designing and implementing new or better public solutions [11]. In this definition, co-creation differs from co-production in that actors are ideally considered equal, and horizontal relations are established between them [11]. Co-production establishes a vertical hierarchy instead, with actors not considered equal. Ideas from users can be included in a product or service with co-production, but co-creation can make them completely user-centered.

2.2. Open Government (Data)

Citizens have new expectations and demands for public services with the introduction of digital technologies [6]. Governments have to respond to the new expectations, with digitalization efforts ongoing. Open Government Data (OGD) has to comply with the open data definition previously explained to be considered truly open, by being released free of charge on an open and machine-readable format. On top of that, it has to be released by a government organization and it has to be of non-confidential nature [12]. If it does not comply with this definition, it can be considered government data, or simply data, but not OGD.

Moreover, to be genuinely effective, OGD must be easily accessible and discoverable by users. This is where data portals come into play, by providing a centralized platform for accessing OGD. The publisher should choose the correct data portal and publishing plan to ensure data can be helpful to users [13]. Freeing up data can unlock added value, but the datasets and formats have to be carefully chosen in order to be useful [14]. Machine-readable and reproducible formats and datasets that follow user needs should be chosen.

OGD in the literature is an ongoing topic. Future literature is expected to ensure a sustainable OGD, resulting in creating more value from OD [15].

2.3. Open Government Data & co-creation

Governments must rely on their users to ensure that OGD and public services sustainability is met and value is created from it. OGD-driven co-creation has mostly focused on governments and citizens as stakeholders [12, 16, 17, 18]. For a broader scope, the quadruple helix stakeholders (academia, industry, government, society) [19] should be included. The relevant government body may not be the main driver in the design and implementation of public services [10], but the services should rather be designed, implemented, and evaluated in a co-created way.

Both public and private sectors must contribute to the successful implementation of technology-driven public reforms [20]. Different factors are relevant for the success of OGD-driven co-creation: motivated stakeholders, innovative leaders, proper communication, an existing OGD portal, external funding, and agile development [21].

Several barriers exist when co-creating public services with OGD. The barriers can be split into four categories: data and technology, stakeholders' attitude and culture, organizational aspects, and legal aspects. Every barrier can have an associated driver, providing conditions are met (e.g. lack of OD availability can become a driver when OD is readily available) [22]. Therefore, effective co-creation should address each one of the four categories.

2.4. From Co-creation to Open Data Ecosystems

Ecosystems in the information domain are defined "to be a system of people, practices, values and technologies in a particular local environment" [23]. This local environment has highly connected components, and its stakeholders are mutually interdependent [4, 24].

In traditional OD systems, the data flows one way, from providers to users. In OD ecosystems, meanwhile, data cycles between providers and users [25, 24]. OD Ecosystems (ODEs) need to address these four characteristics to be value-creating and sustainable: to be user-driven, inclusive, circular, and skill-based [24]. Co-creation is a means to achieve this user-driven cycle.

Standardized open tools must be developed to reduce the barrier of entry and ensure a transparent and trustworthy co-creation flow, completing the circularity in the ecosystem. But technology is not enough, and a socio-technical infrastructure [8] should be set up to solve the different barriers in the ecosystem.

Data portals are current platforms where data producers upload their O(G)D to the public. Utilizing these already existing platforms and making them more circular and sustainable to support value-creating has immense potential. McBride et al. [21] cite an existing OGD portal to be one of the factors playing a key role in allowing co-creation to take place. Each of the current data portals and platforms software has some pros and cons, but platforms such as CKAN and DKAN are greatly used for their wide number of features [13]. Data publishers (usually government agencies), however, still alter these software packages to fill their gaps. Co-creation is one of these gaps that should be addressed and incorporated into already existing tools. Tools like GitHub, while not suitable as data portals (as explained with its multiple cons in [13]), do include standardized co-creation tools such as issues and pull requests. Including standardized co-creation mechanisms to CKAN or DKAN may be a technical solution to explore.

Regarding the skill-based characteristic, training stakeholders is important, so their contribution does not depend on best effort [24]. The processes for co-creation must be properly explained, with clear instructions and well-designed technical solutions.

3. Open Data - co-creation in practice

Van Loenen et al. [24] cite five case studies where OD is provided and used, and with a diversity of actors. These cases are geographic, education, agricultural, financial, and legal, and the conclusions are that "none of the systems fully correspond to the ideal situation for value creating and sustainable OD ecosystems".

Experiences show that in critical times, such as during the Covid-19 pandemic, stakeholders can react quickly to the demands and co-create platforms, effectively changing public services. Examples are civic hackathons in Germany, Estonia or Spain [26], and the Spanish collaborative digital platform of "Frena la Curva" [26, 18]. This platform aimed to co-create ideas and broad concepts on how to fight the virus, as well as propose service offerings and network building.

Another example related to the Covid-19 pandemic comes from [27]. Here, several co-created services are presented in three different countries (Estonia, Czechia and Latvia), with different stakeholders and user involvement. The key takeaway from these examples is that "OGD does play an important role in enabling new forms of information dissemination during a crisis" and that continuous government support is critical in maintaining OGD-driven ecosystems over time.

4. Discussion and conclusion

ODEs and co-creation are greatly intertwined. The horizontal nature of co-creation can be a driver toward fairer, more inclusive, and user-based OD systems. Input from the different actors in every part of the process is key to maintaining the sustainability of the system. A co-creation solution is preferred to co-production as actors are considered equal. This horizontal relation can help create services truly centered in its users, rather than just including some of their ideas.

Both societal and technological aspects have to be addressed as part of the solution. A only social or only technical solution can help lower the barriers, but will a true change will happen only when both are combined. The legal framework should also allow for co-creation efforts to be successful and not act as a barrier.

A gap is found in the implementation of the processes and technical solutions to the problem, which is still in the early stages of its theoretical framework. The technical solution should start from already-in-use tools such as open data portals, expanding them to allow for co-creation with standardized and properly explained methods, ultimately empowering a great interaction between stakeholders.

On top of that, more efforts need to be made to include non-citizen stakeholders in co-creation processes, as different services may be used primarily by different actors of the quadruple helix. The industry seems to be the actor less included in current efforts.

Current challenges in the social space are how to lower the social barriers to co-creation and keep stakeholders motivated, as well as trust building.

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