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Creating public value with open government data in Latin America

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Research is to see what everybody has seen and think what nobody has thought.

Albert Szent-Gyorgyi

Abstract

The creation of public value through the use of open government data (OGD) is a relevant innovation to enhance collaboration between the public sector and civil society organisations. The Latin American region has seen an increased interest in the development of services based on this data. This research aims to understand how OGD is used for creating public value in Latin America. For this purpose, the author has developed and tested an integrative model drawing from theories on open data ecosystems, open data intermediaries and public value creation using open government data. Additionally, this study had identified what kind of value is created by reusing open government data, and what are the critical influencing factors in OGD-based projects. Based on this, it is possible to understand which factors are pertinent to take into account when developing OGD-based public services and how they affect their development. The model has been tested by combining document analysis and an exploratory multiple case study from four organisations that have developed services using OGD in four Latin American countries: Colombia, Guatemala, Mexico and Uruguay. This testing is achieved by using within-case analysis, cross-case synthesis and logic model techniques. The results of this study are the following: 1) the existence of open government and open data policies is good, but not enough when also exist organisational and legislative barriers, 2) OGD infrastructure varies, but the emphasis should be put in collaboration, 3) the role of OGD community is vital for networking and partnership building, 4) OGD capabilities must be interdisciplinary and in-house, and 5) sustainability is still a great challenge, together with the communications strategy. The main conclusion is that despite the many efforts that exist in Latin America from many OGD actors, there are still significant challenges to overcome for seizing the potential of the public sector information use.

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Abbreviations

ACLED	Armed Conflict Location and Event Data Project
AGESIC	Agency for Electronic Government and the Information and Knowledge Society
ANEP	National Administration of Public Education
API	Application Programming Interface
CBPP	Common-Based Peer Production
CCP	Content-Context-Process
CEIP	Initial and Primary Education Council
CES	Secondary Educational Council
CETP	Technical Education Council
CFE	Education Training Council
CICIG	International Commission Against Impunity in Guatemala
CSO	Civil Society Organisation
DATA	Open Data, Transparency and Access to Information
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
FLACSO	Latin American Faculty of Social Sciences
GPAT	Presidential Commission for Open Public Management and Transparency
GPSDD	Global Partnership on Sustainable Development Data
IADB	Inter-American Development Bank
ICT	Information and Communication Technology
IDE	Spatial Data Infrastructure
ILDA	Latin American Open Data Initiative
INACIF	National Institute of Forensic Sciences
INE	National Statistics Institute
IODC	International Open Data Charter
IT	Information Technology
MAAGTICSI	General Application Manual for ICT
MINTIC	Ministry of Information and Communication Technology
NAICM	New Mexico City Airport
NED	National Endowment for Democracy
NGO	Non-governmental Organisation
OAS	Organisation of American States
OECD	Organisation for Economic Co-operation and Development
OGD	Open Government Data
OGP	Open Government Partnership
OSF	Open Society Foundations
PNC	National Civil Police
PODER	Project on Organising, Development, Education, and Research
POT	Portal of Transparency Obligations
QEQW	Quién Es Quién Wiki
SENACYT	National Secretariat for Science, Technology and Innovation
UDELAR	University of the Republic
UK	United Kingdom
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
US	United States of America
UTEC	University of Technology

Introduction

Across the world, there is a demand from citizens on plenty of information-related problems: information gaps across industries, traditional and intuitive decision-making approaches from governments, corruption scandals, public policies based on unknown citizen necessities, and still a long list of issues that are in need to be solved. That is why citizens and civil society organisations around the world are demanding more information, participation and collaboration spaces, higher efficiency and enhanced delivery of services.

Governments around the world refer to laws on public information access as part of the rationale for releasing public sector information (Scrollini, 2015); however, its release is not just to legally-comply with laws and decrees, but also convenient because of the value it could create. Governments have an unprecedented opportunity to generate public value through the opening and use of public data (IADB, 2018), boosting the sharing of public sector information in an open format, and allowing this information to be available for citizens, academia, start-ups, non-profit organisations and companies.

In the last decade, open data has been an essential technology around the world. Specifically, the benefits of releasing public information are manifold: it increases the level of trust that citizens have in government, it helps governments to run more efficiently, and it enhances the way services are delivered. That is why citizens are standing up and demanding greater transparency and accountability from their governments, and governments are finally listening to this claim (Opendatasoft, 2017). Furthermore, when governments open their data, citizens can see how their taxes are spent and, consequently, they become more engaged in public administration issues. They see what is within their best interest to take action to make sure that they receive the services they need.

The release of open government data (OGD from now on) theoretically allows the use of public information for the creation of value in many different ways: by stimulating transparency, citizen participation, innovation and economic growth (Zuiderwijk et al., 2014), by creating new products and services (or improving their delivery and quality), or by enhancing productive processes to achieve gains in efficiency and productivity (Bonina, 2017).

Latin America has demonstrated being a highly active region with the open data agenda since several countries in the region already have threefold: regulations about open data, implemented open data portals, legislation on personal data, and overall it is a pioneer region in the implementation of innovative initiatives (IADB, 2018).

Although the release of OGD is an essential step from the government side, the publication of data itself does not add any value, but it is only through some sort of transformative process that OGD generates value (McBride, 2020). In order to create it, some intermediaries with specific characteristics are needed to carry projects forward (Scrollini, 2015). These intermediaries are organisations or citizens that develop OGD-based public services.

This thesis is built upon the premise that in order to fully grasp the opportunities offered by open government data, a more detailed understanding of its workings is necessary (Verhulst and Young, 2016). However, the literature on OGD-based innovation does not explicitly address how OGD plays a catalytic role in the creation of new public services, or none has focused specifically in the relationship between OGD-based public services and public value creation.

Furthermore, the way in how the government and the intermediaries participate in the public value creation process and what are the relevant factors that must take into account is also still little explored in literature, given that there is no systematic and robust evidence about the value of using open government data (IADB, 2018). The main reason for the lack of research in public value creation through the use of OGD could be attached to the relative newness of the concept, and the lack of applications of OGD-based public services in Latin America.

The OGD environment has the potential of creating value; however, it is still a research gap in the academic circle to which extent, how is the value created, what are the actors that collaborate in the process of value creation with OGD, and what aspects do impact on it. Moreover, the mechanisms through which open government data can scale and harness developmental goals have not been established in Latin American countries (Bonina, 2017).

This master thesis seeks to remedy the academical shortcoming and research gap by answering the following research question:

How is OGD used to create public value in Latin America?

In order to answer the research question, the proposed research objectives are the following ones:

1. To build a theoretical framework for understanding public value creation using OGD.

2. To identify and describe the main characteristics of OGD-based public value creation in four Latin American country-cases.

3. To identify and analyse critical factors (enablers and challenges) that influence the development of OGD-based public services in Latin America.

The present thesis has been divided into four parts in order to achieve the previously mentioned goals. The first chapter describes an overview of the paradigms of open governance and open government since the open government data phenomenon occurs inside it. Similar to many technical terms, OGD and value creation are also dynamic and often discussed concepts so that it will be followed by a discussion of the different terms around public data resources and value creation with OGD in Latin America.

The second chapter describes the analytical framework that has been followed in order to answer the research question. Thus, the concepts and variables to take into account in open data ecosystems, open data actors and public value creation using OGD will be discussed with a twofold aim: first, to identify and describe the main characteristics of OGD-based public value creation, and second, to develop a theoretical framework to understand public value creation using OGD. This discussion will allow the construction of a theoretical framework of OGD-based public value creation. Later in the third chapter, the methodology will be introduced, describing the research design, the justification of the methods and the description of how data has been collected and analysed.

The fourth part includes the results of the empirical work applied within the four case studies in order to identify the main characteristics of the projects. Then, in the fifth chapter, an analysis of patterns and key factors that influence the development of OGD-based projects is introduced by using cross-case synthesis and reformulating the logic model presented at the end of Chapter 3.

The researcher has conducted multiple case study research on open government data projects in Latin America. The case studies were selected for their representativeness inside the four selected countries, and they were built from both: by reviewing secondary sources and publications about the topic in the region, and by conducting several interviews with important stakeholders in Latin America.

Finally, the last chapter discusses what this research has identified as the most critical takeaways, theoretical contributions, and practical implications. At the end of this study, conclusions are presented, together with the limitations of this research and the guidelines for further research.

1 Research Background

In order to analyse the way OGD is used for public value creation in Latin America, it is of paramount importance to understand many diverse paradigms and concepts that are interrelated and often confused in this field. For the purpose of this research, it is essential to present the definitions that are acknowledged and synthesise them in order to have a common concept of the discussed terms. For that reason, the definitions of open governance and open government have been presented in this present chapter.

Moreover, the kind of information that is released from the public sector is sometimes confused with the term 'open data', leaving still the gap of defining it and making a differentiation between all the related terms: public sector information, open data and open government data; which, like many technological terms, all these concepts are also dynamic and frequently discussed.

The creation of value has also been highly debated since it triggers the automatic question "value to whom?"; moreover, there are also discussions around where do value creation exactly lies, whether in the process or as an outcome; hence, it will be further discussed later, especially locating the issue in the Latin American context and describing the characteristics that this specific ecosystem offers to the OGD public value creation.

This chapter introduces a research background on the formerly mentioned concepts and the definition of to what extent OGD and public value creation are understood for the purpose of this research. Moreover, it finishes describing the public value creation with OGD in Latin America.

1.1 Open Governance and Open Government

Open Knowledge Foundation defines 'open knowledge' as any content, information or data that people are free to use, reuse and redistribute — without any legal, technological or social restriction. The three key features of openness are availability and access, reuse and redistribution, and universal participation (Open Knowledge Foundation, n.d.).

These three features are the pillar of the open paradigm, based on the value of information and how its use can achieve forms of participation, allowing new forms of collaboration to a great extent. In 2011, several governments declared their commitment to these value in order to (1) increase the availability of information about governmental activities, (2) to support civic participation among companies, organisations and academia, and (3) to implement the highest standards of professional integrity throughout our administrations; by signing the Open Government Declaration (Open Government Partnership, 2011).

By following this open government paradigm, governments demonstrate their will for empowering individually and collectively all the stakeholders that play a role in the constitution of society, and for enabling the sharing of resources between all stakeholders, contributing in the long run to the creation of public services that generate public value (European Commission, 2013). Consequently, open government co-innovates with everyone (companies, civic organisations, NGO and citizens), shares resources that were previously closely guarded, harnessing the power of mass collaboration and becoming a more influential part of the social ecosystem (European Commission, 2013).

However, the open government ideal does not only mean that the government should be transparent and sharing public information but a step further, acting "as an open system that interacts with its environment and actively seeks feedback to improve its work" (Toots et al., 2017, p. 1).

Open government is based on the following three principles: transparency, collaboration and participation; while at the same time relies on three factors: open data, open decisions and open services (European Commission, 2013). Open governance is the paradigm that leads this open transformation, locating Open Government at its heart.

The Open Governance Framework, elaborated by the European Commission and presented in the next figure, tries to explain what principles and factors exist around this concept and what are their relationships among them.

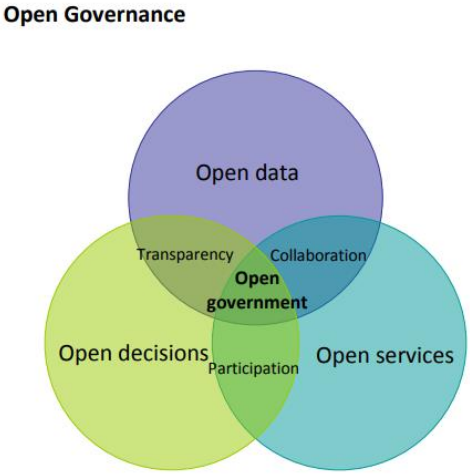

Figure 1 Framework for Open Government (Source: European Commission (2013, p. 3))

The Open Governance Framework allows understanding how the values of transparency, collaboration and participation support the possibility of releasing data in an open format,

but also the participation in the decision-making processes to develop public services. This paradigm "has thus led to the idea that open data should not only be used to inform and serve society but also stimulate the active participation of societal actors in public policymaking and creation of services for the public value" (Toots et al., 2017, p. 1). These are the three stages of open government.

Moreover, Millard (2015) also developed a model of an open governance system, with no significant differences to the previously mentioned framework. Instead of open data, open assets are considered, while instead of open decisions, open engagement is the one taken into account. Moreover, there are minimal differences as considering collaboration is the same as 'co-creation and innovation', and adding accountability to the transparency principle, where the former could be considered as an intrinsic part of the later one (Millard, 2015). The discussed model can be seen in the next figure.

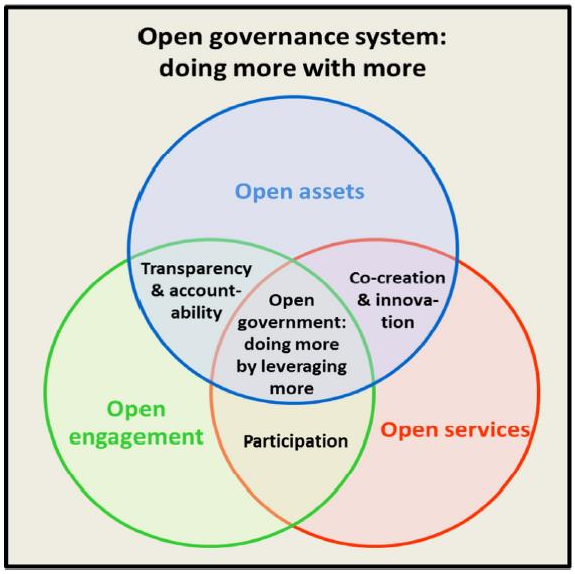

Figure 2 The Open Governance System (Source: Millard (2015, p. 5))

The open government in both models is embedded in broader open governance framework, encompassing all of the social actors; in this context, the public sector needs to adapt its role and relationships with those actors (Millard, 2015). This open governance system serves as an intermediary in the relationships among all social actors, while at the same time, it leverages and coordinates unrealised and untapped assets and resources (Millard, 2015). Open governance is understood as the kind of governance that puts into practice the principles of the three stages of open government (transparency, participation and collaboration) while allowing the sharing of assets, processes and execution of services.

1.2 Public Data Resources

The assets shared under an open government framework are mainly data and information; however, there are many different terms and notions when referring to public data resources, while the most commonly used are 'public sector information', 'open data' and 'open government data'. As it was previously mentioned, like many technological terms, all these concepts are also dynamic and often confused between them, leaving still the gap of defining it and making a differentiation between all these related terms.

Since the public sector manages large quantities of data from its citizens, businesses and organisations, the public sector is considered one of the major producers and holders of information (Vetrò et al., 2016), which under the umbrella of openness, it is also considered a key provider of data (Toots et al., 2017). The potential of public sector information is not just for information and disclosure, but it also serves as raw material that can be used to develop new products and services. Given that reusability of public sector information implies representing and exposing data so it can be easily accessed, queried, processed and linked with other data with no restrictions (Vetrò et al., 2016, p. 325, based on Sharon, 2010), many times governments have not the capacity to process this information or to transform it into new services or products.

Thus, whereas public sector institutions are the creators and suppliers of the original material; civic organisations and the private sector frequently play an essential role as intermediaries in the capacity of information processor between the source of information (public body) and end-users (OECD, 2006).

However, sometimes there is a confusion when this public information is open to be available to all citizens, calling it 'open data' many times. In order to make a distinction between both terms, this research proceeds to define what open data is. Open data has been defined and redefined by many organisations for different purposes; those definitions can be visualised in the following table.

Table 1 Open Data definitions

Source	Definition of Open Data
Open definition (Open Definition, n.d.)	"Open data is any content that can be freely used, modified, and shared by anyone for any purpose".
Open Data Barometer (World Wide Web Foundation, n.d.)	"Open data is data which is freely available and shareable online, without charge or any other restrictions".
Open Knowledge Foundation (Open Knowledge Foundation, n.d.)	"Open data are the building blocks of open knowledge. Open knowledge is what open data becomes when it is useful, usable and used".
Open Data Charter (IODC, 2015, p. 1)	"Open data is digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused, and redistributed by anyone, anytime, anywhere".
World Bank (The GovLab, 2014)	"Data is open if it satisfies both conditions below: Technically open: available in a standard, machine-readable format, which means it can be retrieved and meaningfully processed by a computer application Legally open: explicitly licensed in a way that permits commercial and non-commercial use and reuses without restrictions".
The White House, 2013 OMB Memorandum (US Government, 2013)	"Open data refers to publicly available data structured in a way that enables the data to be fully discoverable and usable by end-users".
Data.Gov.UK (The GovLab, 2014)	"Open data is data that is published in an open format, is machine-readable and is published under a license that allows for free reuse".

Source: Own elaboration, based on the sources previously mentioned in the table.

Despite the many open data definitions, they can be condensed as the following: it is "data that is presented in a machine-readable format that can be freely used, reused and redistributed by anyone" (Toots et al., 2017, p. 1), adding that low restrictions should apply to their circulation and reuse, fostering collaboration, creativity and innovation (Hofmokl, 2010). This data must comply with features and principles. The Open Knowledge Foundation states that the key features of openness are threefold (Open Knowledge Foundation, n.d.):

1. Availability and access, meaning that the data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.

2. Reuse and redistribution, meaning that the data must be provided under terms that permit reuse and redistribution, including the intermixing with other datasets. The data must be machine-readable.

3. Universal participation, connoting that everyone must be able to use, reuse and redistribute the resources. Thus, there should be no discrimination against fields of endeavour or persons or groups.

While, the six principles that open data has to comply are the following ones: "(1) open by default, (2) timely and comprehensive, (3) accessible and usable, (4) comparable and interoperable, (5) for improved governance and citizen engagement, and (6) for inclusive development and innovation" (IODC, 2015, p. 2). In a perfect world, the open data available should comply with all these three features and six principles, however not all the called open data fulfils with the previously mentioned requirements to a full extent.

By opening the data, numerous benefits can be enabled or supported. The International Open Data Charter enumerates them (IODC, 2015, p. 1-7):

- It enables governments, citizens, and civil society and private sector organisations to make better-informed decisions.
- It allows user to compare, combine, and follow the connections among different datasets, tracing data across several programs and sectors.
- It can empower governments, citizens, and civil society and private sector organisations to work toward better outcomes for public services in areas such as health, education, public safety, environmental protection, human rights, and natural disasters
- It can contribute to the generation of inclusive economic growth by supporting the creation and strengthening of new markets, enterprises, and jobs.
- It can help improve the flow of information within and among governments and make government decisions and processes more transparent.
- It presents opportunities to provide innovative, evidence-based policy solutions and support economic benefits and social development for all members of society.

Thus, if the public sector is one of the key holders and providers of data, what happens when this data is in an open format in order to enable stakeholders to work with this data to the great goal of creating value and benefiting the society?

1.2.1 Open Government Data (OGD)

The concepts of open data and public sector information show considerable overlap, one where public information is available and free for use. This overlap is shown in Figure 3. The part where public sector information is also open is commonly defined as open government data (OGD).

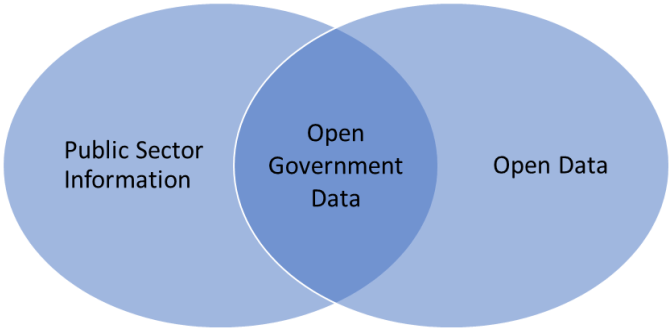

Figure 3 Open Government Data as a subset (Source: Own elaboration, based on European Union (2015))

Open data is often referred to as open government data (OGD), which entails data produced and released by the government in the open format ("Open Government Data" n.d.). However, it is necessary to make a distinction between both terms and, in order to achieve that, a definition of OGD is pertinent: while open data refers to data that is open and provided by any source, OGD directly refers to open data which is created and released by government agencies (McBride, 2017), this way, open government data is a subset of public sector information and open data.

The Open Knowledge Foundation defines open government data as open data produced or commissioned by the government or government-controlled entities. This gathering of information is generally accepted during business as usual activities which do not identify individuals or breach commercial sensitivity (Open Knowledge Foundation, n.d.); this way, privacy and security are enforced.

The Organisation for Economic Co-operation and Development (OECD) defines OGD as a philosophy and a set of policies that promotes transparency, accountability and value creation by making government data available to everyone (OECD, n.d.), but landing the philosophical definition as "the information collected, produced or paid for by the public bodies and made freely available for reuse for any purpose" (European Data Portal, 2018, p. 2). OGD not just involves the data produced by public sector institutions, but also allowing the participation of the government just as a funding provider.

In order to clarify the definition of open government data, it will be synthesised as the following: it is public sector data freely available in a convenient (ideally machine-readable) form, and that complies with the Open Definition – that is it can be freely accessed, used, reused, and redistributed by everyone (Open Knowledge Foundation, n.d.); this data is not mandatorily made available by the government, but also could be made open by other organisations, as long as the information base, or funding comes from

the government, and this sharing of data enables evolved forms of relationships between all the stakeholders: namely information, participation and collaboration.

1.3 Creating Value with OGD

Understanding what public value is and how it is created is relevant for this research. Value could be defined as the production of new goods and services, how outputs are produced, how those are shared across the economy, and how the earnings are reinvested (Mazzucato, 2018, p. 16). However, the definition is a very complex concept which depends on politic and socioeconomic arguments; thus, the conceptualisation of it is not neutral and can lead to a distinction between "productive" or "unproductive" activities, which are rarely the result of scientific measurement (Mazzucato, 2018, p. 23), and many times defined by the monetary outcomes it can be produced (Manyika et al., 2013; Verhulst and Young, 2016; Callinan et al., 2018; IADB, 2018; World Bank, 2019)

Making a distinction between value creation and extraction is also relevant, given that the former leads to "how different types of resources (human, physical and intangible) are established and interact to produce new goods and services", while the latter means "the activities focused on moving around existing resources and outputs, and gaining disproportionately from the ensuing trade" (Mazzucato, 2018, p. 16).

In an economic-based view, governments have been seen as "unproductive, spender and regulatory institutions, rather than value creators; even the term "public value" does not exist in economics" (Mazzucato, 2018, p. 213). As the author of "The Value of Everything", Mariana Mazzucato, highlights: "it is assumed that value is created in the public sector, and at its best, the public sector just facilitates its creation and redistributes it through taxation" (Mazzucato, 2018, p. 213f).

Thus, a definition of public value is needed for the aim of this research. However, it should be mentioned that there is no absolute accepted conception of public value (Alford and Hughes, 2008, Alford and O'Flynn, 2009, Pang et al., 2014), its definition "depends on the needs and desires of the public as well as on social and environmental circumstances with which the public and public managers deal" (Pang et al., 2014, p. 193).

There are two perspectives when discussing public value creation, the institutional and the generative (Pang et al., 2014). The first one highlights that public value is far more multifaceted than private value, which just refers to monetary profits (Pang et al., 2014), including direct tangible outcomes from public services (Alford, 2002), but also comprising intangible values such as trust in government, national pride and fairness

(Moore, 1995, Alford and Hughes, 2008, Alford and O'Flynn, 2009). The second one, the generative perspective, points out that "public managers need to play a key role in discovering what truly amounts to public value, especially in increasingly uncertain, unstable environments" (Pang et al., 2014, p. 193), calling for a more active role from the government, consciously engaging in political discussions and actively participating in discourses among politicians and public administrators, citizens, businesses and non-profit organisations in order to enhance public value (Hui and Hayllar, 2010).

Mazzucato (2018) states that three key characteristics should be considered in value creation and innovation processes: they are cumulative (innovation rarely occurs in isolation), uncertain (most attempts at innovation fail, and many results are unexpected) and collective (it is the result of decades of hard work by different researchers and organisations) (Mazzucato, 2018, p. 180). Open government paradigm fits in here when it is noted that by unlocking information (open government data) and collaboration spaces, it is possible to foresee the potential of the outcomes that could be created.

1.3.1 The public value of OGD

There is no doubt that the use of public sector information when is released as open government data can deliver added public value, meeting a demand coming from all kind of actors, from non-governmental organisations, private companies, academia, journalists to simple citizens and generating direct benefits on them (Vetrò et al., 2016). However, it is essential to mention that just the availability of OGD can also facilitate the linking and reuse of public sector information for the creation of new data-driven services (Toots et al., 2017, based on European Commission, 2011), creating indirect benefits for the end-users of those data-based services. Hence, the mere "emergence of open government data can be seen as an important enabler for co-creation" (Toots et al., 2017, p. 5) In general, the circulation of public sector datasets could entail unusual forms of reuse and not just for the benefit of the government and the public administration, but also private companies and their workers or clients, for commercial purposes (Vickery, 2011).

The results of using OGD creates public value, which ranges from tangible benefits to further intangible impacts, having a variety of potential uses and applications in diverse sectors such as culture, science, finances, statistics, weather, and environment (Open Knowledge Foundation, n.d.). This research will try to summarise the public value created and its impact on six aspects:

1. *Government transparency and accountability* (Manyika et al., 2013; Verhulst and Young, 2016; McBride, 2017; IADB, 2018; World Bank, 2019). Due to better access to information (European Data Portal, 2015) and originating openness and

trust as public value constructs (Callinan et al., 2018). Through the publication of budgets and public procurement processes help the fight against corruption, and further improving the transparency of public institutions (Stiglitz, Orszag, & Orszag, 2000; Ubaldi, 2013), and allowing its accountability (IADB, 2018), since now citizens and civil society organisations can monitor and track public budget expenditures and detect potential corruption acts (Bonina, 2017; IADB, 2018; World Bank, 2019).

2. *Government efficiency and effectiveness* (Manyika et al., 2013; Verhulst and Young, 2016; Bonina, 2017; Callinan et al., 2018; IADB, 2018; World Bank, 2019). Saving costs to public sector and enhancing its responsiveness (European Data Portal, 2015), improving the policy-making and administrative processes (McBride, 2017), easing the design, monitoring and evaluation of public policies (IADB, 2018), and overall making less costly to discover and to access to their data or from other public institutions, easing interoperability (World Bank, 2019).

3. *Economic growth and efficiency for private companies* (Manyika et al., 2013; Verhulst and Young, 2016; Callinan et al., 2018; IADB, 2018; World Bank, 2019; European Data Portal, 2020). Saving time and costs (European Data Portal, 2015), and providing efficiency gains (Manyika et al., 2013; European Data Portal, 2015; Callinan et al., 2018); but also for commercial purposes (Vickery, 2011), such as increasing the number of transactions in the form of revenue (European Data Portal, 2015; IADB, 2018), raising productivity (Manyika et al., 2013), and impacting in the overall economic growth (Verhulst and Young, 2016) in the form of an increase in the number of jobs (Manyika et al., 2013; European Data Portal, 2015; Verhulst and Young, 2016) and as a higher Gross Value Added (GVA) up to $1 and $3 trillion per year (Manyika et al., 2013; European Data Portal, 2015).

4. *Innovation in both private and public sector: creation and enhancing of products, services, processes, business models and sectors, fostering innovation and experimentation* (Manyika et al., 2013; Verhulst and Young, 2016; McBride, 2017; IADB, 2018; Rodriguez Müller and Stein, 2019; World Bank, 2019). Creating and enhancing products and services (Manyika et al., 2013; Bonina, 2017; McBride, 2017; IADB, 2018; World Bank, 2019) thanks to the improvement in the service quality, ease of access and responsiveness (Rodriguez Müller and Stein, 2019) and service design (Juell-Skielse, Hjalmarsson, Johannesson, & Rudmark, 2014), and therefore creating new business models and increasing the market size (Manyika et al., 2013; European Data Portal, 2015; Verhulst and Young, 2016; IADB, 2018).

5. *Citizen and Community inclusion and empowerment due to improved decision-making, providing transparent and real information to citizens and communities for enhanced social inclusion* (European Data Portal, 2015; Rodriguez Müller and Stein, 2019). Encouraging the empowerment of social organisations and citizens (European Data Portal, 2015; IADB, 2018; Rodriguez Müller and Stein, 2019), which supports evidence-based decision-making (Manyika et al., 2013; European Data Portal, 2015; Verhulst and Young, 2016; McBride, 2017), for a more responsible social and participation (European Data Portal, 2015; Bonina, 2017; McBride, 2017; World Bank, 2019) and political awareness (European Data Portal, 2015, World Bank, 2019), and originating openness, trust and outcomes as public value constructs (Callinan et al., 2018). Furthermore, OGD can also enable co-creation between the government and citizens (Toots et al., 2017; Callinan et al., 2018; IADB, 2018)

6. *The building of a better data-driven culture for assessment and problem-solving, allowing a societal problem analysis* (IODC, 2016; Verhulst and Young, 2016). Causing a quality improvement of available OGD (McBride, 2017), fostering data-driven assessment and engagement (Verhulst and Young, 2016), and facilitating the building of new data-driven products and services for social impact (Toots et al., 2017; World Bank, 2019).

For the aim of this research, the terms public value and value will be used interchangeably, synthesising this value creation process with OGD as the following: a cumulative, uncertain and collective process (Mazzucato, 2018), which most likely is based on co-creation (Toots et al., 2017), and enhanced when all actors participate and can produce tangible and intangible outcomes, as well as direct and indirect benefits (Pang et al., 2014), namely the following six: government transparency and accountability; government efficiency and effectiveness; economic growth and efficiency for private companies; innovation in both private and public sector (creation and enhancing of products, services, processes, business models and sectors); citizen and community inclusion and empowerment due to improved decision-making; and building of a better data-driven culture for assessment and problem-solving.

1.3.2 Creating value with OGD in Latin America

The Inter-American Development Bank (IADB) states that governments around the world have an excellent opportunity to create public value through the openness and use of open government data, encouraging innovation and entrepreneurship, achieving greater inclusion of vulnerable groups and increasing economic growth (IADB, 2018). Latin America is not the exception of interest in the seize of open government data, but a region

that is leading the world in OGD (Open Knowledge Foundation, 2016; World Wide Web Foundation, 2019), locating five to six countries among the top 20 leading countries in two of the most relevant global benchmarks in open data, such as the Global Open Data Index of 2016 (a global benchmark for publication of OGD by the Open Knowledge Network) (Open Knowledge Foundation, 2016), and the Open Data Barometer (a global measure of how governments are publishing and using open data for accountability, innovation and social impact) (World Wide Web Foundation, 2019). Furthermore, the majority of International Open Data Charter (IODC) adopters come from this region (World Wide Web Foundation, 2017), having eleven national governments that have signed it (IODC, n.d.) and that have been relevant actors in the definition of the principles (IADB, 2018).

The Latin American region is amongst the highest level of social innovation in public administration (Barcena, 2015). It has shown a high commitment with the open government principles given that 16 countries from this region have joined the Open Government Partnership (OGP) (Perez Ara, 2020). Moreover, most countries in the region are improving their policies for collaborating with civil society organisations, implementing open data initiatives (IADB, 2018). It is demonstrated as seven countries have concreted their national open data policies, building the legal and technical base for the opening of data (World Wide Web Foundation, 2017). However, despite the achieved progress, open government data has not yet taken off at the subnational level, and the government engagement with civil society actors and support for innovation has remained limited (World Wide Web Foundation, 2017).

Open government data is commonly available in national open data portals, that publish and systematise the databases and datasets (IADB, 2018). The region performs well in the opening of public datasets for holding governments to account (World Wide Web Foundation, 2017), having at least 400 open data portals (Open Data Inception, n.d.). However, just 13 countries actually have central data portals, and many of the published datasets are not entirely "open" (IADB, 2018); moreover, there is "an alarming decrease of data availability and quality in the region, with implementation scores dropping since the third edition of the Open Data Barometer (World Wide Web Foundation, 2017). Thus, there is still much work to do and, in order to foster this ecosystem, the sharing of code, databases and the creation of new protocols for exchanging information could be the right way (Bajak, 2019).

In the Latin American Ecosystem, many actors have contributed to the public value unlocking of open government data. All the governments build public sector information that "form the supply side of the data value chain, but the realisation of the value of these

platforms lie on the applications and services that are built on top of the data" (Bonina, 2017). In order to promote openness and the use of OGD, civic organisations play a leading role in the Latin American open data movement (Bonina and Eaton, 2020). The region stands out for having high participation of civil society organisations (CSO) in data openness, activism and collaboration for improving the life quality of the communities, leading it to a structural change where CSO and the government have improved their collaboration, from ad-hoc consultancies to a multi-stakeholder platform engagement (Perez Ara, 2020).

There have been many global and regional initiatives such as the OGP, the Global Partnership on Sustainable Development Data (GPSDD), the Regional Conference for Open Data (AbreLatam/ConDatos) and the Statistical Conference of the Americas of ECLAC, spaces where OGD community is supported (Barcena, 2015). These meetups have strengthened the OGD community to offer solutions in areas like transportation, public health, urban planning and government transparency (Bonina, 2017). There are efforts for researching that seek to understand and promote the use of open data in Latin America such as the Latin American Open Data Initiative (or ILDA as its acronym in Spanish), who developed a set of strategic initiatives to test and explore the value of open data, as well as conducting basic research on the topic (Scrollini, 2017). On the commercial side, companies still have not seized the value of OGD (Bonina, 2017)

Through a transformative process, many actors with specific characteristics use OGD for carrying projects, where OGD-based products and services are created, Latin America has been a region with cases from every sector. From the government side, the cities of Buenos Aires, Mexico and Montevideo used hackathons to engage developers and start-ups to create new services (Bonina, 2017; Bonina and Eaton, 2020; Scrollini, 2015). There have also been collaborations between the public sector and civil society organisations: organisations like DATA have run partnerships with local governments and ministries in order to build platforms and OGD-based initiatives (Bonina, 2017; DATA, 2019; Scrollini, 2015). Thus, other relevant actors are civil society organisations, with cases like Ciudadano Inteligente in Chile, SocialTIC in Mexico and Datasketch in Colombia (Bajak, 2019; Bonina, 2017; ILDA, n.d.). Other relevant actors are news platforms and journalists with cases like the argentine newspaper La Nación and its data division, or Convoca and Ojo Público in Peru who opened up public data to help users understand how extractive industries were impacting on people's lives, and to transparent public procurement and expose cases with corruption risks, respectively (Bonina, 2017; Cabral, Huamán and Rossi, 2019).

The outcomes in the region of the OGD use differ from an impact on the public sector, on public opinion, and the users (Scrollini, 2015), and there is evidence that OGD is improving government efficiency in the countries; however OGD impact "has not yet translated into concrete improvements in the lives of ordinary people, especially for traditionally marginalised groups" (World Wide Web Foundation, 2017). Many reasons for this could exist, as unavailable or incomplete data (Vetrò et al., 2016); the presence of barriers to participation as political resistance to open data projects, and administrative barriers to undertaking projects (Scrollini, 2015), the deficit of capabilities (Conradie and Choenni, 2014); and mismatches between needed data and published data (Gurin, Bonina and Verhulst, 2019).

The research into open government data and its ecosystem has allowed understanding how the fruits of this enhanced relationship between government and the diverse stakeholders in the open data environment have the potential of creating value, however, to which extent, how is the value created, and what are the actors that participate and collaborate in the process of value creation with OGD, and what are the context aspects that have an impact on it is still a research gap in the academic circle. Furthermore, the mechanisms through which open government data can scale and harness developmental goals have not been established (Bonina, 2017).

In order to understand the previously mentioned gaps, it is pertinent to review the literature based on open data ecosystems, open data actors and value creation with open government data. Then, the construction of a theoretical framework on OGD-based public value creation will allow the understanding of how this process is developed and what are the main aspects and variables to analyse in the Latin American case.

2 Theoretical Framework

This chapter defines the theoretical framework that has been used to frame this research focused on public value creation when intermediaries use open government data. For this reason, it has been of paramount importance to review underlying academic literature in order to define the following concepts and theories.

First, the concept of open data ecosystems has been examined, along with the many views from diverse authors about what are the variables that should be taken into account when analysing the environment around open data projects. Second, the diverse theories about open data actors have been presented, with a heavy focus on open data intermediaries and the types of actors that participate in the public value creation process.

Third, in order to create public value from OGD, it is only through some transformative process that is possible. The capabilities needed for that value creation process and the outcomes have been described. Fourth, the result of these processes, where the intermediaries are seen as co-creators, is known as OGD co-created public services (McBride, 2020). Thus, the role of OGD-driven public services and co-creation is analysed with the goal of understanding in depth how value creation is achieved through the previously mentioned services.

Finally, the evolution of the many terms and notions around public value creation when using OGD has been examined in order to know the characteristics and the outcomes of it.

All the previous concepts have been synthesised in an integrative model that has been proposed based on the previously discussed theories, along with the key factors that influence the public value creation with their respective description and analyses. The main goal of this model is allowing the operationalisation of the key concepts that are relevant to the analytical part to be presented in the next chapter. Finally, the limitations of this framework will be further analysed.

2.1 OGD Ecosystems

As it was discussed in the previous chapter, OGD value creation phenomenon rarely occurs in isolation, but rather is a collective process involving many actors cooperating, and it is a result of many years of research. In order to understand the ecosystem where OGD inhabits, its aspects and characteristics, many theories from different fields must be synthesised.

Since OGD is based on two fields (information systems + management), there are two streams of definitions for an OGD ecosystem. In the information systems arena, the OGD ecosystem is "the complex and heterogeneous systems of institutions, groups of actors, infrastructure and data which interact, adapt and grow in the context of environmental change" (Bonina and Eaton, 2020, p. 3; based on Dawes et al., 2016; Harrison et al., 2012). While in the management literature, these ecosystems are "clusters of interdependent organisations structures in constellations rather than traditional value chains" (Bonina and Eaton, 2020, p. 3; based on Iansiti and Levien, 2004).

In the Integrative Model of IT business value (2004), there is an effort in understanding how the context at many levels affect the IT business value creation inside organisations (Melville et al., 2004). As can be seen in the following Figure, the Macro Environment and the Competitive Environment are taken into account as the contextual factors that shape the IT business value generation process.

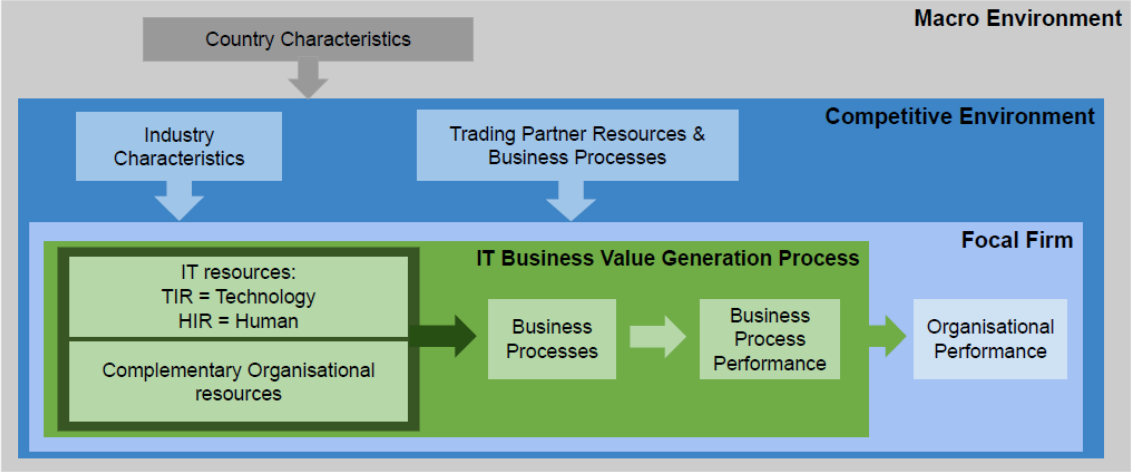

Figure 4 Integrative Model of IT Business Value (Source: Melville et al. (2004, p. 293))

At the highest level, the macro environment involves country characteristics as the level of country development, necessary technological infrastructure, education, socio-economic situation, investment and culture are the variables that affect the value creation process (Melville et al., 2004). It shapes the degree to which firms can apply IT for organisational, while telecommunications infrastructure moderates the economic value of an inter-organisational information system (Melville et al., 2004).

In the following contextual layer, the competitive environment is industry characteristics that affect from outside the value generation process such as industry factors shaping how IT is applied within the focal firm to generate business value, including competitiveness with other organisations and regulations. On the same way, other variables that affect this

process are the trading partner resources and business processes, since they can directly enhance or diminish the experience, which are IT and non-IT resources and business processes of trading partners such as buyers and suppliers (Melville et al., 2004). The industry characteristics moderate the ability of firms to apply IT for improved organisational performance and to capture the resulting benefits, while IT and non-IT resources and the business processes of electronically connected trading partners shape the focal firm's ability to generate and capture organisational performance impacts via IT (Melville et al., 2004).

In the last layer, the IT Business Value Generation Process is located in the focal firm, which will be later discussed in the OGD value creation process section. The limitations of this model are that the research is intrinsically tied to an ex-post, firm-level perspective on IS business value, limiting its applicability, but also focusing on an economic-based view. Furthermore, it does not provide a research agenda for studying differences between developed and developing countries (Schryen, 2012). For the aim of this research, the macro environment (to a regional level), the country characteristics, and the capabilities of the partners will be taken into account for the study of OGD-based projects in Latin America.

To understand the open data ecosystems in which the OGD public value creation occurs is of high importance for this research. These ecosystems are characterised by "interdependent socio-technical levels, dimensions, actors (including data providers, infomediaries and users; to be later discussed), elements and components. Moreover, open data ecosystems need to address challenges related to policy, licenses, technology, financing, organisation, culture, and legal frameworks and are influenced by ICT infrastructures" (Zuiderwijk et al., 2014, p. 23), as it can be seen in the following Figure.

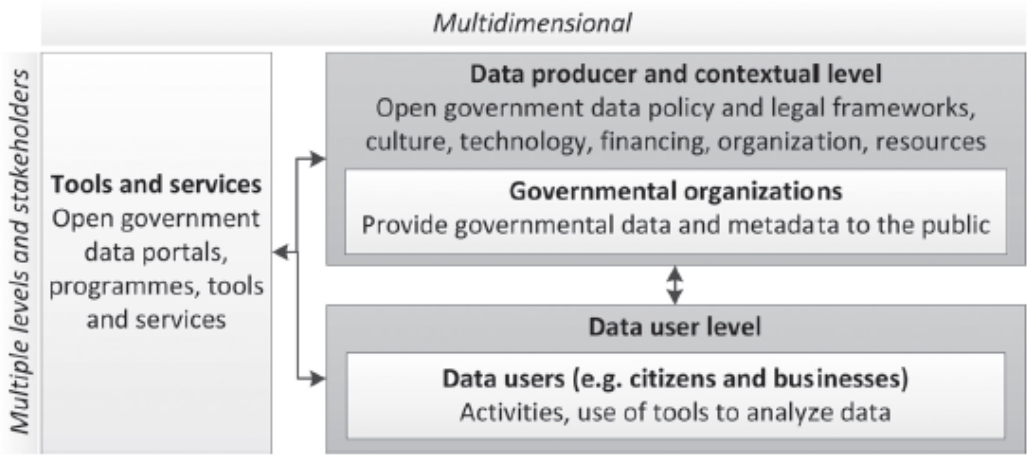

Figure 5 Elements of an OGD ecosystem derived from the literature (Source: Zuiderwijk et al. (2014, p. 144))

Thus, interaction and integration are needed between the ecosystem members, where three additional elements should be taken into account: "user pathways showing directions for how open data can be used, a quality management system and different types of metadata for being able to connect the elements" (Zuiderwijk et al., 2014, p. 28).

Given that an ecosystem makes possible for open data users to select and utilise the best functionalities of this ecosystem, it is crucial to address the essential challenges open data ecosystems relate, such as policy, technology, financing, organisation, culture, and legal frameworks (Ubaldi, 2013), as the same that would be rescued for understanding the context characteristics in this research. The tools and services are understood as the technological infrastructure over which OGD is constructed, namely Open Data Portals, public institution webpages, programmes tools and services; while the data users are the ones that interact with the offered OGD.

In the European Commission's Framework used in the content-context-process (CCP) approach for evaluating Linked Open Statistical Data (LOSD)-driven public services, the variables considered to assess were: technology and infrastructure, stakeholders, legal environment, policies, and organisational and administrative factors (McBride et al., 2017). Since people and technology only exist in relation to each other (Orlikowski and Scott, 2008), OGD also influences its ecosystem and macro context, "helping OGD actors to be more efficient, to reduce the barriers for participation, and increase the number of involved stakeholders" (McBride, 2020, p. 34). To understand how these actors or stakeholders are involved, to dive on OGD actors literature is of paramount importance.

2.2 OGD Actors

As McBride (2020) poses, if OGD is available, those who are interested in interacting with it naturally begin to gather together, influencing public service co-creation ecosystems (McBride, 2020). The United Nations (2014) indicated the need to meet these communities that operate as "intermediaries of information" who are responsible for developing tools to process data and transform it into useful information (United Nations, 2014), but also in better public services.

The motivations for these actors to become re-users of open data are intrinsic, such as joy, prestige and challenge (Scrollini, 2017, based on Juell-Skielse et al., 2014). However, it is essential to note that, depending on the role they act in this ecosystem, they have to accomplish different objectives.

Ubaldi (2013) identifies three types of open data ecosystems: 1) an ecosystem of data producers, 2) an ecosystem of infomediaries as an intermediate consumer of data, and 3)

an ecosystem of open data users (Ubaldi, 2013); on the same way, Ding et al., (2011) make a distinction between Linked Open Government Data (LOGD) production, the LOGD community and LOGD consumption (Ding et al., 2011). Both divisions of actors allow understanding the difference between OGD producers, OGD direct consumers (Community of intermediaries), and OGD users (citizens and organisations).

As to understand technology, there are some capabilities needed by the users, and there is a knowledge gap for understanding and processing open government data as well. Depending on their capabilities, Magalhaes et al. (2013) identified three types of intermediaries in the literature and categorised them into 1) civic startups, 2) open data services, and 3) infomediaries. The first provide services based on digital technologies, analyse data and achieve greater citizen participation. The second one corresponds to private companies whose business model is based on providing innovative services based on the use of open data and open government data. Finally, the infomediaries are agents that provide open data-based products and services to citizens or third parties (Magalhaes et al., 2013).

In the previously mentioned Zuiderwijk et al. 's OGD ecosystem model (Figure 5), those infomediaries are intermediate consumers of data such as data wranglers and application builders, adding value to datasets by cleaning, analysing and integrating them. That reused data is published, sharing also the value it generates, and supporting both of these levels, data publication and data use (Zuiderwijk et al., 2014).

Those OGD intermediaries act as agents "1) positioned at some point in a data supply chain that incorporates an open dataset, 2) positioned between two agents in the supply chain, and 3) facilitate the use of open data that may otherwise not have been the case" (van Schalkwyk et al., 2016); arguing that the intermediation between the data source with user groups can occur on several levels, since in principle, a single broker may not have all the necessary capabilities to generate value through the use of data (van Schalkwyk et al., 2016). The following figure describes the scheme of intermediaries:

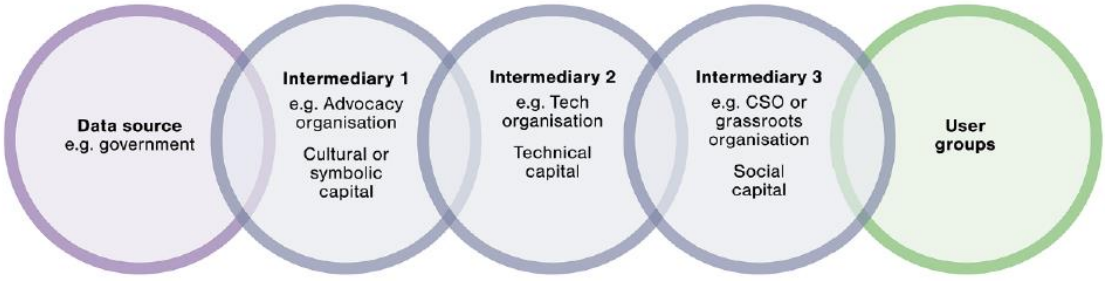

Figure 6 **A model of layers of intermediaries connecting a data source with users (Source: Van Schalkwyk et al. (2016, p. 20))**

As the research claims, "this model presents the multiple layers of intermediation between a data source and end-use, with each intermediary deploying its relative strengths as expressed by the type of capital it possesses in order to connect actors and to facilitate the effective reuse of open data" (van Schalkwyk et al., 2016). For the purpose of this research, a distinction of the three main groups is posed: OGD producer (the government), OGD intermediaries (one to many organisations that collaborate in order to clean or develop a product or service), and OGD users (citizens and organisations which benefit from the use of OGD-based services). The key lies on the intermediaries since the sharing of capabilities on an open government context, allows the creation of public value. Given that many organisations are involved in the process of public value creation, there is also a wide variety of potential areas.

2.3 Inside OGD Value creation process

As it was previously defined in the Research Background chapter, public value creation is a cumulative, uncertain and collective process (Mazzucato, 2018), which most likely is based on co-creation (Toots et al., 2017), and enhanced when all actors participate and can produce tangible and intangible outcomes, as well as direct and indirect benefits (Pang et al., 2014). The process is enhanced when all actors participate, and especially when public managers engage in political discussion (Pang et al., 2014).

Previous research demonstrates that developments in the IT field, as OGD, are "commonly assessed or even defined in terms of their perceived value" (Panagiotopoulos et al., 2019, p. 3). Moreover, this perceived value lies in the consumption of aggregated services, and not in the service per se, or the sum of delivered values by the use of individual services (Panagiotopoulos et al., 2019).

In order to understand what is inside the value generation process when using OGD, many theories will be introduced for rescuing the variables that have to be taken into account when analysis public value creation processes.

From the economic-based value side, Melville et al. (2004) present the IT Business Value Generation Process in the Integrative Model of IT Business Value, claiming that within the focal firm, IT business value is generated by the deployment of IT resources and complementary organisational resources within business processes, as can be seen in previously presented Figure 4, and in a more focused way in the following Figure:

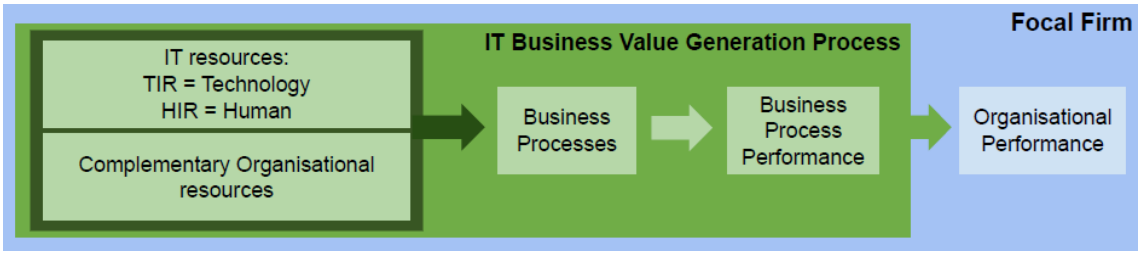

Figure 7 Focal Firm in the Integrative Model of IT Business Value (Source: Melville et al. (2004, p. 293))

The IT resources can be of two types: technological IT resources (TIR), which is the infrastructure and business applications, including both hardware and software; and the human IT resources (HIR), which is the firm's human capital, refers to expertise and knowledge and denotes both technical and managerial skills (Melville et al., 2004).

The complementary organisational resources, as its name states, are the ones that accompany the implementation of IT resources and are non-IT physical resources, non-IT human resources, and organisational resources (Barney, 1991). These complimentary resources include the organisational structure, policies and rules, workplace practices and organisational culture (Melville et al., 2004), and are the ones that support the organisational change (Brynjolfsson and Hitt 2000; Brynjolfsson et al. 2002; Cooper et al. 2000),

The implementation of both, IT and complementary resources, support business processes, transform inputs to outputs and impact on the business process performance, then in the organisational performance, and ultimately in the overall firm performance (Melville et al., 2004). In this model, the IT resources create economic value for a local firm by conferring operational efficiencies, and it may create a temporary competitive advantage (Melville et al., 2004).

However, the Integrative Model of IT Business Value research was intrinsically tied to the ex-post, firm-level perspective on IS business value, limiting the applicability of the synthesised IS business value model, and not providing a research agenda for studying differences between developed and developing countries (Schryen, 2013)

In the model developed by Schryen (2013), new elements are added to the business value: time-lag effects, a division between IS investments and non-IS investments (similar to IT and non-IT resources), and a definite highlight was put in the relevance of the IS management capabilities (Schryen, 2013), whose can be seen in the following Figure.

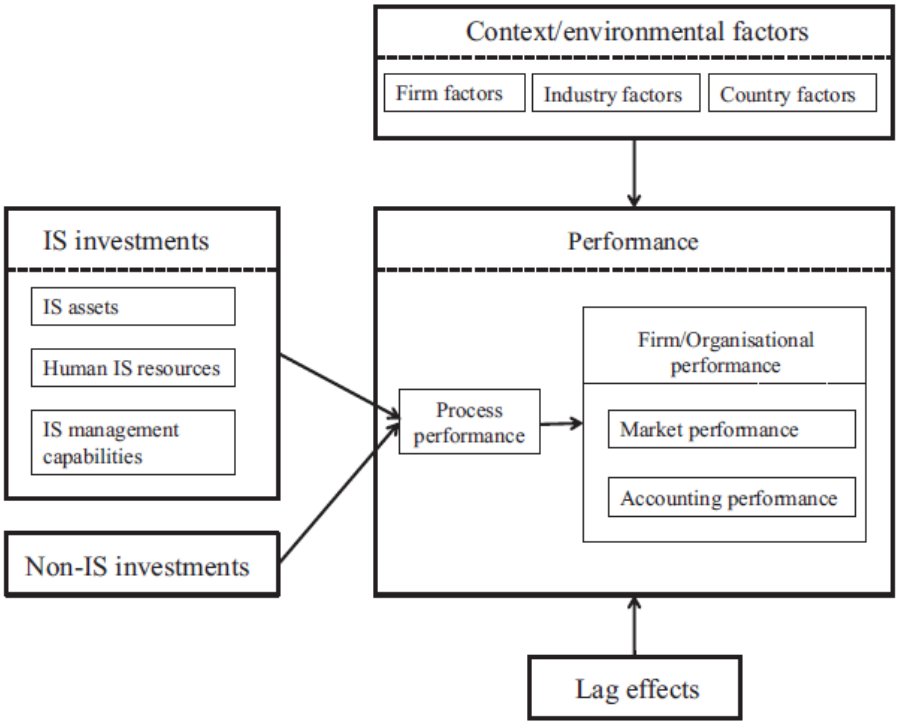

Figure 8 Synthesized IS Business Value Model (Source: Schryen (2013, p. 144))

The limitation in both Melville et al. (2004), and Schryen (2013) is mainly the economic-based view of value creation, which focus on the measuring of productivity, market performance, or accounting performance (Melville et al., 2004; Schryen, 2013). Having only resource-based view as the base theory for IT value limits its application to specific organisations which might not want to generate profit but still will gain value from IT, such as governmental and civil society organisations.

Furthermore, sometimes value is not always evident given it could be intangible and indirect (Pang et al., 2014), and manifested itself in ways beyond the scope of traditional uses of data (such as optimisation or economic benefits) (Panagiotopoulos et al., 2019). Similarly, not all advanced data applications are directly associated with value. Despite that "open data applications can produce value in the form of benefits at different levels in government, the value they create together might still be challenging to determine" (Panagiotopoulos et al., 2019, p. 3).

In public value creation theory, the relationship between IT resources, and organisational capabilities derive into public value creation. As Melville et al. (2004), they followed Wade and Hulland (2004) and defined IT resources as both IT assets and IT capabilities (Wade and Hulland, 2004). Pang et al. (2004) focused on five essential IT resources: digitised administration processes, public intelligence analytics, inter-organisational system integration, online public interactive interfaces, and public information

dissemination (Pang et al., 2014). Additionally, they identified five capabilities that underpin this relationship, namely: public service delivery capability, public engagement capability, co-production capability, resource acquisition capability, and public-sector innovation capability, which can be seen in the following Figure.

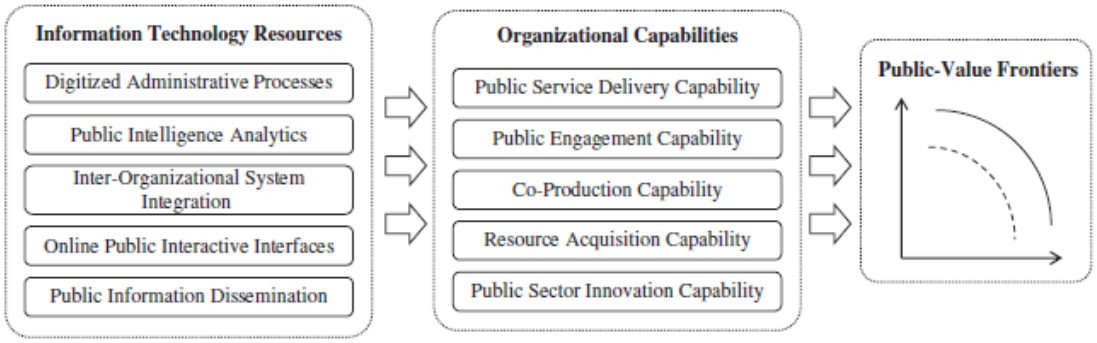

Figure 9 The theoretical framework for IT value in the public sector (Source: Pang et al. (2014, p. 195))

These organisational capabilities identified by Pang et al. (2014) differ from operational capabilities, defining the former as "the ability to integrate, build, and reconfigure resources and competences to adapt to changes", and the latter as "the systemic use of resources to perform essential tasks and execute business processes" (Panagiotopoulos et al., 2019, p. 3).

Authors like Crosby, Hart and Torfing (2017), Kattel and Mazzucato (2018), and Cabral et al. (2019), emphasised dynamic capabilities in the public sector and recognised the importance of new public sector capabilities, not just for facilitating or redistributing value but for genuinely creating value in the economy, identifying threefold: state capabilities, policy capabilities, and administrative capabilities (Kattel and Mazzucato, 2018).

Panagiotopoulos et al. (2019) introduce a conceptual framework for public value creation in digital government, where is depicted "the idea that digital technologies support and enhance public services, in terms of efficiency, accessibility, ease of use, transparency, accountability and privacy" (Panagiotopoulos et al., 2019, p. 4).

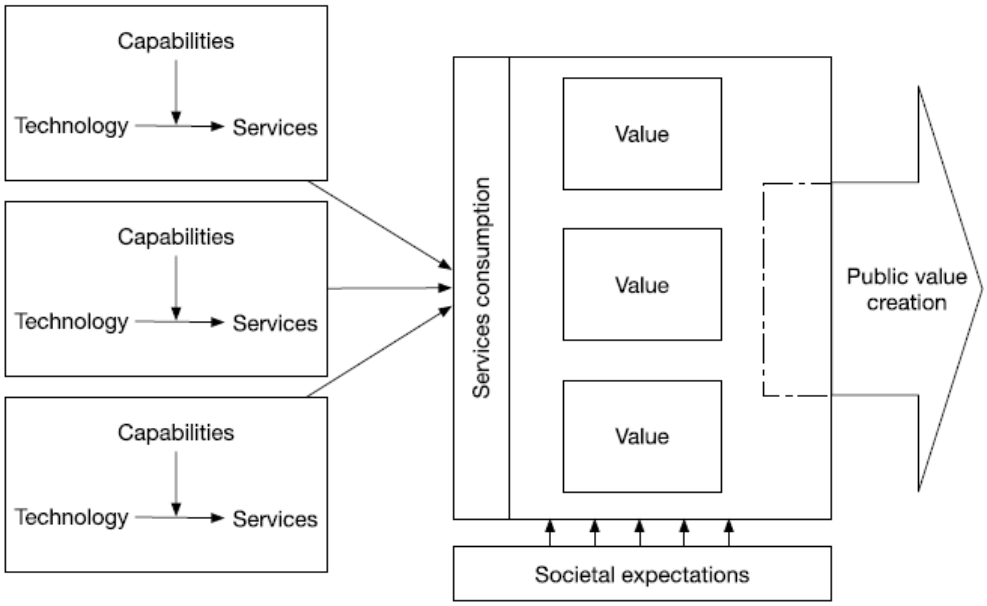

Figure 10 Conceptual framework: the realm of public value creation (Source: Panagiotopoulos et al. (2019, p. 4))

As it can be seen in Figure 10, "the production of each service is enabled by a configuration of the technologies and underpinning organisational capabilities that result from the systematic ability to deploy, integrate, and reconfigure internal and external resources" (Panagiotopoulos et al., 2019, p. 4).

Moreover, the combined consumption of all services results in the creation of different values. However, as it was previously stated, public value creation is not the accumulation of the use of technologies and the subsequent values resulting from their use, but the combined usage of multiple public services (Panagiotopoulos et al., 2019).

The configuration of technologies and capabilities for creating services can be extended to the inter-organisational level; resulting in a combination of configurations from multiple organisations that are aligned to deliver public value, and that not necessarily have the same capabilities but work with partners that have other capabilities to complement their work (Panagiotopoulos et al., 2019), bringing back the involvement of other actors as intermediaries for seizing the OGD resources (Van Schalkwyk et al., 2015).

The named capabilities by Pang et al. (2014) provide a starting point for understanding which exact resources and capabilities are needed when creating value with open government data that, together with the configurational approach (Wilden, Devinney, & Dowling, 2016), describe the basis for the combination of dynamic and operational capabilities, and it can enhance public value creation processes. The investigation can

extend to capabilities that include aspects of "(1) co-production, social or open innovation and other forms of involving digital or traditional publics, (2) the role of public administration networks, public-private partnerships and other relational approaches, (3) regulatory and policy initiatives to stimulate" (Panagiotopoulos et al., 2019, p. 7).

For the aim of this research, IT resources will be understood as the public sector information sources for the development of OGD-based public services, where the capabilities are provided by the OGD intermediaries and could be operational and dynamic. Furthermore, the perceived value depends on the service consumption, impact and outcomes of using OGD-based services.

2.4 OGD-based public services

The most prominent way of turning data into value is by creating services, which are public because of its contribution to public value and the common good (McBride et al., 2019). For McBride, "if OGD is made available, any stakeholder that has an interest, ideas and skills can take the lead in building OGD-driven services that address a societal need or add value to citizen's lives in different ways, based on co-creation" (McBride et al., 2019, p. 26). Consequently, governments are not anymore the only provider of public services (European Commission, 2014).

The involvement of new stakeholders allows new perspectives to participate in the diverse aspects of service development. Co-creation is, in this way, understood as "the involvement of individual users, groups of citizens and other stakeholders in the planning and delivery of public services – to cover the whole array of possible forms of stakeholder participation in public service creation, from initiation to implementation" (Toots, M. et al., 2017, p. 3f), which can be seen in the following Figure.

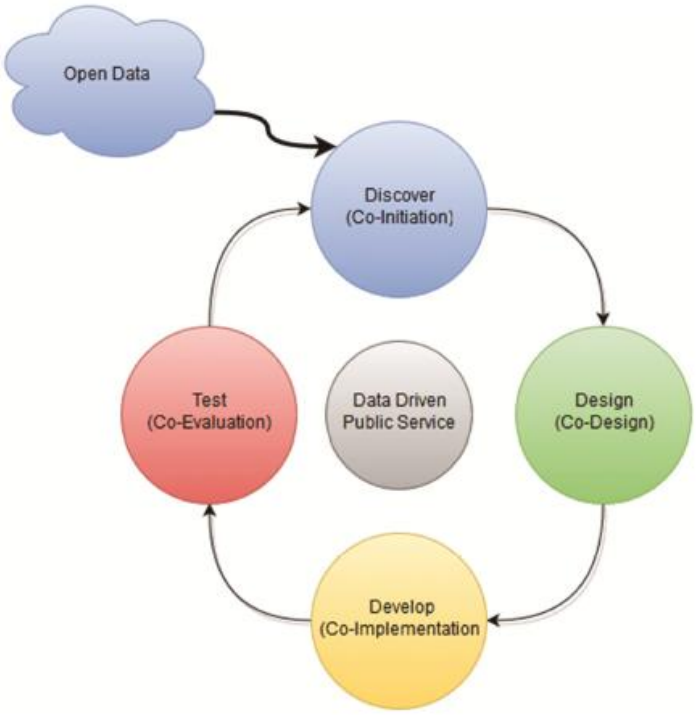

Figure 11 A Framework for Data-Driven Public Service Co-production (Source: Toots et al. (2017, p. 271))

The research on OGD-based public services has mainly based on the drivers and barriers that have an impact on their creation (McBride et al., 2017; Toots et al., 2017) but also on co-production and agile development, allowing the rethinking the concept of public services, the service creation process, and the roles of different actors in the process (Toots et al., 2017).

OGD enables a collaborative service production, between government, citizens, NGO, private companies and individual civil servants, and based on government data (European Commission, 2012) and to generate public value (Lindgren and Jansson, 2013).

The concepts of co-creation and OGD have been merged in the concept of co-created open data-driven public service: if the government makes data available then now any stakeholder has the potential to create public services exploiting OGD to create or add public value (McBride et al., 2019). The merge of the two concepts and their diverse outputs are shown in the following Figure.

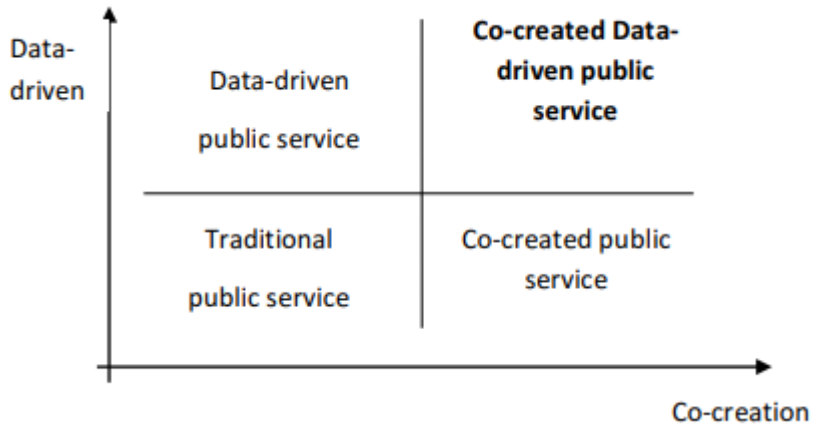

Figure 12 OpenGovIntelligence: Data-driven public service co-creation (Source: McBride et al. (2017, p. 13))

McBride et al. (2019) recognise three components for OGD-driven co-created public services: "1) It must utilise or be driven by OGD; 2) it must be co-created by stakeholders from different groups (from example, members from government, private sector, and citizens working together); and 3) it must produce public and societal value" (McBride et al., 2019, p. 89).

The model developed for OpenGovIntelligence by McBride et al. (2017) has a strong focus on the co-creation process again when using OGD, and in the iterations (agile development), which can be seen in the following Figure.

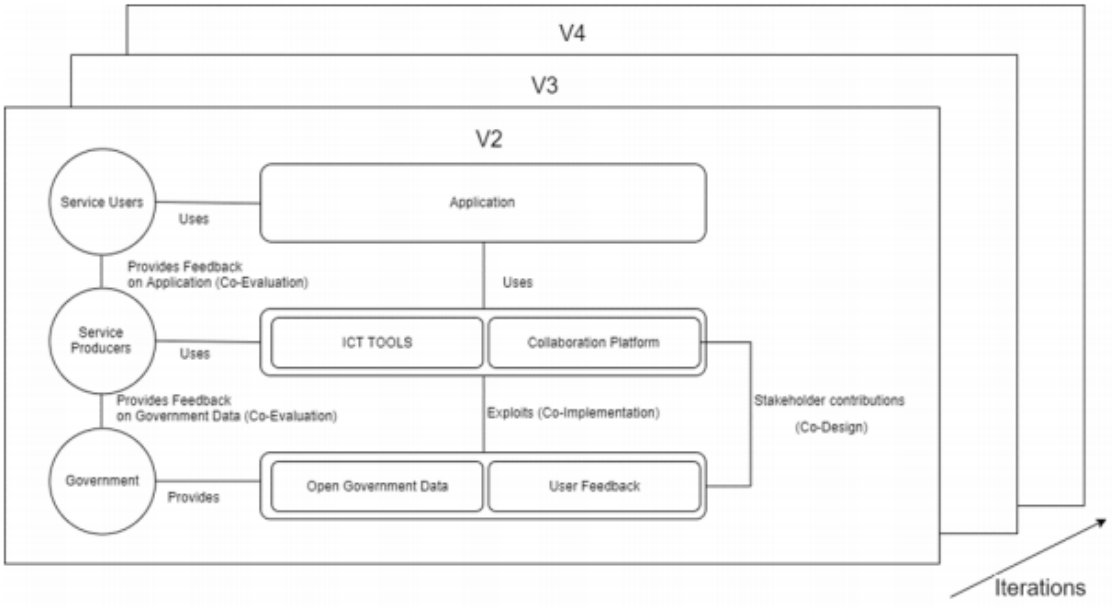

Figure 13 OGD-Driven Co-Created Public Service Architecture (Source: McBride et al. (2017, p. 36))

In the model, diverse actors are separated by their functions (government provides data, service producers co-creates applications, and users use the applications); however, there is no emphasis in the public value creation, in the contextual factors, or which kind of capabilities are needed when developing the mentioned OGD-driven co-created public services.

Nonetheless, in more actual research, McBride (2020) states that the contextual environment influences the results of the co-creation system and that many different "configurations, relationships and interactions would lead a system to behave differently" (McBride, 2020, p. 33).

The research finishes by high pointing that OGD does have the potential to facilitate and drive the co-creation of new public services in many ways (McBride, 2020, p. 33f):

- The government releases and maintains OGD for fostering interaction.
- The presence and usage of OGD engage co-creators and increases the likelihood for co-creation to occur.
- If the OGD and the OGD-driven co-created public services are of high relevance or developed by a non-governmental stakeholder, it seems to be more likely to succeed.
- OGD allows non-traditional stakeholders to play a leading role in the implementation and design of new public services.

2.5 Integrative Model of OGD Public Value Creation

This research aims to understand how is OGD used to create public value in Latin America. Specifically, we seek to understand how is this public value creation process and which factors enable or restrict the use of open government data in the Latin America context

The approach we take is to integrate the concepts of OGD ecosystems, OGD actors, OGD public value creation, and OGD-based public services. We adapted the previously presented theories so that they can be seen in a model that seeks to understand how the OGD public value creation process is developed.

This integrated model is illustrated in the Figure below, and the key constructs used in the analysis part will be summarised afterwards. The development of this model eases the assess of the case studies later.

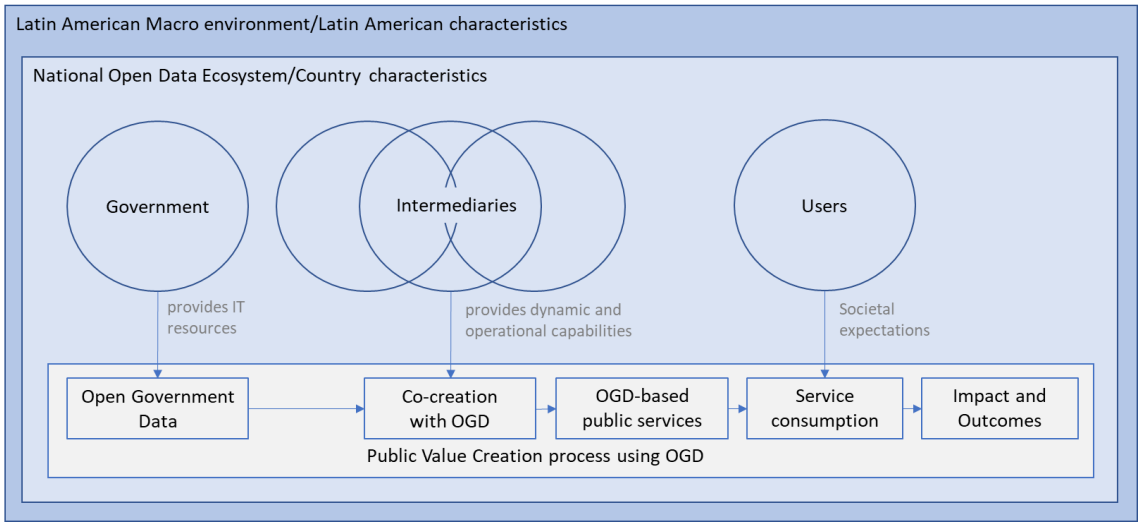

Figure 14 Integrative Model of OGD public value creation based on literature (Source: Own elaboration Melville et al. (2004), Pang et al. (2014), Zuiderwijk et al. (2014), Van Schalkwyk et al. (2015), Panagiotopoulos et al. (2019)

For this research, the principal actors of the OGD ecosystem are threefold. First, we consider the government as the data producer in the supply side, who provide modules of OGD to be used that is the data source (Magalhaes et al., 2013; Van Schalkwyk et al., 2015), and the IT resource at the same time (Melville et al., 2004; Schryen, 2012; Pang et al. 2014; Panagiotopoulos et al., 2019). It is of paramount importance to state that the government can shape its own National Open Data Ecosystem, mainly due to its highlighted role in the generative perspective of public value (Pang et al., 2014).

Second, the existence of Intermediaries as intermediate consumers of data, and who provide the dynamic and operational capabilities necessary to co-create with OGD (Ubaldi, 2013; Magalhaes et al., 2013; Zuiderwijk et al., 2014; Van Schalkwyk et al., 2015; Schryen, 2013; Pang et al., 2014; Panagiotopoulos et al., 2019). These intermediaries collaborate resulting in a combination of configurations from multiple organisations that are aligned to deliver public value, and that not necessarily have the same capabilities but work with partners that have other capabilities to complement their work (Panagiotopoulos et al., 2019).

The result of this co-creation with OGD is tangible in what is called OGD-driven co-created public service (McBride, 2020), and it consumed by users, further impacting in society and creating public value.

All this process occurs inside both a National Open Data Ecosystem and a Latin-American macro environment, which shape the context of how OGD public value

creation occurs and have an impact on it, which can hinder or foster the creation of public value.

It is understood, however, that a variety of factors that are around this OGD public value creation can constitute enablers or barriers to this process, and not just necessarily at the context but inside the process of value creation.

In the next chapter, the introduced model represents the basis for the data analysis part, which considers within-case study analysis and cross-case synthesis.

2.6 Critical influencing factors derived from literature

Many researchers have worked on the key influencing factors for OGD-based projects, calling them drivers and barriers, enablers and inhibitors, or challenges; but in synthesis, these are factors that could impact positively or negatively in projects that use OGD.

Verhulst and Young (2016) identified four enabling conditions that allow the potential of open data to manifest: collaborations among various organisations, open data public infrastructure, clear open data policies and performance metrics, and a clear target or problem definition (Verhulst and Young, 2016). In the same way, they identified four challenges that open data projects face: lack of readiness, unresponsiveness to citizen needs, privacy and security, and shortage of financial resources (Verhulst and Young, 2016).

The International Open Data Charter (2016) in its International Roadmap enumerated seven activity streams that should be focused on, namely open data principles, open standards, capacity building, innovation networks, measurement and evaluation, global goals and regional dialogues (IODC, 2016). On the same way, McBride et al. (2018) identified five context variables that have to be taken into account when developing Linked Open Statistical Data (LOSD)-driven public services: technology and infrastructure, stakeholders, legal environment, policies, and organisational and administrative factors (McBride et al., 2018).

Furthermore, Toots et al. (2017) went more in-depth in the analysis of these areas, identifying enablers and barriers that were segmented at four different levels: data and technology, stakeholders, organisations, and legislation and policies, which could be seen in the following Table.

Table 2 Open Data as Enabler of Public Service Co-creation: drivers and barriers

Barriers	Drivers
Data and technology	
B.DT1 – Lack of availability of open data	D.DT1 - Availability of open data
B.DT2 - Lack of data quality, fragmentation of datasets	D.DT2 - Provision of high-quality easy-to-use datasets, provision of datasets of key importance
B.DT3 - Messy data formats and lack of metadata	D.DT3 - Harmonization of data and metadata
B.DT4 - Missing infrastructure to support open data	D.DT4 - Open Data Portal
Stakeholders (perceptions, attitudes, culture)	
B.S1 - Political environment	D.S1 - Citizen demand and visionary policy-makers
B.S2 – Lack of awareness of open data and benefits	D.S2 - Awareness of open data and benefits
B.S3 - Technological skillset missing	D.S3 - Training and skills development
B.S4 - Requires trust and participation	D.S4 - Participation
Organisations	
B.O1 - Existing business models	D.O1 - Development of new business models
B.O2 - Missing innovation orientation in public sector	D.O2 - Presence of innovative orientation in public sector
B.O3 - Incompatible organizational processes	D.O3 - New organizational processes required
Legislation and policies	
B.LP1 – Legislation on data sharing and licenses	D.LP1 - Legislation on data sharing and licenses
B.LP2 - Limited legal obligation to publish open government data	D.LP2 - Strengthening legal obligations to publish government data as open data by default
B.LP3 - Privacy and security concerns	D.LP3 - Increases transparency and accountability

Source: Toots et al. (2017, p. 6)

As a summary, Toots et al. (2017) stated that "availability of data; awareness of open government and open data and full recognition of its benefits; enhanced data-related skills and co-creation perspective among providers and users; and regulation and policy instruments (including strict regulatory measures as well as softer coordination initiatives and instruments for technical and financial support)" (Toots et al., 2017, p. 9) are the main factors that influence the phenomenon of open data-enabled co-creation.

For McBride et al. (2018), they presented two enablers: the acknowledge of non-traditional stakeholders role and the opportunity for participation; and the following four barriers: low data quality, organisational pushback, inadequate legal frameworks, and a lack of government support (McBride et al., 2018, p. 193).

Later in 2019, in other multiple case study research, McBride et al. (2019) presented six factors that what in their research they call a 'perfect storm': "motivated stakeholders, innovative leaders, proper communications, existing OGD portal, external funding, and agile development" (McBride et al., 2019, p. 94); concluding one year later that "drivers and barriers cannot be applied broadly" and highlighting that "context plays a significant

role in influencing the drivers and barriers associated with OGD-driven co-creation" (McBride, 2020, p. 34).

For the specific Latin American context, there have also been investigations from many experts. According to Scrollini (2015), the enabling factors for OGD projects are supporting from open data policies; the emergence of a new community of actors capable of catalysing the use of data effectively; a multidisciplinary team with technical and political capabilities; and to not remain in the experimentation, but to apply incremental and iterative processes (Scrollini, 2015). The barriers identified in the same research were the open data infrastructure; the political resistance to open data projects and administrative barriers to undertaking projects (Scrollini, 2015).

The Latin American Open Data Initiative (n.d.) has also identified in their multiple case study analysis some key factors that drive OGD-based projects, such as collaboration to share the responsibility in the maintenance of the platform among the partners; while as negative factors they named: the sustainability of the projects, the legal form of the organisations, the inadequate communications strategy, the lack of collaborative culture, and the pedagogical challenge for recognising the value of open data and its tools (ILDA, n.d.).

Finally, in a research conducted by the GovLab in 2016, the identified barriers were the time constraints of the platforms (if it is used once or twice a year), and the outreach and communication strategies to promote the services (Sangokoya et al., 2016).

The identification of the critical influencing factors from the reviewed literature is embedded in the aspects and variables of OGD public value creation, which are introduced later in the Common Analysis Grid (Table 9). These are divided into four aspects: national OGD ecosystem, OGD actors, public value creation and value created and outcomes.

For the National OGD Ecosystem, the following critical influencing factors have been identified in the literature and are shown in the following table.

Table 3 Factors at the National OGD Ecosystem level derived from literature

Aspects	Critical factors	Source
Policy and Legal Frameworks	Open data policies and legal frameworks	Scrollini (2015) IODC (2016) Verhulst and Young (2016) Toots et al. (2017) McBride et al. (2018)
	Privacy and Security legislation	Verhulst and Young (2016) Toots et al. (2017)
Organisational and Administrative factors	Support from the Government and political environment	Scrollini (2015) McBride et al. (2017) Toots et al. (2017) McBride et al. (2018)
	Support from public servants (innovative leaders and acknowledge of non-traditional stakeholders role)	IODC (2016) Toots et al. (2017) McBride et al. (2018) McBride et al. (2019)
	Lack of readiness	Verhulst and Young (2016)
	Organisational processes for innovation	Scrollini (2015) Toots et al. (2017) McBride et al. (2018) McBride et al. (2019)
Financial Resources	Sustainability of projects	Verhulst and Young (2016) ILDA (n.d.)
	Business Models	Toots et al. (2017)
	External funding	McBride et al. (2019)
Technology and Infrastructure	Data availability	Scrollini (2015) Verhulst and Young (2016) McBride et al. (2017) Toots et al. (2017)
	Data quality	Toots et al. (2017) McBride et al. (2018)
	Harmony of data	Toots et al. (2017)
	Existance of OGD portal	Toots et al. (2017) McBride et al. (2019)

Source: Own elaboration, based on references mentioned in the table.

On the same way, at the OGD Actors level, the drivers and barriers have been identified and can be further seen in the following table.

Table 4 Factors at the OGD Actors level derived from literature

Aspects	Critical factors	Source
OGD Community willingness to work	Regional dialogues	IODC (2016)
	Awareness of Open Data and its benefits	Scrollini (2015) Toots et al. (2017)
	Motivated stakeholders	McBride et al. (2019) ILDA (n.d.)
	Innovation Networks	IODC (2016)
	Capability of actors	Scrollini (2015)
Collaboration between intermediaries	Trust and participation	Toots et al. (2017) McBride et al. (2018)
	Collaboration among various organisations	Verhulst and Young (2016) ILDA (n.d.)

Source: Own elaboration, based on references mentioned in the table.

For the Value Creation Process level, the enablers and inhibitors are the following ones:

Table 5 Factors at the Value Creation Process level derived from literature

Aspects	Critical factors	Source
IT and non-IT capabilities	Capacity building	IODC (2016)
	Multidisciplinary team with technical and political capabilities	Scrollini (2015)
	Technological skills	Scrollini (2015) Toots et al. (2017)
	Agile development (incremental and iterative)	Scrollini (2015) McBride et al. (2019)
Service consumption and assessment	Measurement and evaluation	IODC (2016)
Service engagement	Proper communications strategy	Sangokoya et al. (2016) McBride et al. (2019) ILDA (n.d.)
Service development	Time constraints of the platform	ILDA (n.d.)

Source: Own elaboration, based on references mentioned in the table.

Finally, in the Value Created and Outcomes level, the critical factors are the following ones:

Table 6 Factors at the Value Created and Outcomes level derived from literature

Aspects	Critical factors	Source
Value created and outcomes	Unresponsiveness to citizens needs	IODC (2016) Verhulst and Young (2016)
	Clear target or problem definition	IODC (2016) Verhulst and Young (2016)

Source: Own elaboration, based on references mentioned in the table.

The previously presented critical influencing factors derived from literature, serve as a basis for the comparison with the empirically results of the within-case analysis and cross-case synthesis, allowing the affirmation, rejection or modification of the theory.

3 Methodology

This chapter will explain the methodology that has been used to frame this research. First, the research design will be presented, including a brief overview of the nature and the sequence of research, followed by a justification of the selected case studies.

Then, the data collection sources for this paper are detailed along with the methods used, and lastly, the units of analysis selected. Finally, this chapter will conclude with a summary of the limitations of the applied methodology.

3.1 Research Design

The nature of this research is qualitative. Recurrently, qualitative researches seek to answer "why" or "how" research questions (Yin, 2018). Even more, conducting a qualitative study allows for capturing the views and perspectives of the participants, as well as the contextual conditions that may influence human events (Yin, 2018).

In order to answer the research question *"How is OGD used to create public value in Latin America?*", the sequence of research will be divided into two parts: document analysis and a multiple case study. The use of these two information compiling tools allows to overcome the deficiencies that each one of those has, but also it will serve two different parts of this research.

In the scope of this research, the document analysis is used for the first research objective, while the multiple case study allows achieving the last two research objectives. The following table illustrates the methods used for each research objective:

Table 7 Research Objectives and tools to achieve the Research Goals

Methods	Research Objectives
Document Analysis	1. To build a theoretical framework for understanding public value creation using OGD.
Multiple Case Study	2. To identify and describe the main characteristics of OGD-based public value creation in four Latin American country-cases
	3. To identify and analyse critical factors (enablers and challenges) that influence the development of OGD-based public services in Latin America

Source: Own elaboration

While the document analysis serves mainly for building a theoretical framework for understanding public value creation using OGD, the multiple case study allows for better understanding from an empirical sight what are the main characteristics of OGD-based public value creation in the region and, at the same time, for identifying which are the

factors that influence the development of these. The description of the research steps that have been followed for each of these tools is shown below.

The following figure illustrates the document analysis structure.

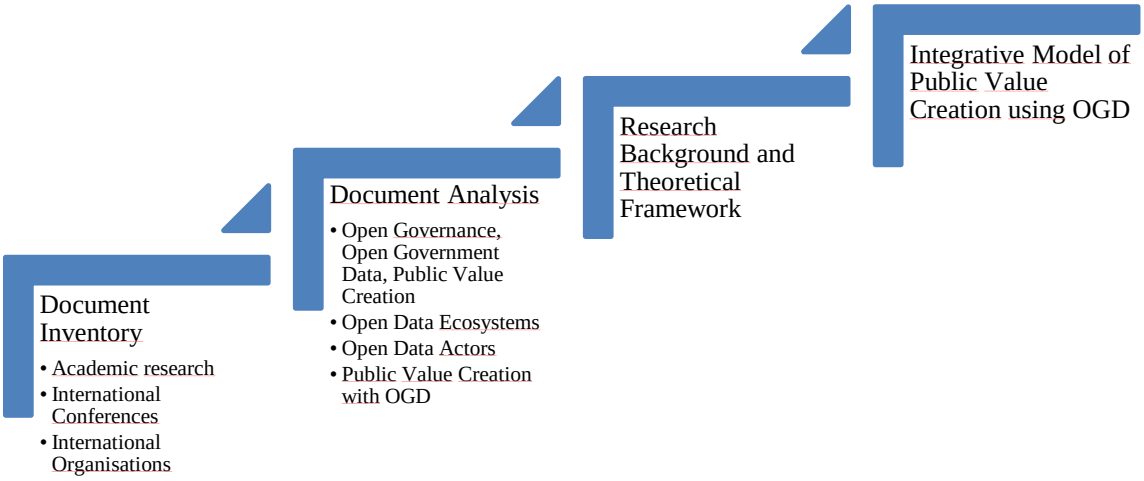

Figure 15 Document Analysis Structure (Source: Own elaboration)

The first part, the document analysis consisted of a review of concepts and theories related to the creation of public value when using OGD. For this aim, the most relevant academic publications have been inventoried from:

1. Scientific journals such as Government Information Quarterly, Public Management Review, Information Policy, the Journal of Community Informatics, and the Electronic Journal of e-Government.

2. International conferences as the International Open Data Conference, the International Conference on Theory and Practice of Electronic Governance, International Conference in Communities and Technologies (C&T), and International Conference for E-Democracy and Open Government (CeDEM).

3. International non-profit organisations like United Nations, the European Commission, OECD (Organisation for Economic Cooperation and Development), IADB (InterAmerican Development Bank), CAF (Banco de Desarrollo de América Latina), Open Data Latin American Initiative (ILDA, in its Spanish acronym), Open Data Barometer, and the Latin American Administration Centre for Development (CLAD, in its Spanish acronym).

The building of this theoretical framework allows the proposition of an integrative model for public value creation when using OGD, easing the operationalisation of the critical aspects and variables to be analysed under this framework and that has been the basis for

the data analysis part in the following multiple case study. The construction of logical models is further explained in the data analysis part.

For the second part, an *exploratory multiple case study research design* will be held given OGD-based public value creation in Latin America has received very little scientific research, and it is still an emerging technology. Yin (2018) defends that *exploratory research design* is appropriate for studying new phenomena on which little research has been conducted yet, and when the research objectives require an extensive in-depth description of a social phenomenon (Yin 2018). In order to clarify the understanding of the topic, this will be the aim of this research.

A *case study research design* provides twofold: to test current theories, and to generate new ones to increase scientific understanding (Flyvbjerg 2006). Since it provides a rich understanding of a real-life context, this type of research is pertinent when there is a need to construct new theory or generate new insights for an understudied or not clearly understood phenomenon, especially when the boundaries between phenomenon and context may not be evident (Yin 2018).

Moreover, Eisenhardt assigns a deductive and an inductive function to the case study approach; while the former tests theories using case studies to assess a priori models, the latter generates theories using recurring patterns of case studies to generalise postulates (Eisenhardt, 1989). Both functions cannot be disassociated and are highly iterative (Eisenhardt, 1989).

However, the disadvantage of case studies is that they are often unrepresentative of the universe of cases. Hence, a *multiple case study research design* provides a more generalisable contribution to academic research and allows to replicate the findings since it is regarded as being a more robust category of case study research design (Herriot and Firestone, 1983) and favouring its holistic feature for understanding phenomena in their real-world settings (Yin, 2018); however, it is of paramount importance that the chosen cases are comparable between each other (Baxter and Jack, 2008). A cross-sectional study will allow making a distinction between the cases in the same timeframe.

The multiple case study structure will be the following one for the present research:

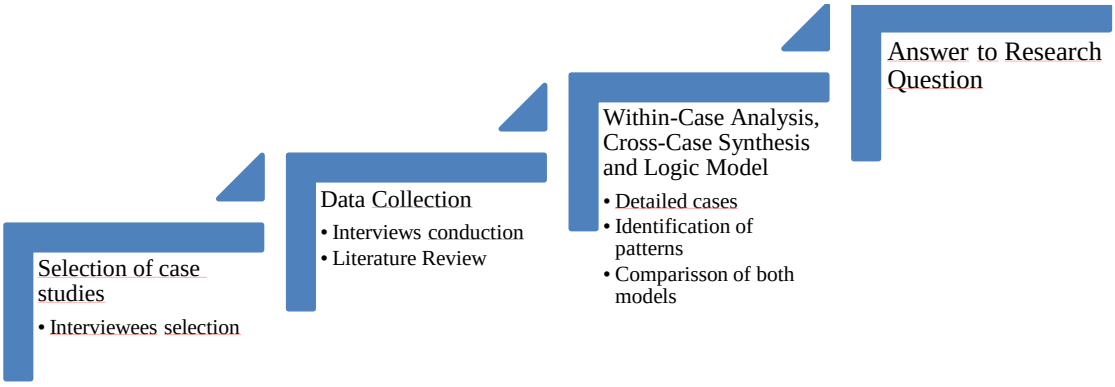

Figure 16 Multiple case study structure (Source: Own elaboration)

3.2 Selection of case studies

In order to answer the proposed research question, it has been selected single cases from four different countries in Latin America, the criteria selection to choose the cases has been based on their potential to provide rich insights to our research question.

Chosen cases are OGD-based projects developed by Civil Society Organisations on the basis for providing both a specific public service as an intermediate outcome and public value as an ultimate outcome (Yin, 2018). Furthermore, the selected cases are relevant due to scientific and societal reasons: the organisations are well-known cases in their countries, meaning that are representative for their contexts and have demonstrated the achieving of positive results (Yin, 2018). Additionally, the cases have been pragmatically selected, based on data availability and ease of access to the project leaders for conducting interviews via Internet-based meeting, due to physical location restrictions, given that the leaders are located in various countries.

To select the case studies, a two-step process has been undertook: it has been scanned existing literature in OGD-based projects in Latin America, allowing to identify organisations that are leading this field in the region; and afterwards, reaching out a number of experts in open government data and civic technology in Latin America (Verhulst and Young, 2016), namely, Paloma Baytelman (Adviser at Chilean Ministry Science, Technology, Knowledge and Innovation), Natalia Carfi (Deputy Director of the International Open Data Charter), Juan Manuel Casanueva (Director of SocialTIC), Elaine Ford (Director of Democracy and International Development), Gloria Guerrero (Avina Foundation, and ALTEC representative), Mariano Ignacio Malia (Executive Co-Director of Wingu), Anca Matioc (Executive Director of Agency), Miguel Morachino (Executive Director of Hiperderecho), Laura Paonessa (Knowledge, Innovation, and

Communication Sector at IADB), Fabrizio Scrollini (Executive Director of ILDA), and Florencia Serale (consultant on open data and digital government at IADB); which were selected due to their experience and expertise.

From both steps, there have been selected four cases that are acknowledged in the use of OGD for creating public value in Latin America. The project name, the organisation that led the project, the country in which it was developed, and the project's leader name are shown in the following table.

Table 8 Selected cases for this research

Project Name	Organisation	Country	Contact
DataSketch	Random Monkey	Colombia	Juan Pablo Marín
Observatorio de Violencia	Diálogos	Guatemala	Carlos Mendoza
Quién Es Quién Wiki	PODER	México	Eduard Martín-Borregón
Elijo Estudiar	DATA	Uruguay	Daniel Carranza

Source: Own elaboration

The project leaders have been selected as interviewees, given that this research aims to understand how is OGD used from the perspective of direct users. Thus, the leaders from the projects are the most relevant person to be interviewed inside the respective organisations for understanding from their point of view. For this selection of interviewees that might provide the most relevant data concerning the proposed research objectives, purposive sampling has been applied, which sometimes can be considered as biased, given the author chooses interviewees based on his interests and the research goals.

There are potentially contaminating differences among the individual cases in the multiple-case study (Yin, 2018); thus, it is essential to discuss how the single cases are sufficiently comparable along critical dimensions (country characteristics and settings, diverse OGD ecosystems and various capabilities) to warrant a presumed common finding between them (Yin, 2018). All the four selected cases have been selected on the principle of a most similar design (Kubicek, 2010), given that the countries where they were developed have implemented their OGD policies and these projects are developed by OGD intermediaries with the use of public sector information, following an Open Government paradigm. Furthermore, given the four cases have been successful in their contexts, it is inferable that the cases can be compared among them.

On the other hand, there are marked differences among the cases, that for the research do not undermine the presumed multiple-case findings (Yin, 2018), but complement the results in order to have a much broader perspective. Three of the four cases are among the 20 most developed countries in the Open Data Barometer; thus they are comparable

among them; however, Guatemala is a particular case since it is ranked 63rd in the same benchmark. Moreover, while Diálogos, PODER and DATA are civil society organisations, Random Monkey is a data science company, whose aim is to make an economic profit working on social issues.

Those two cases have been deliberately chosen using the "two-tail" case study design, where there are cases from both extremes (of some critical theoretical condition, such as excellent performance in benchmarking against lousy performance in the same ranking, or for-profit vs non-profit) (Yin, 2018). The four selected cases will lead us to understand the conditions that can undermine OGD-based projects despite the finances of the intermediaries that develop them, and besides the political or technological context in which is implemented.

3.3 Data collection

The primary sources of evidence for this multiple case study are documentary information and interviews.

Documentary information is likely to be relevant to every case study topic (Yin, 2018). Moreover, its strengths are the following: 1) it is stable, which means that can be reviewed repeatedly, 2) unobtrusive, since it was not created as a result of the case study, 3) it is specific so that it can contain a high level of details of a studied event, and 4) it is broad, can cover an extended period, many events, and many settings (Yin, 2018).

For the present research, it has been considered different sources of data, such as academic journals, publications from official government agencies, national open data portals, country sheets and international benchmarks, together with additional sources that the researcher has considered relevant for the achievement of the research objectives. This document analysis allows 1) to recognise the current development of OGD-based public value creation in Latin America, 2) to identify and analyse critical factors (enablers and challenges) that influence the development of OGD-based public value creation in Latin America, in the existent literature.

Likewise, *interviews* are commonly found in case studies. This source of evidence can especially help by suggesting explanations of critical events, as well as the insights and perspectives of participants (Yin, 2018). Yin posed specific strengths for interviews. This data source is 1) targeted because it can focus directly on case study topics, and 2) insightful since it provides explanations as well as personal views (e.g., perceptions, attitudes, and meanings), which help more to explore the cases (Yin, 2018) profoundly. Hence, interviews can provide a better explanation of a studied phenomenon, especially

when the questions are open-ended, and it is semi-structured, allowing to have a conversation rather than a series of questions.

Therefore, a series of interviews have been held with leaders of organisations that have developed OGD-based public services, in order to identify critical aspects when reusing OGD and the factors that influence the development of OGD-based public services. These interviews have been held in a semi-structured way, allowing the interviewees to express themselves freely during the first minutes, and then covering a series of questions based on the aspects presented on the theoretical framework, allowing discussions more profoundly in each feature to assess. Moreover, the interviews have been held via the Internet, depending on conference tools like Skype, and Zoom Meetings, due to location and quarantine constraints (COVID-19 context), and then transcribed employing a systematic qualitative note-taking process (Paillé, 2004), in order to "record both the exchanges and the researcher's observations that occurred during the interview" (Cerceau et al., 2014). The interviews transcription can be found in Appendix B.

A series of interviews with the leaders from the selected projects have been held in order to collect the required data for the case analysis. This last step will lead to answer the proposed research question and to accomplish the three mentioned research goals.

3.4 Data analysis

An analytic strategy is relevant to link the case study data to essential concepts of interest, and then to have the concepts as a sense of direction in analysing the data (Yin, 2018). Moreover, the use of analysis techniques is specially intended to deal with problems of developing internal validity and external validity (Yin, 2018).

For this research, a within-case analysis, a cross-case synthesis and a logic model have been applied. While the first is an in-depth analysis of the separated cases (Yin, 2018), the second one is a single-case comparison to identify key similarities and differences between the cases (Miles and Huberman, 1994). The last one seeks to operationalise a complex chain of occurrences or events over an extended period, trying to show how a complex activity takes place (Yin, 2018, p. 236).

The within-case study involves in-depth case study write-ups for each case study, which produces a stand-alone description, based on a Common Analysis Grid (Eisenhardt, 1989), which can be appreciated next in Table 9.

Table 9 Common Analysis Grid for within-case study and cross-case synthesis

Aspects and variables to assess	Interview Questions	References
Country's OGD Ecosystem		Melville et al. (2004)
Policy and Legal Frameworks	5	Zuiderwijk et al. (2014)
Privacy and Security	6	McBride et al. (2017)
Organisational and Administrative factors		
Support from Government	7	
Support from public servants	8, 9	
Financial Resources	3, 11	
Technology and Infrastructure		
Sources of data	12, 13	
Quality of data	14	
Contribution to the OGD ecosystem	15	
OGD Actors		Ubaldi (2013)
Case study organisation	1, 2, 4, 40	Ding et al. (2011)
Previous experience	23	Magalhaes et al. (2013)
OGD Community willingness to work	10	Zuiderwijk et al. (2014)
Partnership and alliances	16, 17, 18	Van Schalkwyk et al.
Issues with other actors	19	(2015)
Collaboration between intermediaries	20, 21, 22	
Public Value creation		Melville et al. (2004)
Case study service	1, 2, 4	Schryen (2012)
IT and non-IT capabilities	24, 25	Pang et al. (2014)
Service consumption and assessment	28, 29, 30, 31	Kattel and Mazzucato
Service engagement	34, 35	(2018)
Service development	32, 33, 39, 40	Panagiotopoulos et al. (2019)
Value created and outcomes		Verhulst and Young
Self-assessment	36, 37	(2016)
Unexpected outcomes	38	IADB (2018)
		Callinan (2018)
		Rodriguez Müller and Stein (2019)
		McBride (2020)
Drivers and Barriers		Verhulst and Young
Drivers	26	(2016)
Barriers	27	IODC (2016)
Political Recommendations	40	McBride et al. (2017)
		Toots et al. (2017)
		McBride et al. (2018)
		McBride et al. (2019)

Source: Own elaboration, based on references mentioned in the table.

In the table, there is a match between the variables derived from the literature that have been assessed in the empirical cases, together with the respective interview question number, given that each question responds to the aspects to evaluate. The interview questions can be found in Appendix A.

Later, in order to identify the common patterns and trends, a cross-case analysis was used. Cross-case analysis (Miles and Huberman, 1994; Eisenhardt, 1989) help the yielding of common overarching patterns and tentative propositions across the four cases about

relationships among OGD intermediaries, OGD ecosystems and OGD public value creation, and contextualise the findings within existing theoretical literature (Eisenhardt, 1989). These steps were iterative and reflexive and resulted in the findings presented in the Discussion chapter.

Cross-case synthesis resembles a "case-based" approach (Byrne, 2009; Ragin, 1992), where "the goal is to retain the integrity of the entire case and then to compare or synthesize any within-case patterns across the cases" (Yin, 2018); thus, a cross-case synthesis would initially identify the within-case patterns, and then the analysis will allow examining if there are replicative (literal or theoretical) relationships across the case studies (Yin, 2018).

For both, the within-case analysis and cross-case synthesis, the aspects that have been assessed are the ones that appeared as the most relevant in the theoretical framework, and which are shown in the previously introduced Common Analysis Grid (Table 9).

The logic model is the third technique for analysis case study data applied in this research. It shows a complex chain of events staged in a repeated cause-effect pattern, "whereby an outcome (event) at an earlier stage can become the stimulus (causal event) for the next stage, and in turn producing another outcome that becomes yet another stimulus" (Yin, 2018, p. 238). Moreover, it entails the matching of empirically observed events to theoretically predicted events (Yin, 2018).

This way, it is compared the consistency between the originally stipulated sequence in the previously presented Integrative Model for OGD public value creation based on literature (Figure 14), with the empirically observed within-case analysis and cross-case synthesis. This analysis "will provide additional data, explaining in a fair manner why the sequence had been affirmed (or rejected or modified)" (Yin, 2018, p. 238).

4 Case Study Results: within-case analysis

As it was previously announced, in this chapter, a within-case analysis has been held. Since it is an in-depth analysis of the four separated cases (Yin, 2018), it involves detailed case study write-ups for each case study, producing a stand-alone description, based on the Common Analysis Grid (Table 9) previously presented in Chapter 3.

The selected variables to assess are divided into four main aspects which have been addressed in every case study in alphabetical order: Colombia, Guatemala, Mexico and Uruguay. These aspects are the National OGD Ecosystem, the specific OGD actors for that environment, the public value creation process and the capabilities needed for it, and the impact achieved and other outcomes.

These within-case analyses will serve as a basis for the cross-case analysis and logic model further presented in Chapter 5.

4.1 Case 1: Colombia: Random Monkey - Datasketch

4.1.1 Colombia's OGD Ecosystem

Policy and Legal Frameworks

According to the Open Data Barometer, Colombia is ranked in the 12th position in the world ranking (World Wide Web Foundation, 2018). The Ministry of Information and Communications Technologies (MINTIC) has defined and implemented policy guidelines and standards for e-government development at the national and territorial levels (OECD, 2018), it has provided tools and supported web platforms, the open data platform, face-to-face workshops and webinars (OECD, 2018). Table 10 shows the respective timeline on the most important legal documents enacted.

Table 10 Colombia's Open Government Policy timeline

Year of enactment	Political and Legal Framework
2008	Online Government Strategy (Decree 1151 of 2008)
2011	Colombia became a member of the Open Government Partnership
2012	Online Government Strategy 2012 – 2015 (Decree 2693 of 2012)
2015	1st Open Government National Action Plan
	Online Government Strategy (Decree 1078 of 2015)
2018	Digital Government Policy (Decree 1008 of 2018)
2019	Guidelines for integration to the Single Portal of Colombian Government

Source: Own elaboration, based on MINTIC (2019), Open Government Partnership (2020), World Bank (2019)

In general, Colombia's MINTIC has regularly provided strategies to take advantage of open government data and has encouraged its use; however, not all data actors feel the same. Despite this country adhered to the Open Government Partnership, it has focused its efforts to publish just "important" open government data for the users and not all the public sector information it has. Nevertheless, access to public information is a fundamental right; thus, all information should be available, regardless of whether it is used or not (Marín, 2020). However, the main problem is not access to information, but rather how organisations use the information to solve their problems (Marín, 2020).

There is privacy and security regulation as well, but the implementation is not always right. Sometimes, open principles collide with data privacy rights (Marín, 2020). For the case of Random Monkey and Datasketch, this has not been the situation in their projects, but faced many ethical dilemmas: they created the first Feminicide's database and the Registry of Assassinated Social Leaders; leading to many disjunctives about if they were providing better tools for making public policy decisions, opening paths for re-victimisation or putting new social leaders at risk. The way they try to face these issues is by being informed about the new knowledge on the issue, or by partnering with specialised social organisations (Marín, 2020).

Organisational and Administrative factors

In the public sector, there are some public servants and institutions that push or follow open government policies with more will than others. On the same way, there are many others public servants and organisations that, due to cultural tradition or the unclear perceived benefits of public information, are going to stop any progress in the use of open data (Marín, 2020). The first ones are supporters of the Open Government Partnership principles.

However, this varies significantly according to the level of preparedness of the entities to work on open government issues, mainly to the perceived ease of use, training skills or capacities, and the perceived advantages of collaborating with other organisations and opening public sector information (Marín, 2020).

Financial Resources

In Colombia, there are not many organisations working with open data; thus, the financial aid is not divided by many of them. Open data projects are mainly a cross-cutting issue in the agenda of some organisations and not their institutional core; these organisations could be news portals, civic organisations focused on digital rights, and academia. Sometimes, this kind of organisations prefers to build partnerships with organisations like

Random Monkey, in order to apply for grants together but focused on their core projects (journalism, environment, gender, among other issues) (Marín, 2020).

In the case of Random Monkey, economic support comes from two sources: service providing and funding grants. In the service providing, they are a social-aimed company, sustained economically by developing consultancy projects on data science issues, reinvesting in technologies and projects that seek to improve the flow of public information; and most of their clients have been civic organisations, academia and international organisations with projects where they need support in the data science field. On the other side, they have also been supported by the ALTEC funding, receiving a grant of 93000 USD, but also crowdfunding sources in Kickstarter (Datasketch, 2019)

Technology and Infrastructure

Colombia has an Open Data Portal with 11590 datasets from 1193 public sector institutions (Gov.co, 2020). However, it also has public sector information that is not in an open format and can be found in the many government institutions portals; thus the data can be downloaded from the open government data portal or by the use of the Law on Access to Public Information (Colombian Government, 2014).

Datasketch uses data from public and private sources. If some data is not open, the team analyse whether it is worth to open. Sometimes they have to be more careful when data is sensitive, as in the case of the analysis of the Armed Conflict in Colombia (Marín, 2020).

For Datasketch project, data found is not of high quality, this despite that Colombia has good legislation on open data. The problems that can be found are mainly due to the absence of file and attribute standards in the published data (Marín, 2020).

Datasketch follows open government principles; contributing back to the OGD ecosystem while publishing all their datasets in a Github repository, and now by creating their own Datasketch Portal, where people can access data from other people who want to share it, as well as the datasets that Random Monkey has worked on, together with a cloud visualisation platform where users can upload data and make maps or charts, much more straightforward than with other tools (Marín, 2020). Juan Pablo Marín, Datasketch's co-founder, states the usefulness of Datasketch: "without the need for technical knowledge, Datasketch allows you to use open-source visualisation tools, interactive maps, simple graphics, among others. They can be downloaded and used for the purpose any user requires" (Marín, 2020).

4.1.2 OGD Actors

Case study organisation: Random Monkey

Juan Pablo Marín, the founder of Random Monkey, is an electronic engineer specialised in computational statistics. He acknowledged his interest in the use of data and evidence for public innovation in Latin America, leading him to create a data consulting non-profit organisation where he contacted data journalism communities (ILDA, n.d.). In 2015, the company was over, and he returned to Colombia, where he started a data consulting company named Random Monkey, a data science consulting company that seeks to support evidence-based decision making. They provide services in many fields (Random Monkey, n.d.):

- Data cleaning and formatting: web scrapping and data capture, enrichment with public data.
- Data analysis: descriptive statistics, predictive algorithms, automated reports.
- Data visualisation: interactive visualisations and reports, networks, maps and more.
- Data applications for webpages: automatised reports, visualisation applications, customised applications.

This consultancy has strong roots in multidisciplinary work, having a diverse team from different professional backgrounds. The company offers different services around data science, with the aim that their clients can seize information more easily.

Random Monkey has had long experience in data science projects not just in Colombia, but also in Brazil and Chile, and it has improved over time. The type of projects they have been working on are, for example (Marín, 2020):

- Creating a database for the Colombian Armed Conflict (namely kidnappings, massacres, victims, sexual violence variables, among others).
- Developing a web platform for monitoring corruption in the Colombian government.
- Supporting news portals to research on various topics, such as gender equality, among others.

OGD Community willingness to work

Before 2016, there were independent and isolated open data initiatives, but that changed from the AbreLatam Conference in Bogota. This event represented a turning point in the construction of an open data community in Colombia. For Marín (2020), this event helped to generate networks among those who were working on open data issues in Colombia, building new partnerships and developing new projects together (Marín, 2020). However, to integrate all the different actors in the OGD community is a great challenge, but news platforms have used data journalism as an essential tool to communicate relevant issues learnt from public sector information (Marín, 2020).

Partnership and alliances

For Datasketch's specific project, there has not been a partnership with other organisations; however, all the previous projects have been developed together with key partners. They usually have a clearer vision in some issues, and both organisations learn from the alliance (Marín, 2020). International OGD organisations, like the Latin American Open Data Initiative (ILDA), have a vast panorama of the partnerships created on open data initiatives (Marín, 2020).

When partnerships are developed, responsibilities among partners are shared. In the case of Datasketch, we focus on platform development and cloud visualisations to make our partners able to use the tools for seizing their data (Marín, 2020).

Problems beside the usual ones in project management when partnerships are carried, there have not been nor with allies, nor with other social or political stakeholders (Marín, 2020).

Collaboration between intermediaries

To collaborate and create partnerships is very useful because the efforts are summed up, and it does not matter if the partners come from academia, newspapers, public organisations or private companies. However, what is essential to take into account is that partners have to be aligned with the same ethical focus on values (Marín, 2020). Juan Pablo Marín explains that working with organisations that use data to misinform or to harm others would not be within the Datasketch's scope for teaming up (Marín, 2020).

4.1.3 Public Value creation

Case study service: Datasketch (Datasketch.co)

Random Monkey's goal has always been to provide support for evidence-based decision making. However, there was still a need in understanding many issues: the value of data initiatives for problem-solving, how to access public information, how to analyse it, visualise it and communicate it (ILDA, n.d.), that is the reason why Marín created the blog called Datasketch, which in 2015, evolved from a blog to twofold: a data-based services company, and a digital platform for investigative journalism and data (ILDA, n.d.).

Datasketch was created to help organisations access public datasets, to explore and analyse that data, and to create and export data visualisations (Bajak, 2019). The main aim was at the beginning to facilitate journalists and citizens the understanding and analysis of data, to make them able to work in data science adequately without the need for a technical background (Perez Damasco, 2016) Datasketch apps can create data visualisations and empower users to analyse data faster with access to open information repositories. The data tools the platform offers are free to democratise information-based knowledge (Datasketch, n.d.).

Datasketch is different from other data visualisation tools because of (Bajak, 2019):

- The access to data: Datasketch understands that more than data visualisation, one real challenge is accessing data that is well prepared and organised.
- Open source for localisation: Users care about their specific context; thus there is a need for localised tools; however, the only way to do this at scale is by helping developers solve their local data problems.
- Export in multiple formats: Most tools allow users only to embed a visualisation, Datasketch allows users to have access to the source code.
- Learn by doing: Datasketch is incorporating tips from experts straight into the app. While using the app, it is recommended to watch short explainer videos for users, to learn more about data journalism.

Datasketch has created an interactive map for the Inter-American Development Bank, a network of analysis of Colombian politicians, an exploration of gender violence in Colombia, and an analysis of the more than 500 Colombian activists murdered since 2016. Furthermore, Datasketch was nominated for the Data Journalism Award in 2017, and it

has joined the Network of Latin American Journalists for Transparency and Anti-Corruption (Bajak, 2019).

IT and non-IT capabilities

When developing OGD-based projects, are needed both kind of capabilities: IT as well as non-IT. From the former, knowledge of open technologies and their use is transversal to the capabilities needed on OGD-based projects (Marín, 2020). A mix of various skills ensure the performance of the team and therefore, the project.

While from the latter, an interdisciplinary team is vital. In the case of Datasketch, this has been a key strategy from the very first day (Marín, 2020). A well-constituted team of human sciences and technological sciences professionals in Datasketch has professional experience on electronic and system engineering, journalism, computational statistics, political sciences and R programming language (Datasketch, n.d.).

Service consumption and assessment

Service consumption depends on the definition of use is taken. The service performance is measured by the number of data visualisations created and the volume of shared data; hence, defining consumption as platform use, in Datasketch, more than 400 user accounts have been registered (Marín, 2020). However, when products created from the platform (like data visualisations) are shared and distributed worldwide, it can be hundreds of thousands or even millions of people; this, because visualisations are replicated through media partners (Marín, 2020).

Feedback from users has always been welcomed: users send incidence reports to Datasketch, and they always improve the existent service in order to be more user-friendly (Marín, 2020).

Service engagement

There are some challenges when engaging citizens to use Datasketch, namely, 1) advertising the platform to the people that need it, and 2) improving the product in order to make it more useful (Marín, 2020).

Service development

In order to make Datasketch active, Random Monkey is (Marín, 2020):

- Willing to collaborate on more issues which they consider strategic, these are gender issues, fight against corruption and sustainable development.

- Adding new functionalities to the platform or developing new tools (right now, Random Monkey is working on a tool that does text analysis on pdf documents, a common requirement for journalists that access to public information through pdfs).

Datasketch aims that more organisations could develop themselves on data science field without having the in-house knowledge (Marín, 2020).

4.1.4 Value created and outcomes

Self-assessment

Currently, worldwide, it is challenging to find professionals that know how to access, analyse and communicate data. Datasketch accomplishes to help organisations in using data science tools to take advantage of their information (Marín, 2020). This way, Random Monkey democratises data science. For Marín, the success in the crowdfunding campaign, and organisations using their services are a clear result that this platform has been successful (Marín, 2020).

ILDA also enumerated some of Datasketch's outcomes, which are (ILDA, n.d.):

- The positioning of topics on the public agenda
- The generation of new relevant data about those topics
- The replication of their methodologies in other contexts

Unexpected outcomes

Furthermore, Datasketch's success expands to the political field. Due to open government policies, the public sector published many datasets in an open format; however, the quality of them was not of the highest. They encouraged the government to publish OGD in a better format in order to guarantee its quality; now, the government has improved the quality of the published data, this happened with the COVID-19 data, as an example (Marín, 2020).

4.2 Case 2: Guatemala: Diálogos - Observatorio de Violencia

4.2.1 Guatemala's OGD Ecosystem

Policy and Legal Frameworks

According to the 4th Edition of the Open Data Barometer published in 2016 (the last full edition), Guatemala is ranked 63rd in the global measure of how governments are publishing and using open data for accountability, innovation and social impact (World Wide Web Foundation, 2016). This performance mostly is due to the existence of policies but no laws that enforce the complying of the country strategies or that regulate this matter, as it can be seen in the following table.

Table 11 Guatemala's Open Government Policy timeline

Year of enactment	Political and Legal Framework
2008	Law on Access to Public Information (Decree 57 of 2008)
2011	Guatemala became a member of the Open Government Partnership
2012	Creation of the Presidential Commission for Open Public Management and Transparency (GPAT), which executes the Open Government Action Plan (Government Agreement N° 360-2012)
2016	Open Data Policy
2018	Reform to the GPAT (Government Agreement N° 41-2018)
	Open Data National Policy
	4th Open Government National Action Plan
2020	The Presidential Commission for Open and Electronic Government creates the General Government Policy 2020 - 2024

Source: Own elaboration, based on Guatemalan Government (n.d.), GPAT (2018), Open Government Partnership (2020)

For Carlos Mendoza, coordinator of a violence observatory in Guatemala and former public official, such policies in open government and data do exist, but in practice, they do not. This situation is mainly due to an institutional problem, where the whole idea of open data and transparency has been mounted under the old legislation, and it has not been modified, causing incompatibility between the laws (Mendoza, 2020). In Table 11, it can be seen how many policies have been agreed over and over, but in the end, they do not have tangible effects in the legislation or practise. They often cite the "Law on Statistical secret" or "Law on Bank Secrecy", in order to prevent certain data from being shared with citizens and organisations and ends up working as a barrier to access to public information. On this regarding, these circumstances happen because the Access to Public Information Law was made in 2008, not being modified since that year, when open data or open government were hardly known in Guatemala; this would allow that the legislation of a law, since as a policy is not enough for enforcing (Mendoza, 2020).

In general, the Open Government Programme has not been achieved in Guatemala due to political and cultural reasons. The first action plan was executed during a government in which the president and vice president ended up in jail, and, in other government, a minister kicked out the United Nations commissioner, affecting the building of a partnership on this issue. On the other side, the policies have not been successful because it costs a lot to change the mindset of bureaucrats on the issue of data, additionally to the reduced statistical culture of Guatemala (Mendoza, 2020).

The context of COVID-19 has made evident the need to know public information for facing the crisis. Some attempts have been made in the Congress for decreeing laws regarding open data, habeas data law and legislation on personal data, but they only remained as initiatives and failed to be legislated (Mendoza, 2020).

The absence of legislation on personal data leads to several situations that diminish the privacy and security of the citizens: The Supreme Electoral Court provides all political parties with access to the electoral roll with the names and personal identification numbers of 8 million Guatemalans; furthermore, Guatemala is well-known for having cases of telephone espionage and communication interventions from political candidates, which is especially dangerous in a context of violence (Mendoza, 2020).

Diálogos sometimes receives the victim's names, which is private data and should not be shared; however, personal data allows to infer the causes of death (in case they are journalists or political candidates); thus a rigorous ethical performance is needed to be complied with (Mendoza, 2020).

Organisational and Administrative factors

Support from the government is not received at all. Furthermore, for Mendoza, "the government discourages the participation of actors from outside the government" (Mendoza, 2020). This situation happens because public officials perceive actors from outside the government as a threat, supported by the prevalence of a particular culture of opacity (Mendoza,2020), which creates four types of resistance to open public sector information from Guatemala's public officials: some of the officials allege that such an effort makes them more vulnerable to political opposition in Congress; other colleagues are less enthusiastic about transparency for reasons of internal power dynamics, thinking they must demonstrate that they are indispensable for the information they generate and monopolise, these are the bureaucrats (Mendoza, 2017).

Then there is the fearful public servant who is divided into two types: those who lack their initiative to release data because they only do what is required by law and those who fear

the technical and academic scrutiny of experts on the assumptions, scenarios, projections and calculations in general done by them (Mendoza, 2017). Finally, some deliberately hide information to cover up administrative errors, in the best case, or to hide actions or omissions for corruption purposes (Mendoza, 2017). Thus, people with open government mindset is needed within the government, the so-called "champions" who, from the government, promote the open data culture.

The formal mechanisms that exist for access to public sector information are twofold: by the exercise of the Law on Access to Public Information and sending letters to the directors of public institutions requesting the needed government information. However, there can be negative answers, or take much time in providing the requested data, which does not help when it is said that data should be timely and opportune. For Mendoza, “sometimes it is needed to have some "friend" inside the institution in order to have access to public information” (Mendoza, 2020).

Financial Resources

There are international organisations that support the work of organisations like Diálogos. In its specific case, they are Open Society Foundations (OSF), the National Endowment for Democracy (NED), the US Institute of Peace, the Latin American Faculty of Social Sciences (FLACSO, by its acronym in Spanish), HIVOS, and the Inter-American Development Bank (IADB) (Mendoza, 2020). In the beginning, the Violence Observatory economically held Diálogos. However, nowadays, both are financially independent, whilst the Observatory remains as the main Diálogos's most significant project (Mendoza, 2020).

However, for Mendoza, OGD projects are not sustainable: "maybe there are funds to start the projects, but not to continue them. In order to maintain OGD projects, it requires funds that are not readily available, affecting the finishing of some projects and ideas that we have" (Mendoza, 2020).

On this regard, Diálogos has received support from various organisations that have funds to support NGO in Guatemala; this is the case of Agency, SocialTIC and Datasketch, but this makes Diálogos purely dependant on these organisation's funding and resources. There have been some NGO in Guatemala working on OGD projects and promoting open government and data congresses, such as Congreso Transparente (or Transparent Congress in English), but they also run out of funding (Mendoza, 2020). Hence, the economic sustainability of data projects is unclear.

For Mendoza, "the emphasis is on the model of how these collaborations are financed: it is not the same if we have the money and we pay the consultant to come and train us in the required capabilities; but, if one depends on the others to distribute their time and resources, it is much more complicated to accomplish sustainable goals" (Mendoza, 2020).

Technology and Infrastructure

Since 2015, there exists an Open Data Portal and a guide for opening data; however, the first is empty (0 datasets), and the guide is just a recommendation, and it does not enforce public officials to follow their guidelines (Ministry of Governance, 2015; SENACYT, 2015). From this, it can be inferred that there is a relevant problem with the data availability in Guatemala.

Given the data sources for the Observatorio de Violencia are not in this Portal, these are retrieved from three public institutions: The National Civil Police (PNC by its acronym in Spanish), the National Institute of Forensic Sciences (INACIF, by its Spanish acronym), and the National Statistics Institute (INE, by its acronym in Spanish) (Diálogos, n.d.).

The three sources complement themselves, and they differ on quality, which under the Bogota Protocol (a regional standard for homicidal violence data) are assessed as the following (Mendoza, 2019):

- To learn about victims of violence homicidal, the complete source is INE vital statistics, and they can be obtained annually from their website.
- To know more about the criminal act, the best source is the PNC. However, it does not publish the criminal records data automatically, but it has to be requested.
- INACIF turns out to be a complementary source that has very little additional information, but it has its data published daily, with a lag of 5 days on average. The Observatory of the Violence uses INACIF data to verify what reports the PNC at the national level.

For Mendoza, public sector information publication must be improved periodically and promptly, enhancing the analysis of homicidal violence in the country, and it will result in better recommendations for public security and prevention policies (Mendoza, 2019).

However, Diálogos has an alternative informal source obtained through contacts within the National Civil Police, which without it, "no analysis could be made of the 200,000 deaths in recent years because it is detailed on a case-by-case basis" (Mendoza, 2020).

After creating the reports, Diálogos share the worked data in Excel files, which are available on the website; this way, they also contribute to an OGD infrastructure. The downloaded data has been used for groups like ACLED, an organisation that map conflicts around the world, in order to understand how Guatemala is doing in violence issues (Mendoza, 2020).

4.2.2 OGD Actors

Case study organisation: Diálogos

Diálogos (Dialogues in English) is a second-generation think tank that seeks to promote the dissemination of empirical research and the social sciences, as well as evidence-based analysis of public policies, and informed and democratic public discussion on public issues at local, national and regional levels (Diálogos, n.d.). It aims to produce knowledge and foster dialogues for innovative solutions and evidence-based public decisions (Diálogos, n.d.). Now, they seek to evolve from a second-generation think tank to a Public Policy Innovation Lab (Mendoza, 2020), in order to find innovative solutions for current issues and to sustain evidence-based public decisions. Diálogos is currently working on three main issues: anticorruption, violence and migration (Mendoza, 2020), as it has previous experience on these issues.

The transition to a Public Policy Innovation Lab opens up many opportunities in other issues, and the key is to have various methodological tools, in order to grow not only at the national level but also at the regional level. The former will depend on the capacity for (1) growing in technical capabilities (data infrastructure, data management and data analysis) for gaining a competitive advantage, and (2) for collecting funds (Mendoza, 2020). Since its foundation, Diálogos has grown a lot in terms of issues, team members, budget and influence.

OGD Community willingness to work

There is still no OGD community in Guatemala. The open government paradigm is still very incipient in Guatemala, constituted by very young NGO connected to a community at the regional level in Latin America. These movements understand the importance of data and how to take advantage of it, but they do not even transcend Guatemalan civil society (Mendoza, 2020). There have been efforts made by NGO like Guatecambia, "which held open government and open data conferences, but the project was not

sustainable over time, and it did not have the participation from older NGO" (Mendoza, 2020). These older NGO do not understand the relevance of data but are the ones with the most significant political and social power; on the other hand, the newest NGO, despite understanding the open government paradigm, definitely do not have the impact that older NGO do have (Mendoza, 2020).

The private sector might push the data agenda and "it would be in their best interest to do so, but they still do not understand it, since there is a lack of data culture" (Mendoza, 2020). On the other side, there are some international NGO such as SOCIALTIC, which had fellows in Guatemala for the project Escuela de Datos (Data School). Those fellows held events called "Datos y Tragos" (Data and Drinks in English), which tried to build a data community in the country, "but they ran out of funding and as far as I know, there is no data school fellow in Guatemala anymore" (Mendoza, 2020). On the part of citizens, the value of data is not yet understood, continue seeing it as something esoteric (Mendoza, 2020).

On that OGD Ecosystem, Diálogos has gained some respect due to its projects and the private sector and some government spheres have recognised it, but more people with the open government mindset is needed within the public sector, the so-called "champions" that promote the open data culture (Mendoza, 2020).

Partnership and alliances

Open Society Foundations (OSF) is the leading donor for the Observatorio de Violencia. However, it has created a network of observatories in the region, where they are partners at the Latin American level, facilitating the association with other observatories in the Northern Triangle (El Salvador, Guatemala and Honduras), and also the linking with the network of the Organisation of American States (OAS) (Mendoza, 2020).

In addition to OSF, SocialTIC has also collaborated with Diálogos, bringing data science and technical support; however, this partnership did not have any tangible results since the collaboration stopped, despite all the work already invested in the design of an open data repository, and dynamic tools that allow the interaction with the platform users (Mendoza, 2020).

SocialTIC offered mentorship with programmers that "helped us to build the platform image, the domains, the interactive tools; nonetheless, the mentors had to leave because they were offered other job opportunities" (Mendoza, 2020). Last year, Datasketch, a Colombian data science company, helped to design the new Diálogos website. This support happened thanks to HIVOS, who linked both organisations (Mendoza, 2020).

Issues with other actors

The problem with SocialTIC was the availability of funding from their side: "they no longer had a grant to continue supporting us, leading the platform to be just half-developed and not finished, even though we invested time and resources in the platform design for a long time" (Mendoza, 2020).

Though, it is of paramount importance to mention the impact that political issues can have in OGD projects: when the Guatemalan president decides to expel the United Nations commissioner, the Minister of the Interior is also changed in order to expel the CICIG (International Commission Against Impunity in Guatemala), a commission created by the United Nations to combat corruption in the public sector, affecting Diálogos directly, given "we were about to sign the agreement and suddenly excuses appeared for the project to be stopped" (Mendoza, 2020). Hence, political friction breaks relationships that could serve as collaborations and therefore, opportunities.

Collaboration between intermediaries

For Mendoza, "there is knowledge and experience that we do not have, and that is found in other organisations or collaborations. Now that we are making the transition to a Public Policy Innovation Lab, we have advice from external teams. Help from outside is needed for various purposes" (Mendoza, 2020).

Furthermore, there are technological or methodological issues that the team is not capable of handling yet, and collaborations help to fill this gap. The involvement of the organisation "Agency" for the transition to a Public Policy Lab, or the hiring of Javier Arteaga, in order to build Diálogos's "DATOS" methodology, are examples of that (Mendoza, 2020). On this way, the already existent small community of OGD supporters in Guatemala could also be involved.

However, Mendoza highlights the relevance of building a model for financing these collaborations, given "it is not the same if we have the money and we pay the consultant to come and train us; but, if one depends on the others to distribute their time and resources, it is much more complicated" (Mendoza, 2020).

4.2.3 Public Value creation

Case study service: Observatorio de Violencia (Dialogos.org.gt/observatorio-de-violencia)

The Observatorio de Violencia (Violence Observatory in English) aims to timely provide reliable data and analysis on the spatial and temporal evolution of homicidal violence in the three countries of the Northern Triangle of Central America, taking into account relevant variables such as the sex and age of the victims, type of weapon used by the aggressor, place, date and time of occurrence of the violent act (Diálogos, n.d.).

Additionally to its statistical function and the sharing of free access to violence data, the Observatory also intends to enhance the capabilities of public servants and to guide evidence-based decision-making on citizen security policies, especially on what works to reduce homicide rates and prevent violence (Diálogos, n.d.). Moreover, the Observatorio de Violencia seeks to pedagogically explain the importance of using the homicide rate as an indicator; given that journalists usually use the total number of homicides or the daily number of them; however, to be able to compare regionally it is crucial to understand the importance of this data (Mendoza, 2020).

In the future of the Violence Observatory, it is needed a methodological leap to more advanced things: "we want to make the transition from counting data to understanding data. Not only counting the number of deaths by violence but also explaining why violence rises or falls in our context" (Mendoza, 2020).

IT and non-IT capabilities

The Observatory's team is constituted by two senior researchers and two junior researchers, a communications manager, a specialist in institutional relationships, an administrative assistant, and an executive director. This team has the capabilities for accessing databases via STATA, R, or SPSS; but a new position on data science with technical capabilities has been required for the development of the Observatory (Mendoza, 2020). SocialTIC and Datasketch have supported the Diálogos on that regard, with the platform design, the domains, and the interactive visualisation tools, the new Diálogos website (Mendoza, 2020).

However, there is a need on professionals who know more about data science, programming, software, hardware, and data management in general, which is still the primary deficiency in Diálogos: "if we want to be an organisation focused on the use of data, we need the infrastructure to manage this data. We have many databases, but our management is still rudimentary: we do not have a server where we have all the databases

available and by order, where they can be downloaded, manipulated and crossed with other data" (Mendoza, 2020).

The lack of these capabilities goes beyond the organisation and is part of a more noticeable lack of historical concern of the Guatemalan government and a lack of statistical culture in Guatemalan society (Mendoza, 2020).

Service consumption and assessment

The webpage is very basic and serves as a repository for the Observatory's reports and data. However, Mendoza states that they want to have a more functional and eye-catching design, in order to have an adequate platform to socialise and communicate the data the Observatory has (Mendoza, 2020).

The Observatorio de Violencia has performance indicators related to the apparition in media, number of visits to the webpage, presence on social networks, number of webinars on Facebook Live, and number of conversations online with the Sophos bookstore in Guatemala (Mendoza, 2020). Additionally, the Violence Observatory has intangible indicators, such as "the influence that is achieved in the Congress, or the Executive power and in policymakers. These former indicators are more difficult to measure, but we could say that we have achieved that somehow" (Mendoza, 2020).

Service engagement

Respecting the user engagement with the Observatorio de Violencia, the webpage had 3822 visits in 2018, 5043 in 2019 and 1994 visits from January to June 10th in 2020. Regarding the number of views that the reports have had, the average is around 48 viewers per month; however, where the observatory has the most impact is on social media (Diálogos, personal communication, August 3, 2020).

For Mendoza (2020) there is still work to do: "we have to make the Observatory known; Diálogos has still a lot for growing on social networks: on Facebook, we have 4500 followers, on Twitter, we have 2900 followers. We have not yet managed to reach a comfortable position in social networks in Guatemala; above all, if we want to cover Honduras and El Salvador as well, so we need to articulate a greater communications effort" (Mendoza, 2020).

The launching of the Observatorio de Violencia was held in a more traditional press conference: an event where journalists were invited, the presentation was made, a press release was presented, and it was expected that the attendants would follow the Observatory on social media (Mendoza, 2020).

Service development

Diálogos is a recognised organisation by civil society, but in order to be more successful, it needs to strengthen and build capacities in the government counterpart. Mendoza is sure that a collaboration with the PNC, the INACIF, the INE and the Ministry of Governance, would foster the role of the Observatory, but for this, it is necessary to have "a strategic plan to work in these relationships, to avoid political shocks and conflicts. If the government develops technical capabilities, we would surely be at a higher level, doing more advanced things such as georeferenced analysis, among others" (Mendoza, 2020).

In order to further develop the platform, a friendlier design is necessary: Mendoza thinks that "it should be a more interactive platform, easier to use and to find things" (Mendoza, 2020). In order to reach both objectives, are needed capacities for (1) growing in technical capabilities since we see that this is one of the areas in which we could have a competitive advantage, and (2) for collecting funds.

4.2.4 Value created and outcomes

Self-assessment

The Observatorio de Violencia has achieved the transformation of data into useful information for journalists, for policymakers and the critical mass found on social networks. It collects data, shares it on time, learns from it and seeks collaboration. This data is useful for evidence-based decision-making in the public and private sectors, and this value coincides with the intention at the beginning of the project (Mendoza, 2020). For Mendoza, there is a question that is still open: “has it reached enough people, especially the people that must be reached? The people that actually need this data? Journalists have identified us, but we have not reached the whole population or have had a more significant impact on the public opinion” (Mendoza, 2020).

Unexpected outcomes

Furthermore, the Violence Observatory has achieved an international projection thanks to the support of OSF for belonging to the network of violence observatories in the region, contributing to the growing of Diálogos, professionally and institutionally (Mendoza, 2020). Also, the Violence Observatory has served as the showcase for Diálogos, where "it has demonstrated what our organisation can do and the methodology to achieve our goals, generating other donors to approach to us for working together on new issues" (Mendoza, 2020).

4.3 Case 3: Mexico: PODER - Quién Es Quién Wiki

4.3.1 Mexico's OGD Ecosystem

Policy and Legal Frameworks

According to the Open Data Barometer released in 2018, Mexico is ranked in the 6th position in the world ranking (World Wide Web Foundation, 2018). This high position among the whole world has depended on a set of policies that began more than 20 years ago, as can be seen in the following table.

Table 12 Mexico's Open Government Policy timeline

Year of enactment	Political and Legal Framework
1994	Launching of the first website of the Mexican Government
2003	First digital literacy strategies (e-Mexico system), as well as the first document in this regard: Good Governance Agenda
2009	Digital Government Agenda
2011	Creation of the General Application Manual for ICT (MAAGTICSI), a standard for all the technological processes in the Mexican dependencies
	Mexico became a member of the Open Government Partnership
	Mexican Digital Agenda
2012	Creation of Open Data Portal in Mexico City
2013	Mexico City government launched the Lab for the city
	OGD Portal "Code for Mexico City" developed by the Lab for the City
2015	General Law of Transparency and Access to Public Information

Source: Own elaboration, based on Bonina and Eaton (2020), Cruz Meléndez and Zamudio Vásquez (2017), Open Government Partnership (2020), Mexican Congress (2015)

For Eduard Martín-Borregón, PODER's Data, Journalism and Technology Director, it cannot be said these policies are directly encouraging data reuse. However, this open government paradigm was more robust in the past government administration, where there was a willingness for opening government data, but also there were many middle managers who encouraged these open data policies (Martín-Borregón, 2020).

In Privacy and Security issues, there is the Institute of Access to Information, and there is a regulation on the Citizens Privacy and a Law on the protection of personal data, although for Martín-Borregón it is not fully complied (Martín-Borregón, 2020).

In the case of PODER, regarding data protection, they often receive emails from companies requesting published information to be withdrawn, causing some interesting effect: they rectify the published data with their sources, and therefore, allowing public

sector information to be examined and allowing companies to demonstrate that the published information is false (Martín-Borregón, 2020).

Organisational and Administrative factors

The government does not encourage the use of OGD. The public sector works on its policies and plans, but it is not the priority. However, this has allowed the building of formal participation mechanisms.

On the other side, there are some public officials with a will, who understand the role of civil society and who allow the participation of external actors, since they can see new opportunities for improving, these are the so-called data champions. Nevertheless, there is a majority that does not have any will at all or that get bothered by CSO, and there is another part of public servants that completely ignore when CSO approach for collaboration (Martín-Borregón, 2020).

The implementation of OGD policies has fostered the apparition of both formal and informal participation mechanisms: the former is based on the OGP commitments, and, as an example, the Mexican City government calls the committers once a year to review all the plans and assess their development (Martín-Borregón, 2020); the latter are community meetings where CSO meet with public officials, networks are established for improving, and for asking questions. These events could be found on local and regional size: "local events such as Open Data Day, or "Datos y Mezcales" (an event where you can drink the national liquor and discuss open data and OGD); or more regional, such as AbreLatam and ConDatos, or some specific event such as Open Contracting (Martín-Borregón, 2020).

Financial Resources

Sustainability of OGD projects is a big challenge. With the COVID-19 and the coming economic crisis are factors that can jeopardise the sustainability of projects, OGD project teams can be reduced for these reasons. Even more, in private companies, the same professionals can earn higher wages than in civil society organisations (Martín-Borregón, 2020).

In the case of Quién Es Quién Wiki, it has been supported by PODER, which has quite varied funding: Hewlett Foundation, Ford Foundation, Open Society Foundations and Luminate. In the specific case of Quién Es Quién Wiki, Luminate and HIVOS contribute directly to the platform, but also Mexico Leaks (Martín-Borregón, 2020).

Technology and Infrastructure

The first attempt for establishing an OGD Portal in Mexico City was in 2012. Its main was to facilitate the access to mandatory data as required in the Mexican Freedom of Information Law. However, there was little support for this platform and until the involvement of Mexico City Lab, and its initiative called "Code for Mexico", it did not achieve success, which finally happened in 2014 thanks to an opening data event (Bonina and Eaton, 2020).

In the case of Quién Es Quién Wiki, the sources of entities come from the Federal Public Administration Procurement, and the contracts from Mexican Regional Governments and Municipalities, all of the published by Ministry of Public Function. These databases are called CompraNet 3.0 and CompraNet Plus (QuiénEsQuién.Wiki, n.d.). Another primary source is the Portal of Transparency Obligations (POT by its acronym in Spanish), which is a system created to comply with the transparency obligations of public institutions in Mexico.

The list of beneficiaries come from the Mexican Stock Exchange, and additional 15 stock exchanges throughout Latin America and Spain, but also from the Latin American Offshore project, an initiative of the Regional Integration and Financing for Development Program of the SES Foundation (Martín-Borregón, 2020; QuiénEsQuién.Wiki, n.d.). In the case of other sources outside government ones, they access Torre De Control database, a project which aim is to link public contracts with beneficiaries in the specific New Mexico City Airport project (NAICM, by its acronym in Spanish) (QuiénEsQuién.Wiki, n.d.) and Cargografías. This platform shows the public positions that each public official had throughout their life (Cargografías, n.d.).

Despite the numerous existent sources of data, the data quality is not high. Martín-Borregón states that it is necessary to apply cleaning and systematisation processes to all the available data so that it makes sense because the results that appear are diverse and with many alternative names (Martín-Borregón, 2020). PODER contributes to the OGD ecosystem making its data downloadable in CSV or accessed through an API (application programming interface) (Martín-Borregón, 2020).

4.3.2 OGD Actors

Case study organisation: PODER

The Project on Organising, Development, Education, and Research (PODER from now on), seeks “to improve corporate transparency and accountability in Latin America from a human rights perspective and to strengthen civil society stakeholders of corporations as

long-term accountability guarantors" (PODER, n.d.). It works with CSO in Latin America for two reasons: first, to increase their influence in decision-making and, second, to create a citizen-led movement for corporate accountability based on three pillars (PODER, n.d.):

1 Information about business practices

2 Technology to ensure symmetric information among all stakeholders

3 Strengthening of collective organising efforts

PODER defines their goal as for improving the corporate transparency and accountability in Latin America from a human rights perspective and the strengthening of civil society stakeholders and corporations as long-term accountability guarantors (PODER, n.d.).

Its core work is based on corporate research in non-offshoreable industries and global cities, which spans to four strategic sectors (PODER, n.d.): financial and related services; extractives and energy; infrastructure and transportation; and heavy manufacturing. For that aim, PODER combines its information, technical knowledge, and capacity building in order to support civil society stakeholders in the previously mentioned sectors (PODER, n.d.). All of PODER's projects use open government data (Martín-Borregón, 2020).

OGD Community willingness to work

There is an OGD community, and several groups are participating in it, the vast majority are from civil society and the government, some journalists, and there are few academics. On the side of the private companies, in the beginning, there were some members of some Data Analysis companies much more active in the OGD community, but actually, there are some just members that continue participating in these spaces until now (Martín-Borregón, 2020).

In the case of citizens, there is no priority for them in the use of OGD, but there is a priority in solving their problems: if OGD solves their problems, citizens will use it, if it does not, citizens will ignore it (Martín-Borregón, 2020).

Partnership and alliances

PODER's projects have been built in collaboration with other actors -and sometimes participating jointly in economic funding, dividing the tasks among the participating institutions. Together, they create linked projects that show datasets so that users can generate their narratives (Martín-Borregón, 2020).

PODER has worked together with Wingu, where they built the first frontend that was used for QEQW (Quién Es Quién Wiki project), and also contributed to the project Torre De Control, with the development of the several visualisations (Martín-Borregón, 2020). Furthermore, it has collaborated with 15 media partners in 16 countries for the Women on the Stock Market project, in order to learn about the situation of women's participation in the Stock Exchanges per country (Martín-Borregón, 2020).

Nonetheless, collaborations are framed in specific projects. For example, in Torre De Control, Wingu developed the visualisations that allowed a more dynamic use for platform users; whilst PODER contributed with the data availability (Martín-Borregón, 2020). It is essential to highlight that "the core of the projects have always depended on PODER and the collaborations are the complementation of its work" (Martín-Borregón, 2020).

The main tasks in QEQW are the following ones: maintaining and improving the page infrastructure, getting more data, and thinking about how to give meaning to this data (Martín-Borregón, 2020). Currently, PODER oversees the total maintenance of the project, with seven members in its interdisciplinary team: "a backend developer, a frontend developer, a technology coordinator, a journalism coordinator, a journalist, a data analyst, and me, in the position of Data, Journalism and Technology Director" (Martín-Borregón, 2020).

However, there are some organisations and public servants that do not like the approaching of PODER, and "try to put up barriers", this situation often happens; but for Martín-Borregón, it does not interfere critically (Martín-Borregón, 2020).

Collaboration between intermediaries

For PODER, "working with other organisations have helped us to have other perspectives, to grow our contact networks"; furthermore, "PODER is known for that, for being one of the most collaborative organisations, one of the most open for sharing" (Martín-Borregón, 2020). In the last two years, they have planned many events that fostered the collaboration and the building of the OGD Community.

Respecting which organisations are the not recommended to participate in OGD projects, Martín-Borregón has a clear opinion: "We have a business accountability perspective, organisations whose primary interest is to generate benefits for privates should not participate in this project" (Martín-Borregón, 2020).

4.3.3 Public Value creation

Case study service: Quién Es Quién Wiki (Quienesquien.wiki)

In 2014, PODER created Quién Es Quién Wiki (Who is Who Wiki, in English), an OGD and open software platform that promotes corporate transparency in Latin America (PODER, n.d.) and with the objective of mapping power in Latin America (Martín-Borregón, 2020).

It explores connections and contracts between businesspeople, politicians, companies and public institutions. This tool facilitates the access of researchers, journalists and citizens to various sources of open data to add to transparency and accountability (QuiénEsQuién.Wiki, n.d.); but also, it provides "a safe and anonymous forum for whistleblowers and contributors" (PODER, n.d.).

The idea was born from the founder of PODER, Benjamin Cokelet, who was doing his master's thesis on network analysis on the Mexican Business Council ("the most powerful business club in the country") and it was added to a database, which is Quién Es Quién Wiki (Martín-Borregón, 2020).

The platform contributes to (PODER, n.d.): "(1) a wiki community that connects corporate stakeholders and allows users to conduct open collaborations with new information; (2) a semantic database where users can explore the relationships between business elites and their respective companies; (3) a network analysis and visualisation tool for exploring the corporate social network, including a function to track parastatal businesses, public tenders, and resource transfers between the public and private sectors; and to (4) a secure whistleblowing platform for corporate insiders and other stakeholders who seek to improve corporate transparency".

IT and non-IT capabilities

For the development of OGD projects, it has been needed two kinds of capabilities: non-technical, as the understanding of how government ecosystem works; and basic technical capabilities, as working on Excel spreadsheets or CSV archives; however, for further development on extensive technical issues, it would be necessary programming or technology infrastructure building capabilities (Martín-Borregón, 2020).

Service consumption and assessment

The use of the platform is quite high. From June 1st to June 30th of 2020, QEQW has had 40 thousand unique users, who made 1.98 pages per session, with an average session

duration of 1.41 minutes and a total of 94000 page-views (Martín-Borregón, 2020). Furthermore, the use of the platform is still increasing month-by-month considerably (Martín-Borregón, 2020).

Quién Es Quién Wiki has had errors in design, but the team has always worked to improve it: "our team is constantly monitoring and improving QEQW, that is very good for recognising those errors" (Martín-Borregón, 2020).

The success of QEQW is assessed by several performance indicators, like the number of web users, the number of research users from academia or news portals (a community has been built around the platform), and all the generated and shared knowledge in reports that allow the impact in public policy spaces for data generation (Martín-Borregón, 2020).

QEQW has implemented a survey box at the bottom right of the page that collects several variables: frequency of use of the platform, tools that users use to search corporate information, most QEQW functionalities used, proposals for platform improvement, used device for accessing, and the participation in beta versions (PODER, n.d.). The feedback PODER has received: requesting for new data, fixing of databases, updating the existing databases, and some claims for the published data (Martín-Borregón, 2020).

Service engagement

The platform engagement is still quite a challenge. PODER focus on complementary ways for promoting the wiki: using search engines and disseminating their work through press releases. However, the communications and advertising aspect is still complicated (Martín-Borregón, 2020).

Martín-Borregón states that in 2014's launch, the broadcasting was made by a press conference, a press release, some press reports, agreements with some media to republish the platform, and distribution of information on specialised channels; the last is newsletters, specialised data mailing lists and Telegram channels (Martín-Borregón, 2020).

Service development

QEQW plans to continue improving the data and the platform and to look for ways of making their work economically sustainable (Martín-Borregón, 2020). The vision is to see Quién Es Quién Wiki with "procurement data from most Latin American countries, having significant web traffic, having found some self-financing models that allow us to stop having such a strong dependence on donations, and with a whole new series of allies

around the platform, who use and promote it among local countries, stronger and much clearer than what it is now" (Martín-Borregón, 2020).

4.3.4 Value created and outcomes

Self-assessment

The project has been successful due to several reasons: it is the largest procurement database in all Latin America, despite being a civil society organisation; it has made available data that was not there before; it has 40,000 users per month; it had relevant information to stop the airport construction project that was a corruption scandal; thus, for Martín-Borregón, they are indeed having the success that can be had (Martín-Borregón, 2020). Furthermore, the value created coincides with the initial aim of the project, despite all the changes it has had since its very beginning.

Unexpected outcomes

There also have been unexpected outcomes, as all the communication that PODER is now establishing with companies just from putting the "Contact us" boxes in the platform. Several different messages arrive every day, and that is something we did not expect, but overall the feedback that has been received has been good (Martín-Borregón, 2020).

4.4 Case 4: Uruguay: DATA - Elijo Estudiar

4.4.1 Uruguay's OGD Ecosystem

Policy and Legal Frameworks

According to the Open Data Barometer (2016) Uruguay is considered in the 11th position of the world ranking, in the global measure of how governments are publishing and using open data for accountability, innovation and social impact (World Wide Web Foundation, 2018). The Uruguayan political and legal framework on open government and open government data has been supported by a series of acts and decrees that have made possible the construction of an OGD ecosystem. Table 13 shows the respective timeline on the most important legal documents enacted.

Table 13 Uruguay's Open Government Policy timeline

Year of enactment	Political and Legal Framework
2008	Law on Personal Data Protection (Act N° 18331)
	Law on Access to Public Information (Act N° 18381)
2010	Open Data Policy (Resolution 640/10)
2011	Uruguay became a member of the Open Government Partnership
	AGESIC created the first version of the Open Data Working Group.
2012	1st Open Government National Action Plan
2015	Enactment of Law 19355/2015, which established an obligation for government agencies to release their freedom of information replies as open data
2016	The formalisation of the Open Data Working Group (Decree N°357/2016)
2018	4th Open Government National Action Plan
2020	Digital Government Strategy 2020 (Integration of Smart Government, Open Government, Efficient Government, Proximity Government, Whole-of-Government and Reliable Digital Government in one single plan)

Source: Own elaboration, based on Open Government Partnership (2020), Uruguayan Government (n.d.)

Something that it is relevant to mention is that the open data policy and the programs carried out in Montevideo (Uruguay's capital) have been the basis for the development of the open data strategy at the national level, which has been coordinated by the Agency for Electronic Government and the Information and Knowledge Society (AGESIC, by its name in Spanish) (Bonina, 2015), this agency has become a promoter of the open government and open government data. Also, Uruguay signed the Open Government Partnership, a multilateral initiative that brings together national and sub-national governments with the aim of establishing concrete commitments for more open and responsible governments (ILDA, n.d.).

Summing up, some policies encourage the publication, use and reuse of open government data; however, for Daniel Carranza, co-founder of DATA, the Uruguayan ecosystem is more practice-oriented rather than normative-oriented (Carranza, 2020), meaning that, naturally in Uruguay, exists collaboration between actors from civil society, academia, private actors and the government from before all these policy enactments, denoting that there is a substantial incidence of collaboration and co-creation in Uruguay (Carranza, 2020).

Respecting privacy and security issues, the Law on Personal Data Protection is the eldest of all the policies presented. In the case of DATA, they set a key strategy not to deal with personal data in their projects. Though there is an exception with projects like Por Mi Barrio, they prefer not to save anyone's personal data whenever it can be avoided (Carranza, 2020).

Organisational and Administrative factors

The OGP principles have a powerful impact in the organisational factors; this is because several of the processes depend in the OGP system, such as data opening and collaboration, showing that there is excellent support from the government, and demonstrating that the OGP process in Uruguay is successful (Carranza, 2020).

This impact can also be seen from the perspective of the public servants, demonstrating that they also support the previously mentioned low barrier to collaboration between diverse stakeholders. This barrier is recognised as something cultural, with an intense exercise of citizenship and willingness to work together (Carranza, 2020). In general, the links between the public sector, the civic organisations and the private sector in Uruguay are culturally strong.

Financial Resources

The economy in this country has been proliferating. According to official measures, moderate poverty went from 32.5% in 2006 to 8.1% in 2018, while extreme poverty has practically disappeared: it went down from 2.5% to 0.1% in the same period (World Bank, 2019). This performance has located Uruguay as a country with a GDP per capita of 177277 USD in 2018, the highest of the region (World Bank, 2019).

However, the projects based on OGD have not the same panorama, existing an economic weakness, with small and non "formally professional" organisations, always looking for funding. For the DATA team, this has been an opportunity to make their projects both profitable and sustainable: "our projects are a bit old (six or seven years old) and survived different governments, approximately every three years we improve our projects with actualisations and new services" (Carranza, 2020).

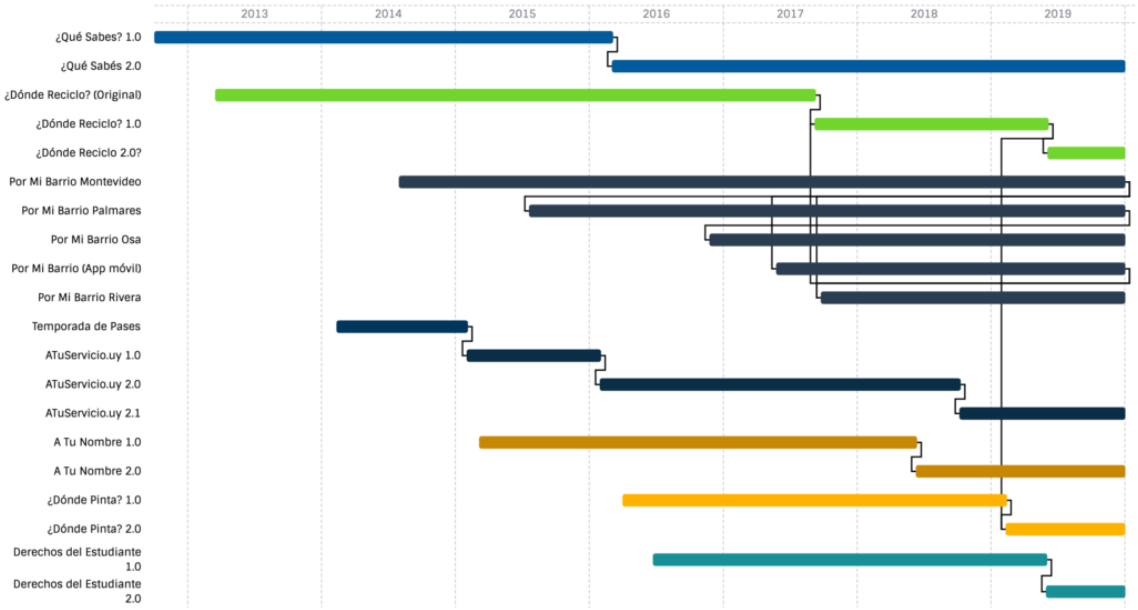

Figure 17 Sustainability and Project renovation cycles (Source: DATA (2019))

This actualisation can be seen in Figure 17, where the projects have a new version almost every three years. This duration is due twofold: first, the proposals for renewing projects that already exist, and second, the concern of not leaving stagnant ideas that we believe still have potential. Furthermore, all our projects are based on long-term strategic work with partner organisations, who usually are experts in the field (DATA, 2019). In the specific case of Elijo Estudiar, the financial capital came from the ALTEC funding, with a budget of 100000 USD, which made possible to execute a long and complicated project successfully.

Technology and Infrastructure

What is relevant to highlight from Uruguay's case is that their OGD platform started as a bottom-up movement amongst a small group of midlevel public servants in 2009. It is interesting since bottom-up initiatives can be effective in achieving a longer-term strategy in open data and governance (Bonina and Eaton, 2020).

In the case of Elijo Estudiar, the data was not that OGD platform or in an open format before the project started, but it was accessible on request due to the Law on Access to Public Information. Now, the data used in the application is available for reuse through the AGESIC National Open Data Catalogue and is published by ANEP (Carranza, 2020). However, this has not been the only source of data used for this project, retrieving information from the INE for creating vector maps, IDE.uy for Uruguay's towns information, the Elijo Estudiar Thesaurus (created by DATA), and a book by Isabel Banasevich about emblematic schools called "liceos" (DATA, 2019).

Since the level of publication is high, the problem does not lie in the availability of data, but data quality due to two reasons: first, because the different databases work with different semantics making the data inconsistent across systems and making interoperability more complicated, and second, due to the level of difficulty on enhancing and improving this data (Carranza, 2020).

Furthermore, it is essential to highlight the work of DATA with all this public sector information: after working on the datasets, DATA published all these data sources in an open format, making them available to everyone in a GitHub repository. All their work is done based on open sources (Carranza, 2020).

4.4.2 OGD Actors

Case study organisation: DATA

All the open data initiatives that Uruguay has been living since 2011, together with the concern about the growing offer of open data and its low demand, contributed to the emergence of DATA, which was finally formalised in April 2012 (Carranza, 2017).

Open Data, Transparency and Access to Information (or DATA, its Spanish acronym and from hereafter) is a civil society organisation with a central objective: to contribute to a fairer society through the use of civic technology and open data (ILDA, n.d.). Its focus lies on open government principles through the use of civic technology; mainly in three aspects: (1) the creation of social tools for participation and the reuse of open data, in collaboration with their partners and the community; (2), the strengthening of a local and regional civic tech community, organising networks and events in Uruguay and abroad; and (3), by social activism, working as part of a network promoting open government, open data, transparency, freedom of information and participation (DATA, n.d.).

In their webpage, they claim to be a "horizontally managed and consensus-based organisation", mentioning that "the vast majority of their projects are either co-created with partners experts on the subject matter (Government, Academia, Media, other CSOs) or with the community" (DATA, n.d.). DATA's mission is "to create tools for collective, participatory and collaborative action, and the community supports it through ICT and public information", it is "a channel for co-creation in itself" (Bonina, 2015, p. 32).

DATA played a significant role in advancing open data-related initiatives in Montevideo, and the city has benefited from its presence (Bonina and Eaton, 2020). Furthermore, the Latin American Open Data Initiative (ILDA) stated that the tools developed by the organisation also generate essential contributions to the open data use and open ecosystem in two ways (ILDA, n.d.): (1) in the reusing and publishing of open datasets from each of

their projects; and (2) in the highlighting of the need for improving data quality and availability.

DATA has worked in many projects as could be seen in Figure 17, demonstrating a vast previous experience in working with the government. The projects are ¿Qué sabés?, ¿Dónde Reciclo?, Por Mi Barrio (the first big project), Temporada de Pases, A Tu Servicio (the most significant project so far, even awarded by OGP), A Tu Nombre, ¿Dónde Pinta?, and Derechos del Estudiante.

All the previously mentioned projects have allowed DATA to build an identity and become a well-known organisation in the OGD ecosystem (Carranza, 2020).

OGD Community willingness to work

The role of civic organisations promoting openness and the use of open data is relevant to mention (Bonina and Eaton, 2020). There is an overall willingness to work from the OGD community; however, the participation among the stakeholders varies depending on their sectors (Carranza, 2020):

- Civic organisations and the public sector have had sustained participation.
- Academia varies. Now there is interest from the University of the Republic in getting involved in open government processes.
- News portals, media and journalists have some weaknesses, except for some exercise of data journalism (e.g. La Diaria newspaper).
- The private sector is unseen. Since the open government is linked to human development, the companies do not see a profit in using data for economic development.

Partnership and alliances

While DATA is committed to the platform development and project management, they have partnerships with the following organisations (Carranza, 2020):

- The National Administration of Public Education (ANEP in its Spanish acronym and from hereafter): it is the main actor, the primary data provider of the information about educational centres and educational offer. They are also committed to providing the data and participating in the co-creation process, pushing legislative approval, in the project sustainability and project communication.

- The Secondary Educational Council (CES in its Spanish acronym and from hereafter): it was part of the initial co-design process, but when the partners changed, it became one more actor within the new universe of actors, as one of the ANEP subsystems.

- The CEIP (Initial and Primary Education council), the CETP (Technical Education Council) and the CFE (Education Training Council): all subsystems of ANEP.

- UNICEF, but more in an indirect way: they introduced DATA to the CES, and it was involved at the beginning of the collaboration; however, it did not continue after the project with the CES fell.

After the platform launching, the project has required low maintenance. A couple of people from DATA and one person per partner has been enough to manage the project after it has been published. There has not been any kind of problems with the partnerships, nor with other political or societal stakeholders (Carranza, 2020).

Collaboration between intermediaries

DATA sees the collaboration with other stakeholders as a fundamental strategy. They foresee opportunities in further collaboration with UNICEF and two universities: UDELAR (University of the Republic) and UTEC (University of Technology), where the latter ones want to be added to the Elijo Estudiar platform (Carranza, 2020). However, the collaboration is not just to a national level, but broader due to replications in other countries: Por Mi Barrio in Costa Rica and Argentina, A Tu Servicio and ¿Dónde Reciclo? in Colombia, Declaraciones Juradas Abiertas in Argentina.

The collaboration aspect is relevant, and choosing the right partner is critical: "the wrong choice of a strategic partner can harm a project" (Carranza, 2020).

4.4.3 Public value creation

Case study service: Elijo Estudiar (Elijoestudiar.edu.uy)

Elijo Estudiar (I choose to study, in English) is a platform developed in 2017 between DATA and the ANEP (National Administration of Public Education), and with the support of the ALTEC funding, from Avina and Luminate. It allows searching and consulting the educational supply from four different public education subsystems: kindergarten, elementary school, high school and the teaching school (CEIP, CES, CETP and CFE respectively) through a simple and attractive tool (DATA, n.d.). This tool allows

students and their families to make evidence-based decisions about the educational process they want to follow next (Carranza, 2020).

The project aims to offer a way to visualise existing information and data but isolated in different areas that are not necessarily accessible to the citizens. This platform can filter the user information by location and preferences, offering information about the courses and available study centres (DATA, n.d.). Following the principles of open government, it sorts the information (usually managerial and oriented to internal use) in ways that allow its presentation with a user-oriented logic. Moreover, Elijo Estudiar has published the most significant amount of information available in open formats, in order to encourage its reuse among other intermediaries.

The launching of Elijo Estudiar was together with two more services, the three of them were aligned to the same visual image: Vos (You, in Spanish), an application to visualise the student records and grades, and Derechos del Estudiante (Student's Rights, in Spanish), a platform for knowing student's rights and creating communication spaces between students and the high levels of public education servants. The three projects together ended up being a pack of services for students that deal with different issues for them (Carranza, 2020).

IT and non-IT capabilities

About the capabilities needed for the development of this kind of projects, Carranza (2020) mentions that they "solve public problems through collaboration. Technology is just a tool that we use for collaboration; it is a way for lowering barriers but not a solution in itself" (Carranza, 2020), highlighting the relevance of non-IT capabilities. The main capabilities needed are divided into two groups: IT capabilities and non-IT capabilities (Carranza, 2020):

IT capabilities: the capacity for backend and frontend development, the use of tools such as Drupal and Ruby.

Non-IT capabilities: the ability to empathise with different types of problems and find solutions collaboratively, the ability to follow an open government paradigm, and the ability to create tools that respond to these problems with a very high level of usability (focus on User Interface and User Experience).

Service consumption and assessment

The monitoring of the platform is through Google Analytics, where the number of sessions since the Elijo Estudiar's launching is almost 16000, and there are peaks in

November 2019 and March 2020. Daniel Carranza mentions that the number of visitors is not abundant due to many diverse reasons, as the newness of the project due to the launching in November last year; the launching date, given it was not in an ideal moment but rather late when classes were already ending; and that there were no funds to carry out a proper communication campaign, where ANEP just used their webpage and some media coverage (Carranza, 2020).

After the launching of the platform, some errors appeared, but these were reported through email by users and solved on time by the DATA team. However, for Carranza, the biggest drawback is not to have implemented what in the beginning they planned to (Carranza, 2020). Although, this is not a reason for him to consider that the platform has been a failure but a success, namely for many reasons (Carranza, 2020): (1) the existence of the page is an achievement; (2) the feedback is excellent and supportive, from the different partners of the project and the people who have used the tool; and (3) the demand from the users since they request for numerous additional functionalities to be created.

Service engagement

The success also involves service engagement with users, where the platform has not had significant obstacles; however, this could also be because of the low number of visits (Carranza, 2020). Another thing to take into account is the low investment in advertising: despite that ANEP invested in media (TV channels and radio stations), it did not generate a massive audience (Carranza, 2020).

Service development

The service development is strongly linked to the sustainability of the civic tech projects. That is why, every three years, DATA improve their projects with actualisations and new services. In the case of Elijo Estudiar, the users request additional functionalities: updating the data, including UDELAR and UTEC universities, include other universities (Carranza, 2020).

In the technical aspect, Elijo Estudiar was previously developed on Drupal, but now we have reached its limit, starting the development in Ruby, which offers and supports more functionalities.

4.4.4 Value created and outcomes

Self-assessment

The platform allows searching and consulting the educational supply from four different public education subsystems: kindergarten and elementary school, high school, technical school and education training school (CEIP, CES, CETP and CFE respectively) through a simple and attractive tool. This searching platform allows a crossover between the user information and the educational options, so the information that appears for each user is different and customised to the necessity and context of every user that access to the page.

Elijo Estudiar is helpful, but not just for the end-users (like students or student's families) but intermediate users (vocational guides or psychologists). The platform still has more potential, but the end product needs to be communicated, without proper advertising, it will not necessarily reach all the citizens, media coverage helps but does not generate a massive audience (Carranza, 2020).

Unexpected outcomes

Specifically for Elijo Estudiar, one of the additional and unexpected positive outcomes was the value created for vocational guides, as an intermediate user of the service (Carranza, 2020). Even more, for other projects, there have other many unexpected outcomes:

In A Tu Servicio (one of the well-known projects of DATA about prices and fees of health providers), since the cost information was transparent, the citizens started sharing the incredible differences between providers, causing the reduction of some health service providers fees (Carranza, 2020).

In Derechos del Estudiante (a project that promotes student rights), the application helped a student girl to make a complaint about the allowance for studying since the school did not allow her to attend in clothes different from the school uniform, causing a scandal in media and ended up with a change in the rules, so this situation never happens to another student again (Carranza, 2020).

The value created exceeds the expectations from the intermediate actors and end-users, allowing to impact in the social and political spheres.

5 Cross-case synthesis and Logic Model

In this chapter, a cross-case synthesis (Yin, 2018) is applied in order to recognise prevailing patterns and trends, drawing the variables from the theoretical framework built on the second chapter. By identifying and describing the main characteristics of OGD-based public value creation in the within-case analysis, it is now possible to yield common overarching patterns across the four cases and contextualise the findings within the previously presented theoretical literature. This synthesis will allow us to understand OGD public value creation in Latin America, together with the several critical factors that influence the development of OGD-based public services.

Later, the Integrative Model of OGD public value creation based on literature (Figure 14) is compared with the empirically constructed within-case and cross-case analyses, with the aim of building a logic model for understanding OGD public value creation in the presented cases. This way, consistency is compared, affirming, rejecting or modifying the previously introduced Integrative Model (Figure 14).

5.1 OGD Ecosystem

5.1.1 Policy and Legal Frameworks

In the four previously mentioned cases, the countries have signed the Open Government Partnership, and therefore have elaborated policies and agreements on open government principles, such as collaboration and opening of public sector information in open formats. Despite the high rank of Mexico, it is understood that OGP policies have been decreed because the trending of OGD, and as a popular political move from the previous government, but not really for encouraging the use and reuse of open government data.

A particular case situation happens with Guatemala, where there is not refreshing of legislation despite the new implementation of OGP principles, mainly because policies are not enough for enforcing, and incompatibilities with the legal framework (specifically with the "Law on Statistical secret" or "Law on Bank Secrecy"); thus, there is a need for an actualisation of the legislation, in order to make them adequate for this new OGP context (Mendoza, 2020).

Another characteristic to highlight on the Guatemalan case is that is clear that political frictions can undermine OGD-based projects, given that the exile of the UN commissioner and the CICIG affected directly the project and the collaboration that was about to finance the Violence Observatory.

Privacy and Security

The only country that did not have a Law on personal data was Guatemala, leading to several situations that diminished the privacy and security of the citizens and organisations. However, in the other three cases, it is demonstrated that the Law could exist and yet not be fully complied with or even collide with open data laws; hence, a safe option for OGD projects is to evade the use of private and personal data (Carranza, 2020). In conclusion, privacy and security issues seem to have not enough weight for bringing down OGD-based projects.

5.1.2 Organisational and Administrative factors

Open Government Partnership principles have a powerful impact in the public administration for collaboration; however, there could exist a bureaucrat mindset or culture of opacity and poor statistical culture (Mendoza, 2020) which can weaken the open government processes.

Support from Government and public servants

From the Government, while in countries like Uruguay there is a low barrier for collaborating with the government; in the other cases, it can be distinguished between the so-called "champions" (public servants who understand the role of civil society and who allow the collaboration with actors from outside the government (Mendoza, 2020; Martín-Borregón, 2020), and resistant public officials (due to political vulnerability, monopoly of information and fearfulness (Mendoza, 2020)).

That opening from public servants and public institutions mostly depend on the level of preparedness of each entity, the perceived ease of use, capabilities and skills these institutions have in their teams, and perceived advantages from collaboration (Marín, 2020).

5.1.3 Financial Resources

All the cases depend on funding grants to ensure their sustainability, where the role of ALTEC, HIVOS and OSF are between the most well-known contributors to the financial resources of the previously introduced OGD-based projects. However, the sustainability of projects is recognised as a challenge to their lifespan, given that there are economic resources for starting the projects, but not to maintain them (Mendoza, 2020). In order to respond to this economic shortage, Datasketch has as a critical strategy to be a service-providing company with a focus on data science (Marín, 2020). Other solutions to look for the sustainability of the projects is the logic of "improvement and low maintenance",

applied by DATA (Carranza, 2020), which looks for actualisations and new partnerships to sustain the projects over the long run. These partnerships can provide new sources for funding or apply collectively to funding grants, so the emphasis lies on how these alliances are financed.

5.1.4 Technology and Infrastructure

In all the cases, there is an Open Data Portal, but in the Guatemalan case, the number of datasets is zero. However, the primary sources of data for the OGD-based projects do not always come from the OGD Portals or even in an open format, but from other sources and in non-open formats.

Sources of data

The basis for requesting public sector information is the Law on Access to Public Information, which allows citizens and organisation to request for the information that the public administration storages or produce. The forwarded information is not on an open format in the four discussed cases, and it comes from public institutions that are related to the issue that the OGD intermediaries are focusing on depending on the projects; this way, for the violence data, Diálogos requests information from the PNC, INACIF and INE; for the procurement data, PODER sources from CompraNet, Stock Exchange from many countries and the Mexican Portal of Transparency; while Elijo Estudiar is based on the data provided by ANEP, INE, IDE and even a book about the emblematic school's ("Liceos") history. In the particular case of Datasketch, the platform allows to upload any dataset, and even combine them with previously uploaded datasets in Datasketch.co, in order to create visualisations or use other software tools provided by the platform.

Quality of data

All the cases coincide that the data quality is low and weak, meaning that before using it, there is a need for cleaning and systematise it. It is impossible just to work out of that because there are issues with the semantics of the attributes and even some information appears with many different names (or ways of writing it) despite all of them mean the same thing. Thus, much work for enhancing this data is essential in order to build platforms or services upon that. However, sometimes data needs to be corroborated: Diálogos depend on three different sources in order to understand the violence in Guatemala, given that these three sources overlap themselves in some attributes, allowing the organisation to validate if the information published by the public institutions is entirely correct.

Contribution to the OGD ecosystem

Despite that the data was not previously on an open format, after all these projects have been executed, the data has made available in an open format, complying with the previously OGD definition: it is in a machine-readable format, and it can be freely accessed, used, reused and redistributed by anyone. An interesting fact to highlight is that it was not made available by the government in all the cases (with Uruguay's exception, which, after DATA worked on the cleaning, it was published in the OGD Portal), but opened by the OGD intermediaries in open repositories or their websites.

They published the data in GitHub repositories (Datasketch, Elijo Estudiar), or their websites (Observatorio de Violencia, Quién Es Quién Wiki), and even sometimes it can be accessed through API as in the Mexican case. Random Monkey is creating their own Datasketch Portal, allowing users to upload datasets there and make them available for everyone, and allowing those other organisations use the published data as in the Violence Observatory, where ACLED (an international organisation working on violence issues) use this data for understanding the topic in the region.

Thus, it can be inferred that all of these organisations work under the paradigm not just of Open Government but based on open sources and CBPP (Common-based peer production).

5.2 OGD Actors

Previous experience of the organisations

All the previously described cases have had experience in many issues that allowed them to have a well-constructed image for working within their OGD-based projects. Furthermore, the cases are well-known in their countries are good representations of how to use OGD for providing social-aimed services successfully. In the case of DATA, the previous experience on collaboration with OGD projects has been vital for their work on civic tech projects; for Diálogos, their previous experience on the issues they are focusing (anticorruption, violence and migration) is critical for opening doors with public and international institutions. For PODER, they have specialised in non-offshoreable industries spanning to four sectors (financial, extractives and energy, infrastructure and transportation, and heavy manufacturing); in contrast, Random Monkey has explicit experience in data science projects with a social aiming, especially working in collaboration with news portals and journalists.

5.2.1 OGD Community willingness to work

Across Latin America, there is an OGD Community that have participated in regional events, which have grown and increased their impact in many countries and with many projects. In most of the countries, there is a clear local OGD Community, but they differ in the extent to each one is developed and the actors who participate in it. In the "best" case, Uruguay's OGD Community is the result of a collaboration between academia, news portals, CSOs and the government, while being supported by strong citizenship and a great willingness to work with the public sector (probably based on their cultural participation), this is called civic tech community. Next, Mexico's OGD Community is also powerful, with many groups participating on it and with a vast majority coming from CSOs and the government, with some participation of newspapers and private companies, the latter declining over time.

For the Colombian case, it is still a challenge to integrate all the different actors in the OGD Community, but news portals are now using data journalism as a useful tool to communicate relevant public sector issues. Finally, for the Guatemalan case, things are not as easy. There is still no OGD Community (Mendoza, 2020), but some very young NGOs connected to a Latin American Community. Some international events foster this regional community as "Data and Drinks", promoted by SocialTIC. This organisation makes an effort to put on the agenda the use of data science tools for solving public issues and replicate the "Data and Drinks" in many Latin American countries. Another well-known event in the region is AbreLatam or ConDatos, a Latin American event led by ILDA (the Latin American Open Data Initiative), which constituted a turning point in the construction of an OGD Community in Colombia, Mexico and Uruguay. Those events have created a Latin American OGD Community that offer support to smaller OGD projects, and that they know between each other.

Respecting the government side, for Mendoza (2020), the public sector needs to involve the "OGD champions" in order to promote and foster an open data culture in Guatemala (Mendoza, 2020).

5.2.2 Partnership and alliances

Another critical aspect when developing OGD-based projects is the building of partnerships to carry them out. All the cases highlight the importance of the alliances and the impact they can have in their projects, namely, learning from their experience, sharing responsibilities, associating for further development, networking, supporting with their capabilities (IT and non-IT), and participating jointly for economic funding. These

partners usually come from international organisations, the Latin American OGD Community or many CSO, but also from the government (as in the Uruguayan case).

Issues with other actors

Mostly, there have not been any issues or problems with partners (more than the usual ones: discoordination, timing, project management), nor with other social or political actors, despite that sometimes some organisations or public servants do not like the open government approach.

However, Guatemalan case demonstrates that political issues can have an impact in OGD-based projects, impacting in the collaborations that could be created and in the donor's activity in the country, completely stopping some projects, or leaving them on stand-by. Another issue with these collaborations is the funding: "even though we invested time and resources in our platform design, the other organisation did not longer have a grant for continuing supporting us, leading the platform just to be unfinished" (Mendoza, 2020).

5.2.3 Collaboration between intermediaries

However, despite the many social or political issues that could appear, all the cases coincide that partnerships are beneficial, given that there is knowledge and experience that the leading organisations do not always have and can be found on the partner organisations, summing up capabilities and efforts and building bigger contact networks. Furthermore, it does not matter if the partner comes from academia, journalism, public organisations or private companies, but they must be aligned in the same ethical focus or values. Another relevant aspect to highpoint is the building model for financing these collaborations, given that without funds, the projects can be halted.

5.3 Public Value creation

5.3.1 IT and non-IT capabilities

Having an interdisciplinary team in the organisations is a crucial strategy for all of them, where a well-constituted team of human and data scientists are necessary to carry on OGD-based projects. Depending on the difficulty level of the projects, the need of the IT skills can vary, but an overall knowledge on how to use Excel spreadsheets, CSV archives or R language is a good starting point; for further development on extensive technical issues, the IT capabilities needed are back-end and front-end development (the so-called full-stack developers), data science and programming for building IT infrastructure.

In the case of non-IT capabilities, the teams have political sciences professionals, journalists, researchers and administrators, but overall, the need is for professionals that know about collaboration, user-centred design and how the open government paradigm works. Having in-house knowledge seems to be crucial in OGD-based projects, given that dependence in other organisations could undermine the projects.

Thus, besides that IT operational capabilities are essential and the basis for developing OGD-based services, the dynamic capabilities have more substantial importance, since co-production, innovation, and managerial skills are the most relevant when creating public value out of OGD.

5.3.2 Service consumption and assessment

The four cases measure their platform use by user demand and platform visits, but also from the feedback they receive from the users, researchers or other organisations. In all the cases, the platforms have been successful in achieving their primary goals, and in becoming an important actor in their particular issue. Furthermore, the cases have other intangible performance indicators, such as the sharing of the visualisations created in the platform (Datasketch), influence achieved in the Congress or policymakers (Observatorio de Violencia), the community created over the platform and the shared knowledge that have impacted in public policy spaces for data generation (Quién Es Quién Wiki), and the request from platform users for additional functionalities (Elijo Estudiar).

5.3.3 Service engagement

Despite the success of the platforms, all the cases coincide that it is still a challenge to engage citizens to use the OGD-based services, besides all the communication channels the projects have used (social media, press conferences, press reports, agreements with some organisations for republishing their platform, and even specialised communication channels, such as Telegram groups and mailing lists.

Thus, for advertising the platform to the people that need it, it is necessary to articulate a more significant communications effort (Mendoza, 2020), and the improvement of the product to make it more useful (Marín, 2020).

5.3.4 Service development

In general, the cases are willing to collaborate with more organisations in order to add new functionalities to the platform, for Carranza (2020), this is strongly linked with the sustainability of civic tech projects (Carranza, 2020). For Mendoza (2020), to strengthen and building capabilities in the government counterpart could be vital for solving some

issues they had: “there is a need for creating a strategic plan to work on these relationships, especially to avoid political shocks and conflicts, but also for developing government technical capabilities” (Mendoza, 2020).

5.4 Value created and outcomes

5.4.1 Self-assessment

The four organisations are successful and well-known cases in their countries, inspiring smaller organisations that pursue social-aimed development. Moreover, all the cases have achieved their primary goals, or even more, namely:

- The positioning of OGD in the public and political agenda, and the increasing relevance as a democratic issue.
- The generation of new relevant data about those issues.
- The replication of their methodology in other contexts.
- The transformation of the data into useful information for evidence-based decision-making in citizens, journalists, companies and policymakers.

5.4.2 Unexpected outcomes

Additionally, there have been outcomes that were not expected, and that, however, were achieved, among these are:

- Impact on the quality of data that the government publishes: now it has higher quality.
- International projection thanks to the collaboration with the regional Latin American OGD Community or with other regional communities.
- Impact on intermediaries (helping vocational guides, price reduction on health providers, changes in policies and legislation)
- OGD-based projects served as showcases for demonstrating what organisations are capable of achieving with OGD and with their capabilities.
- Communication with many stakeholders thanks to the “Contact us” box in their web platform (In the Quién Es Quién Wiki case).

- Impact on government projects that were corruption scandals (the construction of an airport in Mexico).

5.5 Critical influencing factors derived from empirical work

As a result of the cross-case synthesis, it is possible to determine which factors work as drivers or barriers when creating public value using OGD in the presented Latin American projects. These factors are obtained from document analysis and interviews done for the multiple case study. At the National OGD ecosystem level, the following factors have been found:

Table 14 Factors at OGD Ecosystem level derived from empirical work - I

Aspects	Critical factors	Source
Policy and Legal Frameworks	Being part of the OGP (Open Government Partnership)	Carranza (2020) Marín (2020)
	Law on Access to Public Information	Carranza (2020) Marín (2020) Mendoza (2020) Martín-Borregón (2020)
	Inexistence or incompatibility with legislation	Mendoza (2020)
	Political conflicts or arbitrary political decision-making	Mendoza (2020) Carranza (2020)
	Pandemics and economic recessions and crisis	Martín-Borregón (2020)
Organisational and Administrative factors	Preparedness of public organisations for collaboration	Carranza (2020) Mendoza (2020)
	Participation of "champions".	Mendoza (2020) Martín-Borregón (2020)
	Strategic plan to work with the government for capability development and preparedness	Mendoza (2020)
	Formal and informal participation mechanisms	Martín-Borregón (2020)
Financial Resources	Business model: service-providing company	Carranza (2020)
	Funding grants for ensuring the sustainability of projects and collaborations	Carranza (2020) Martín-Borregón (2020) Mendoza (2020)
	Improvement of services and low maintenance	Carranza (2020)
Technology and Infrastructure	Absence of data standards	Carranza (2020)
	Availability of data	Mendoza (2020)
	Data quality	Carranza (2020) Martín-Borregón (2020)
	Technological infrastructure	Martín-Borregón (2020)
	Sharing of OGD for reusing and open sourcing	Carranza (2020) Marín (2020) Mendoza (2020) Martín-Borregón (2020)

Source: Own elaboration, based on references mentioned in the table.

As a result, there is an aspect that was not previously identified; however, it is mentioned various times during the interviews, also belonging to the OGD ecosystem: this is the cultural aspect.

Table 15 Factors at OGD Ecosystem level derived from empirical work - II

Aspects	Critical factors	Source
Culture	Bureaucrat mindset, a culture of opacity and poor statistical culture that create barriers	Mendoza (2020)
	Public culture: acknowledge what a public good is	Carranza (2020)
	Exercise of citizenship and willingness to work with the government	Carranza (2020)
	Lack of trust in the public sector information	Mendoza (2020)
	Cultural participation	Carranza (2020) Marín (2020) Mendoza (2020)

Source: Own elaboration, based on references mentioned in the table.

Next, in the OGD actors level, the influencing factors found are introduced in the following table.

Table 16 Factors at OGD Actors level derived from empirical work

Aspects	Critical factors	Source
OGD Community willingness to work	Previous experience	Carranza (2020) Marín (2020) Martín-Borregón (2020) Mendoza (2020)
	OGD Community at Latin American level	Carranza (2020) Marín (2020) Mendoza (2020)
	OGD Community at the country level	Carranza (2020) Marín (2020) Mendoza (2020)
	OGD events: a turning point in the building of OGD community	Mendoza (2020)
	Understanding of OGD and collaboration benefits by the actors and partners	Carranza (2020) Marín (2020) Martín-Borregón (2020) Mendoza (2020)
Collaboration between intermediaries	The building of partnerships and collaborations	Carranza (2020) Marín (2020) Martín-Borregón (2020)
	Funding of collaborations	Mendoza (2020)
	Networking for new perspectives	Carranza (2020) Martín-Borregón (2020)
	Wrong choice of a strategic partner	Carranza (2020) Martín-Borregón (2020) Mendoza (2020)

Source: Own elaboration, based on references mentioned in the table.

On the same way, the critical influencing factors on the OGD public value creation level are shown in the following table.

Table 17 Factors at OGD public value creation level derived from empirical work

Aspects	Critical factors	Source
IT and non-IT capabilities	Interdisciplinary team	Carranza (2020) Marín (2020) Martín-Borregón (2020) Mendoza (2020)
	Collaboration, user-centred design and open government paradigm	Carranza (2020) Mendoza (2020)
	In-house knowledge	Carranza (2020) Mendoza (2020)
	Data science and full-stack development	Carranza (2020) Martín-Borregón (2020) Mendoza (2020)
	Reduction of team members	Carranza (2020) Martín-Borregón (2020)
Service engagement	Communications strategy and user engagement	Carranza (2020) Marín (2020) Martín-Borregón (2020) Mendoza (2020)
Service development	Improvement of the service: actualisations and new partnerships	Carranza (2020) Mendoza (2020)

Source: Own elaboration, based on references mentioned in the table.

Finally, at the value created and outcomes level, the enablers and barriers found are the ones presented in the table below.

Table 18 Factors at value created and outcomes level derived from empirical work

Aspects	Critical factors	Source
Value created and outcomes	Local problem focus	Marín (2020)
	Democratic reasons for opening public sector information	Martín-Borregón (2020)

Source: Own elaboration, based on references mentioned in the table.

The previously presented critical influencing factors have been derived from the empirical work held, giving a more unobstructed view of the drivers and barriers that affect or could have an impact in the OGD-based projects. Having a strategy for overcoming them is of paramount importance, given that the mentioned factors could halt the projects.

5.6 Logic Model

In this section, the Integrative Model of OGD public value creation based on literature (Figure 14) is compared with the empirical analysis held in the within and cross-case analyses, allowing the construction of a logic model for understanding OGD public value creation in the presented Latin American cases.

The logic model aims to compare the consistency between theoretically predicted events with the empirically observed events (Yin, 2018). It shows a complex chain of events "staged in a repeated cause-effect pattern, whereby an outcome at an earlier stage can become the stimulus for the next stage, and in turn producing another outcome that becomes yet another stimulus" (Yin, 2018, p. 238). This analysis will affirm, reject or modify the previously presented model in Figure 14.

As it has been discussed, there is an evident Latin American OGD community, constituted by international organisations and regional events, and that supports many OGD-based projects around the region. This Latin American OGD Community has an impact in the OGD development inside the countries besides each national OGD ecosystem and allows the formation of partnerships for collaboration and alliances for applying for funding.

Five aspects establish the National OGD Ecosystem: policy and legal frameworks; organisational and administrative factors, financial resources; technology and infrastructure; culture; and the National OGD Community. The level of development of each aspect varies depending on the country, but the five have an impact on OGD-based projects as context factors that can undermine this effort.

Besides what it was previously stipulated in the theoretical framework, OGD is not always provided by the government. The empirical observations note that public sector institutions make an effort in sharing public sector information in a non-open format. However, after cleaning labour from OGD actors, this information is transformed into OGD and shared in open source platforms like the national OGD portals, GitHub or institutional webpages. For this cleaning labour, OGD intermediaries require operational IT capabilities in order to systematise it. Later, dynamic non-IT capabilities are needed for the co-creation process among the diverse intermediaries that are participating in the project.

After this collaboration process, OGD-based public services are developed. For it to get known, a proper communications strategy is held and launched to citizens. Only after the end-users consume the service, there are outcomes of the public value creation process when using OGD. It is essential to add that not just citizens are the end-users of OGD

projects, but other service providers can be benefited in the way, whose were not taken into account a priori. The described chain of events can be further seen in the following Figure.

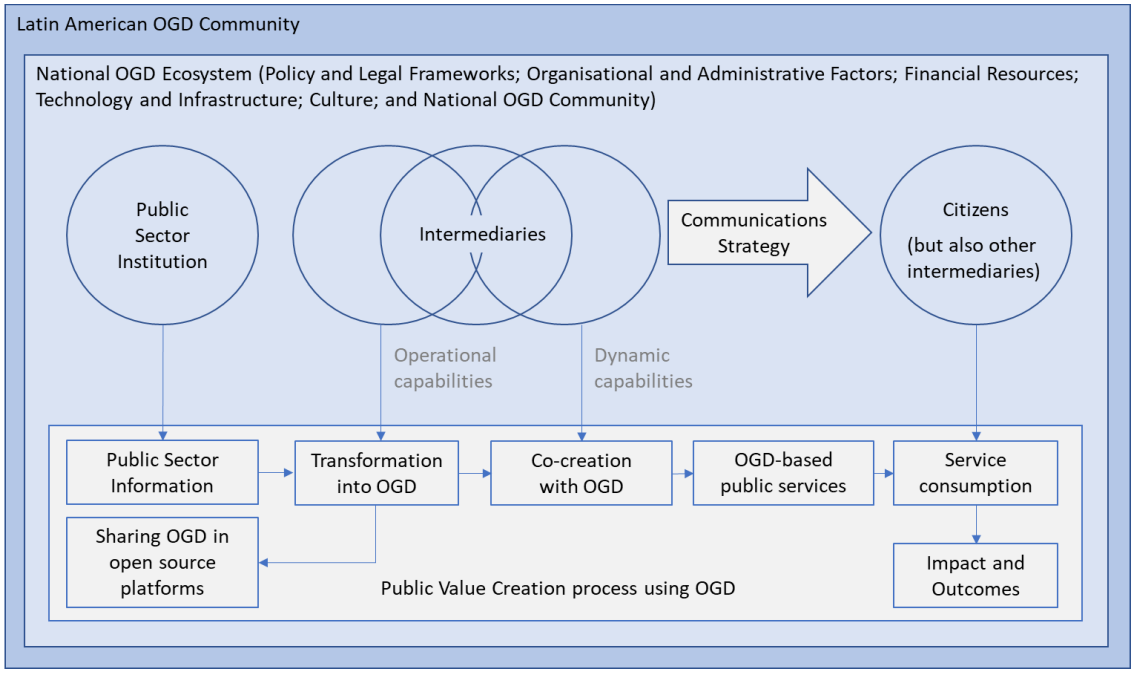

Figure 18 Logic Model for OGD public value creation in Latin America (Source: Own elaboration)

The introduced logic model is an effort for understanding the aspects and variables that should be taken into account when developing OGD-based projects in Latin America. Together with the previously presented cross-case synthesis and critical influencing factors, achieve to answer to the initially formulated research question and objectives.

6 Discussion

By answering the research question “How is OGD used to create public value in Latin America?”, this research brings theoretical contributions to the open government data and the public value creation literature. Moreover, the empirical observations collected from the multiple case study have also practical implications for understanding the combination of both concepts in the Latin American context.

The contributions to OGD and public value creation literature are addressed in the initial two chapters; first, by constructing a conceptual framework (in the Research Background part), and second, by building a theoretical framework that led to an Integrative Model of OGD public value creation based on the literature.

In the Research Background, the differentiation between the concepts around OGD public value creation permitted to build a glossary of terms around the issue: open government and open governance; public data resources (public sector information, open data and open government data, as the intersection of the first two); and the understanding of what public value is and what it does involve. Later, the impact of using OGD found in the literature was presented, namely: (1) government transparency and accountability; (2) government efficiency and effectiveness; (3) economic growth and efficiency for private companies; (4) innovation in both private and public sector: creation and enhancing of products, services, processes, business models and sectors, fostering innovation and experimentation; (5) citizen and community inclusion and empowerment due to improved decision-making, providing transparent and real information to citizens and communities for enhanced social inclusion; and (6) the building of a better data-driven culture for assessment and problem-solving, allowing a societal problem analysis.

Far ahead, the building of a theoretical framework for understanding what aspects have to be taken into account when analysing OGD projects and how these aspects impact in the creation of public value using OGD, allowed the construction of an integrative model for understanding OGD public value creation. The highlighted levels are OGD ecosystems, OGD actors, OGD public value creation and OGD-based public services, which led to the construction of a Common Analysis Grid that allowed the analysis of the further presented case studies. Furthermore, it has been recognised, based on the literature, what are the critical influencing factors around OGD projects, allowing a profound synthesis of the academic research held upon the date.

In doing so, this research contributes to the theorisation of OGD public value creation, not only by synthesising the research already done but also by adding theoretical depth to OGD literature by introducing public value creation concepts, an approach that was

previously lacking. In this way, the first aim of this investigation, “to build a theoretical framework for understanding public value creation using OGD”, is achieved.

This study also has practical implications for how OGD public value creation is achieved in the Latin American context. First, developing a within-case analysis in four different countries allowed an in-depth understanding of each country settings and how diverse factors have an impact on the development of OGD projects. Second, synthesising with a cross-case synthesis permitted the recognition of common patterns and trends around the countries, in an effort for trying to understand which aspects could be extended to the regional settings. This second technique helped with the recognising of critical influencing factors in the Latin American context based on the empirical findings, permitting to understand what the drivers and barriers are when developing OGD-based projects in this specific context.

Third, the construction of a logic model based on a match between theory and practice, permitted the modification of the previously presented integrative model, contextualising the series of events in the Latin American context. This model further supports all actors interested in working with OGD, such as policymakers, civil society organisations, allowing them to recognise which aspects have to be taken into account for driving successful OGD-based projects in the region.

After these three techniques have been applied, the second and third objectives, “to identify and describe the main characteristics of OGD-based public value creation in four Latin American country-cases”, and “to identify and analyse critical factors (enablers and challenges) that influence the development of OGD-based public services in Latin America”, have been achieved.

The results indicate that there are still some barriers from the government to the participation of non-government stakeholders and that this situation can undermine OGD co-created projects. The government should be an orchestrator and nurturer of the OGD ecosystem. In the same way, the sustainability of projects is limited due to rare funding to long-term projects. Differentiation in the business model can tackle this challenge, such as it has been seen in the Datasketch case. Apart from the presented cases, there are not many successful projects in Latin America that perdure on time. As Carranza mentioned, “there is just money for starting projects, but not to continue them” (Carranza, 2020). OGD-based projects need to have a clear strategy for sustaining its work on the long-ride.

Furthermore, human-centred design is critical for OGD-based projects, given that there is no goal in solving problems that do not exist. The recognition of a problem, and then the acknowledgement of what information is needed to solve the problem, is critical for

driving OGD projects. In Carranza's words, "open government data is not an end in itself, but a channel for achieving a goal" (Carranza, 2020), thus the emphasis should not be put in the opening of data, but in recognising the problems first, and then what data is necessary for solving the problems. Participation and collaboration go beyond open government data, and the focus is on solving key public issues (Bonina, 2015).

Additionally, the Latin American OGD community has the potential to have an impact in the national OGD communities. The sharing of previous experiences in the region and the support from their members can help to build an OGD innovation network, where OGD actors can create partnerships and learn from the experience (Bonina, 2015).

Respecting the data infrastructure, the use of multiple sources in the four cases demonstrate that OGD in itself does not create value, but the combination of several datasets and data sources does (European Data Portal, 2020). Moreover, it is essential to highlight that the technical requirements for OGD are not necessarily understandable for everyone; or, in Carranza's words, "machine-readable is not everyone-readable" (Carranza, 2020). For creating public value, open government data is nothing but comma-separated values without apparent utility, especially if there is a lack of skills for using it and transform it into useful data for decision-making. Building capabilities and standardising OGD can help to overcome the lack of skills and the quality of OGD.

Open government data does not add value in itself, but afterwards, as an aggregated consumption of the information that it provides for decision-making. It is interesting to see how the opening of public sector information can generate unexpected outcomes and how citizens and society, in general, can be benefited from OGD.

Finally, open government data is not more than just a way for collaborating with available public sector information; thus, the emphasis must be put into the partnerships created for improving services into a citizen-centred design. Civic techs have a significant role in this aim, collaborating not only with the government but with other actors, in order to enhance the relationship between citizens and the government and further improving the citizenship exercise.

The observations made in the analysis lead to the following recommendations for nurturing OGD-based projects in the region:

1. *The existence of not just policies but clear regulations that open mechanisms for participation and collaboration with the government* (Mendoza, 2020). Open government and open data policies are essential, but without a clear procedure of how to open the data and how to allow the collaborations between the different

actors of society, it will not produce a real impact. Legislation on access to public information updated to open government data could build a basis for transparency and collaboration.

2. *The existence of "champions" inside the public sector, in an effort for boosting the OGD ecosystem from within the government and the involvement of actors outside the government* (Mendoza, 2020; Martín-Borregón, 2020). If there are already policies and legislation, the next step is to create a generation of public servants that allow the participation from external actors. The "champions" are recognised as a key actor for allowing the collaboration between the government and non-governmental stakeholders and can work as a guiding coalition in the public sector (Kotter, 1996).

3. *An effort for changing the culture of opacity and bureaucracy, which undermines open government policies* (Mendoza, 2020). Undoubtedly more challenging to solve, the culture inside the government has to change to an open paradigm. Transparency and accountability are critical in every democratic government and to share the successful cases could help in this task. The empowering of public servants and the creation of capabilities is critical (Kotter, 1996).

4. *The support for improving the quality of the data, but most importantly, the sharing of data for increasing the availability of it* (Carranza, 2020; Marín, 2020; Martín-Borregón, 2020; Mendoza, 2020). The opening of the OGD National Portal to other actors could be vital for supporting the reuse of OGD, allowing all datasets to be in just one source and creating a community of innovators around the national OGD portal (Bonina and Eaton, 2020). This opening will support as well the combination between diverse public institution's datasets, increasing the possibility of combining the data and generating value.

5. *The construction of clear economic incentives for the use of public sector information and collaboration* (Mendoza, 2020). The sustainability of OGD-based projects it is still an issue to overcome. Funding grants seem to be vital for starting projects but not for sustaining them on time. New business models in the OGD- based projects are necessary for creating incomes, and maybe the involving of the private sector can help to foresee new ways for creating economic value.

6. *The nurturing of a national OGD community, with the government as an orchestrator of CSO, journalists, private companies and citizens* (Carranza, 2020; Marín, 2020; Martín-Borregón, 2020; Mendoza, 2020). The holding of a series of national and international events is vital in order to achieve this goal. The role of

the OGD community is vital when developing OGD ecosystems and when summing up capabilities for developing OGD-based projects. It is not necessary to reinvent the wheel.

7. *The creation of IT and non-IT capabilities within and outside the government* (Carranza, 2020; Marín, 2020; Martín-Borregón, 2020; Mendoza, 2020). For seizing the potential of OGD, a combination of IT and non-IT capabilities is vital, even better if those are in-house skills. Among the IT ones, data science and back and front-end development are significant; while among the non-IT ones, collaboration, user-centred design and an open government paradigm can fulfil the requirements for public value creation with OGD.

8. *The emphasis in a proper communications strategy to make the OGD-products and services known to all the citizens* (Carranza, 2020; Marín, 2020; Martín-Borregón, 2020; Mendoza, 2020). Last but not least, a communication campaign for sharing the services created and discussing the real importance of OGD and OGP paradigms is critical. Without a real understanding of the possibilities that OGD has, and a no clear communication of what has been achieved by opening the government and its data, it is complicated for OGD to reach its full possible impact. A great effort in a communication strategy can achieve to make OGD-based services available and useful for everyone.

These recommendations were based on empirical cases and are necessary to be considered when developing projects that use OGD. Additionally, it has been demonstrated that OGD projects positioned the use of public sector information in the public and political agenda, generating more relevant data in the issues where it works, but also increasing the quality of the existing data (Martín-Borregón, 2020; Mendoza, 2020).

The impact that OGD can generate is also broader, gaining international and local projection, and benefiting not just the end-users but intermediaries in their way (journalists or services providers) (Carranza, 2020; Marín, 2020). It also has created new ways of communication between the OGD users and the service users, allowing feedback and the involving of users for a new citizen-centred design on OGD-based projects. As Bonina (2015) claimed, the opening of public sector information can generate unexpected positive outcomes.

7 Conclusions

This research sets out to explain how is OGD used to create public value in Latin America, responding to a call for addressing an under-theorisation in digital government literature (Bannister and Connolly, 2015). This goal is achieved in two parts: by developing a conceptual and theoretical framework, and then applying it to OGD initiatives in four Latin American countries. Both parts resulted in the highlighting of various aspects and components that must be taken into account when developing OGD-based projects in Latin America: national OGD ecosystem, OGD community, OGD public value creation and the value created and outcomes.

These components form the basis of OGD public value creation and dealing with them is essential. Hence, they have been the foundations for developing a first model based on the literature. Moreover, it has been synthesised the impact of OGD into six benefits of its reusing: (1) government transparency and accountability; (2) government efficiency and effectiveness; (3) economic growth and efficiency for private companies; (4) innovation in both private and public sector: creation and enhancing of products, services, processes, business models and sectors, fostering innovation and experimentation; (5) citizen and community inclusion and empowerment due to improved decision-making, providing transparent and real information to citizens and communities for enhanced social inclusion; and (6) the building of a better data-driven culture for assessment and problem-solving, allowing a societal problem analysis.

Later, the results from the empirical work were reconciled with the theoretically predicted events in order to understand further how OGD projects work in the specific context of Latin America. Based on this, it has been developed a logic model for understanding OGD public value creation in Latin America, together with the critical influencing factors when developing OGD-based projects. The logic model can be seen in Figure 18 and works as a map for understanding how the process of value creation with OGD in Latin America is.

Furthermore, the author has presented the results and elaborated a series of recommendations that have been stated in the Discussion chapter. These results and recommendations have been based on the interviews and document analysis realised for the empirical part of this research, merged with the literature review held in the theoretical part of this research.

This study aimed to identify how is OGD used for creating public value in Latin America. Based on a qualitative analysis, it can be concluded that there is an overall intention from governments to implement open government policies; however, in practice, there are

some legislative and organisational barriers (specifically in the regulations and the willingness of public servants) for boosting the potential of OGD. The government should be involved as an orchestrator and nurturer of the OGD ecosystem.

Moreover, the state of data infrastructure varies from country to country, from institutions to institution, from issue to issue. Standardisation in the quality of data could help the OGD actors to seize public sector information. Also, the combination of OGD sources support the value creation. However, the critical emphasis must not be in the OGD itself, but on collaboration processes.

Additionally, the role of the regional and national OGD communities seems to be crucial in the use of OGD, supporting the complementarity of capabilities and the sharing of experiences in international events. Moreover, the capabilities needed for seizing OGD are manifold, from operational and technical data capabilities to dynamic and managerial ones. A combination of both and in-house skills helps the creation of public value with OGD.

On the other hand, the sustainability of projects is still a big challenge that must be overcome. New business models and the involving of other actors (like private companies) could boost the environment and make it more competitive, boosting innovation and the creation of new ways for sustaining OGD-based projects.

Finally, a proper communications strategy could be a turning point for sharing the impact of the use of OGD. The dissemination of OGD-based projects and practices seem to help the building of an OGD community and the reaching of a more diverse public that could be benefited from using OGD or OGD-based services.

The critical influencing factors when creating OGD-based services in Latin America are transversal to all the previously mentioned aspects and are not few. For understanding, what are those, and to which exact aspect impact, Tables 14-18 explain them based on the empirical work.

Overall, the contribution of this research is twofold: it attends to a previously under-examined area of OGD-based projects, by providing a starting point for understanding public value creation process in a field that has received little attention. Additionally, the findings can be extended not just to OGD actors but also pertain to other civic tech initiatives in the region.

Limitations and Future Research

As it has been mentioned before, there are some risks and limitations when conducting an exploratory multiple case study research, and these can be caused by the chosen research design, methods and data sources.

This exploratory multiple case study research does not allow to come up with conclusions that could be generalised or applied to other cases with complete certainty. That is out of the scope of the research. Any attempt to describe and explain the phenomenon should not be extended or applied to other cases; thus, the resulting conclusions are case-specific and cannot be generalised to other cases.

There is also no strict procedure of how a case study should be applied. The absence of a clear research procedure might also cause massive and irrelevant results (Yin, 2018). In order to avoid the previously mentioned risks, the application of a theoretical framework has guided the within-case analysis, the cross-case synthesis and the logic model, guaranteeing that the research is based on theoretical standpoints. Chosen data sources could also be the cause of weak research results. Documentation shortcomings are the following ones: 1) retrievability since it can be challenging to access and find, 2) the selection could be biased due to selectivity, 3) it could also have a reporting bias, reflecting the bias of their authors, and 4) access, give that it might be deliberately withheld (Yin, 2018).

Since the creation of public value with OGD is still a new area of research, there is no standardisation in many concepts, and a limiting factor could refer to the incipient sources of information available. The conceptualisation of the terms in the research background chapter fulfils this lack and builds on the OGD public value creation literature.

On the same page, Yin (2018) listed the weakness of the interviews as a source of evidence: 1) bias due to poorly articulated questions, 2) response bias, 3) inaccuracies due to poor recall, and 4) reflexivity from the interviewee, which ends up saying what the interviewer wants to hear (Yin, 2018). Purpose sampling method for the interviewee selection could also be considered as biased, given the author chooses interviewees based on his interests and the research goals.

In conclusion, further research needs to be carried on testing the results found in this investigation. An emphasis on how the combination of operational and dynamic capabilities are used for achieving an impact with OGD could lead to an in-depth understanding of public value creation. Furthermore, a study not based in OGD-projects but on IT for public value creation would bring a more unobstructed view of the

intermediaries that participate and how the community could be adequately nurtured for achieving more significant impact.

This research has focused on public value creation with OGD, giving as a result that the communications strategy is critical for advertising the services created. A more extensive investigation in the role of the communication might provide fruitful results in what kind of strategies should be implemented when working with OGD projects.

Finally, this study focused on the perspective of the OGD intermediaries as immediate users of public sector information. In future, further research could extend to examine the consumption of OGD-based public services, with a focus on citizens and end-users.

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Appendix

A List of Interview Questions

Introduction

1. Where did the idea come from?
2. What was the main goal of the project?
3. Does the project have any financial support (if yes, where does it come from?), or is it a voluntary project?
4. How was the initial problem identified and described? What did the planning and development process look like?

Open Data Ecosystem

5. Are there policies to encourage the reuse or supply of open data? If yes, which? Were those policies successful?
6. What about legal frameworks? Do problems exist around privacy and security issues? Have you had to deal with those issues?
7. Could we say that the government encourages the use of OGD?
8. Is there any willingness from public servants to collaborate? Does public administration allow for collaboration? What mechanisms exist?
9. How do they see the involvement of non-traditional stakeholders?
10. Do you feel that there is an overall willingness to use OGD in the country? From academia, journalists, private sector, NGOs? Does it exist an OGD community?
11. Do you think that open data projects are sustainable?

OGD Infrastructure

12. Where did you get the data from?
13. Did your team use other data sources?
14. Could you say that the OGD found is of high quality? (machine-readable, interoperable)
15. Have you managed the project in an open format? Is this project in GitHub? Do you contribute to the open community?

Open Data Actors

16. Were there other organisations that contributed to the development of the service? What organisations were involved in the project? How was the partnership network developed?
17. How were responsibilities for creating the service shared among the partners? How were the roles divided?
18. What are the main tasks to manage this project? How many people worked on the project and how many are involved in maintaining it? Were all stakeholders involved in all stages of the creation of the model? How was the communication between stakeholders?
19. Have you encountered any issues while implementing the project within your partnership or with other social or political stakeholders?

20. Do you feel including people from outside of your organization benefited the creation of the model? If yes, In which ways? If no, why not?
21. Would you consider involving other organizations in developing this project further? Why?
22. Which groups or organizations, according to your experience, should not be involved in implementing this project?

Intermediaries capabilities

23. Was it the first time the organization used OGD? How were previous experiences?
24. What kind of capabilities are needed for using OGD?
25. What kind of technical capabilities are needed for developing this kind of platforms/services?

Drivers and Barriers

26. What were the key drivers for creating value with OGD based on your experience?
27. What were the key barriers for creating value with OGD based on your experience?

Use of services/platform design

28. Have you been performing any monitoring activities of the use of your platform? How many people used it?
29. Are there drawbacks from the service design you have noticed? What are those? How could it be improved?
30. How do you evaluate the success of the service?
31. Are users involved in the evaluation process? What is the feedback that you have received?
32. Is it necessary to offer additional features or services to keep the platform active? Why or why not?
33. What other functions could be added to make the platform useful or more participative for citizens?
34. Were there any challenges when engaging citizens to use the services? What were those?
35. How did you communicate the launching of the platform and encourage its use?

Value created

36. Would you consider the service created has been successful? Why or why not?
37. What kind of value do you think the service has generated? Does it coincide with the initial intention the service had?
38. Were there any additional positive outcomes that the team did not expect?
39. What would you consider doing differently in terms of implementation?
40. How do you see the future of the organisation in a short-term (5 years)?

Recommendations

41. If you would be a policymaker, how would you encourage OGD use?
42. Is there something additional you would like to add? What do you think it would be good to take into account in order to be useful and helpful for civic tech organisations?

B Interview Transcriptions

B.a Interview 1

Interview 1: Datasketch's co-founder
Interviewee: Juan Pablo Marín Díaz
Interviewer: Miguel Angel Alor Flores
Type: Zoom meeting
Date and Time: 9th of June 2020, 10:00
Audio file information: 60:00 record duration

*Note: before the start of recording, the interviewer introduced the research topic, explained main objectives of the thesis, and asked the permission for recording the conversation. The interview was held in Spanish and then translated to English.

Introduction

1. Where did the idea come from?

I am an electronic engineer, I worked in IBM for a time, then I did a postgraduate degree in artificial intelligence in Switzerland and when I returned to Colombia I was disenchanted with the use of science to solve the problems of Latin America; thus, in 2010, I started a project to make a map of innovation in the region to track money flows and see if the innovation ecosystem served to solve Latin America's problems. At that time, the so-called big data did not have that name yet, even less it was used to solve public problems. In 2012, together with a friend, we formed a non-profit organization dedicated to data consulting, where we collaborated with public, private and media institutions in Brazil and Chile. During that time, a collaboration that caught my attention was with La Silla Vacía, a newsroom with whom we created data visualisations on corruption and concentration of power. In 2015, our entrepreneurship closed and I returned to Colombia, where I started a private company called Random Monkey, not anymore with so much weight in the non-profit sphere, but with a more balanced proposal that also generates economic value for three purposes:

- Ensure the sustainability of the organisation
- Ensure the freedom of working with issues that are of our interest, without having to depend on external funding or sponsors, and with their proposed "issues to be solved".
- Propose a new different economic model: projects with a corporate social responsibility purpose.

Random Monkey's goal has always been to provide support for evidence-based decision making. However, there was still a need in understanding the value of data initiatives for problem solving. This was the reason I created a blog called Datasketch, where I started generating content about how to access public information, how to process it, how to communicate it, which data visualisation tools exist for communicate it, and so on. In summary, how to use technology to communicate public information in an enhanced way.

The biggest challenge for making evidence-based decisions lies in the access to information and how it is communicated, rather than implementing an algorithm. That is what Datasketch is dedicated to throughout its projects, finding efficient, easy and clear ways to access and communicate data for non-technical users. In access to information, countries like Colombia or Mexico are above many European countries. The problem is the vision, the recognition of local problems and solving them with the resources we have locally. Hence, the problem is not the access to information, but rather how we use our information to solve our own problems. That is what I see that is needed in Latin America: a culture of thinking about local problems and how we can use information to solve local problems. The reality is that there are foreign companies that work here but do not focus on local problems.

2. What was the main goal of the project?

Random Monkey's goal has always been to provide support for evidence-based decision making, and for that, the first step is to make public information accessible to anyone.

In order to make better decisions, we need better data. That works in many dimensions: political, technical or communicational. The political dimension is literally if in practise the public institutions comply with what the legislation indicates that they must comply. The technical dimension is in what formats the data is. In the communicational dimension, the focus lies on how to make that information more friendly for those who do not have technical training, who, in the end, are the ones who make the decisions in the different government institutions.

3. Does the project have any financial support (if yes, where does it come from?), or is it a voluntary project?

It comes from two sources: service providing and funding grants.

We are a social-aimed company, and we invest our income in solutions that benefit the community, this could be seen throughout the projects that we have implemented. Although we are a company, the type of projects we handle are social in nature.

Most of our clients have been social organisations, universities or international organisations with projects that want to support governments in the data science field. We have sustained ourselves economically by developing consultancy projects on data science issues, reinvesting in technologies and projects that seek to improve the flow of public information.

The type of projects we are working on have been, for example:

- The creation of a database for the Colombian Armed Conflict (namely kidnappings, massacres, victims, sexual violence, etc.)
- The development of a web platform for monitoring corruption
- Supporting media newsrooms to carry out research on various topics, such as gender equality, among others.

Likewise, we have also participated in the ALTEC funding in its second round, with 93,000 USD to carry out a series of projects that sought to support other organisations to make better use of their information.

4. How was the initial problem identified and described? What did the planning and development process look like?

It was a process throughout the implementation of the various previously described projects around the use of technologies to make better decisions.

Open Data Ecosystem

5. Are there policies to encourage the reuse or supply of open data? If yes, which? Were those policies successful?

Yes, the Ministry of Information Technology has a good open data platform and they are constantly looking for strategies to take advantage of and encourage its use.

Colombia adhered to the commitments and plans of the Open Government Partnership, it set some goals and specific public entities responsible for its execution.

I consider that these policies have not been completely successful, I believe that the governments realized that nobody was using open government data and then focused their efforts on opening only the information that was relevant to solve certain specific problems prioritized by the use from the civil society. However, the access to information is a fundamental right, so all information should be available, regardless of whether it is used or not. Such discourse can be risky and may violate the right to information.

If only certain information is prioritized to be released and not all, under the pretext that one is "more useful than others".

From our side, we particularly belong to the Steering Committee of the Open Government Partnership in Colombia; this partnership is an international organisation that focus on promoting open government and open data. Through the collaboration that we have with different allies, we promote the principles of the Open Government Partnership

6. What about legal frameworks? Do problems exist around privacy and security issues? Have you had to deal with those issues?

Yes, but the implementation is not always correct or vary. In Chile, they have a privacy and lobby law, which means that the mayor must give a public record of the reason for the meetings. However, it can represent a violation of the right to privacy given that some meetings can have private subjects on discussion and confidential data could be leaked into the public registry. It is important to work together with organisations that see the importance of digital rights.

We have not had particularly problems with that; however, we have had ethical dilemmas: we created the first database of femicides in Colombia, so the issue that arose was about the role of this registry, if we were providing better tools for making public policy decisions on gender violence or if we were opening paths for revictimisation.

On another project, after the signing of the Colombian Peace Agreement, we worked on a registry of the assassinated social leaders in the country, where the other problem that arose was whether by listing them, we put new social leaders at risk.
In conclusion, we have not had legal problems, but rather about the ethical use of information. We try to mitigate it by being informed about the new developments in these issues (example book "Data Feminism") and working with social organisations that know better the issues.

7. Could we say that the government encourages the use of OGD?

It depends. There are public servants within certain public organisations that are aware of OGD relevance, so they push different policies; thus, there are organisations more open to participation and to open data. However, there are many others public servants and organisations that, due to cultural tradition or the unclear perceived benefits of public information, are going to stop any progress in the use of open data.

8. Is there any willingness from public servants to collaborate? Does public administration allow for collaboration? What mechanisms exist?

At the beginning it was more informal. We gave support to organisations that did not have the technical resources to carry out their tasks; later we made larger alliances: now we belong to the Steering Committee of the Alliance for Open Government in Colombia, they are an international organization that promotes open government principles.
Colombia signed to their commitments and plans, set some goals and certain public entities for their execution. Through the collaboration that we have with different allies, we promote the principles of the Open Government Partnership.

9. How do they see the involvement of non-traditional stakeholders?

This varies greatly according to the level of preparation of the entities to work on open government issues (Perceived ease of use, training skills or capacities, perceived advantages).

10. Do you feel that there is an overall willingness to use OGD in the country? From academia, journalists, private sector, NGOs? Does it exist an OGD community?

Integrating the different actors to participate in the use of the OGD is a great challenge. Data journalism is a great channel to communicate to citizens what can be learned from public information, this because journalism reaches those citizens who could not be reached in any other way. That is also why we have partnerships with newsrooms.
Before 2016 there were independent and isolated open data initiatives, but that changed from the AbreLatam Conference in Bogota on 2016. This represented a turning point in the construction of an open data community in Colombia. This helped to generate networks among those who work on open data issues in Colombia, to build new alliances and develop new projects together.

11. Do you think that open data projects are sustainable?

Yes, from different sources:

In our case, there is funding from the academia and from international organizations. However, there are not so many organizations (I could name no more than 4) exclusively dedicated to using open data. Nevertheless, there are many organisations that do so as a cross-cutting issue in their work but not as their institutional core.

This could be for example:

- newsrooms with data journalism
- civil society organizations that watch over digital rights, but that cross-cutting touch on access to information
- academia, academic work but who want to launch an open data portal on infrastructure (project with the Universidad de los Andes in Bogota)

Additionally, we have participated together with other organisations to grants for projects oriented to different topics (journalism, environment, gender).

We also did a crowdfunding campaign last year on Kickstarter, in order to get funds to spend a few months exclusively on the product.

OGD Infrastructure

12. Where did you get the data from?

Normally, from public sources

13. Did your team use other data sources?

Yes, for private projects. But if it is information worth opening, we make it available to other organizations. Nonetheless, when we did the analysis of the armed conflict, we worked with sensitive information. That data was private.

14. Could you say that the OGD found is of high quality? (machine-readable, interoperable)

The data is not of high quality. Despite the fact that in Colombia there is good legislation on open data, when you sit down to work with open data, it is not of the best quality.

The problems they have are file encoding, file formats, categories that are not standardised, even dates were in different formats.

15. Have you managed the project in an open format? Is this project in GitHub? Do you contribute to the open community?

We create our own repository and publish all the research we do, so others can use it with an open license. We use GitHub to upload our code and we are currently launching our open data platform, on our Datasketch.co portal, where people can access the data of other people who want to share it, as well as those that we have used and made available from public sources.

All this together with our cloud visualisation platform: you can upload data and make a map of a country much simpler than with other tools. Without the need for technical knowledge, Datasketch allows you to use open source visualization tools, interactive maps, simple graphics, among others. You can download and use them for the purpose you require.

Open Data Actors

16. Were there other organisations that contributed to the development of the service? What organisations were involved in the project? How was the partnership network developed?

Not particularly with Datasketch. However, all organisations we have collaborated with have contributed to our growth and learning. For example, in the beginning, we did not have a gender perspective, but now, thanks to alliances and partnerships with feminist organisations, we have a clearer vision on the issue. Before, we were not as aware of the risks of data privacy associated with health, but after working with other organizations that specifically incorporate these issues, it has contributed to our growth: it is always a feedback process where we are always learning.
Organisations like the Latin American Open Data Initiative (ILDA) has a great panorama of what is happening in Latin America, it is a good reference. We implemented the ExploraLatam page.

17. How were responsibilities for creating the service shared among the partners? How were the roles divided?

The responsibilities among the partners have changed over time. At first it was around the different projects we were working on. In recent months, it has been around the Datasketch platform to be able to reach more small organisations so they can take advantage of the data and its use through our online Datasketch platform.

18. What are the main tasks to manage this project? How many people worked on the project and how many are involved in maintaining it? Were all stakeholders involved in all stages of the creation of the model? How was the communication between stakeholders?

The main task in our projects is to continue generating knowledge around the use of open data. Around Datasketch, to improve the cloud visualization program after the feedback we receive. Right now, the whole team of Random Monkey, this is seven people, is involved in the development of Datasketch.

19. Have you encountered any issues while implementing the project within your partnership or with other social or political stakeholders?

Besides from the usual problems in a regular project management challenge, we have not encountered any particular issues with our partners, nor with other political or social actors.

20. Do you feel including people from outside of your organization benefited the creation of the model? If yes, In which ways? If no, why not?

Yes definitely, to collaborate with other partners is very useful for the previously mentioned reasons.

21. Would you consider involving other organizations in developing this project further? Why?

Yes, constantly. Governments from other countries, social organisations, newsrooms, among others, this at a regional level in Latin America. We are interested in expanding our project to the entire region. We have already worked with projects in various countries: Brazil, Chile, Colombia, among others.

22. Which groups or organizations, according to your experience, should not be involved in implementing this project?

Perhaps organisations that are not aligned with the values that we promote, but this is independently of whether the organisations are public, private, academia, journalists, NGOs, etc. Working with organisations that use data to misinform or to harm would not be within the organisations we would work with.

Intermediaries capabilities

23. Was it the first time the organization used OGD? How were previous experiences?

No, we have been working with open government data for a long time. The experiences have been good, and they have been improving over time: in the beginning, when we started working on the issue of public contracts and procurement, the data was not in an open format, now it is, and it is accessible for everyone. The type of projects we are working on have been, for example:

- The creation of a database for the Colombian Armed Conflict (namely kidnappings, massacres, victims, sexual violence, etc.)
- The development of a web platform for monitoring corruption
- Supporting media newsrooms to carry out research on various topics, such as gender equality, among others.

24. What kind of capabilities are needed for using OGD?

One of the most important things is to have an interdisciplinary team, this has been part of Datasketch's strategy from the very first day. Our team is constituted by professionals from the human sciences as well as the technological sciences.

25. What kind of technical capabilities are needed for developing this kind of platforms/services?

Technical knowledge of open technologies and their use.

Drivers and Barriers

26. What were the key drivers for creating value with OGD based on your experience?

Communication of the platform and the services it provides is key. This ables to reach more people who could consume the contents generated by the use of open data. Without communication and advertising, it

is very difficult to promote any policy or change in the surrounding society for the use and value of public information.

27. What were the key barriers for creating value with OGD based on your experience?

Ignorance or misconception of what a public good is, including not only the access to public information, but also the conception of public money, the access to public services, the access to natural public resources, the distribution of land, among others. The ignorance of what the "public" involves, affects a lot in a democratic development: if public information is not understood as a public good, whoever creates the information will not want to share it; whoever does not understand public money as a public good, does not understand that appropriating of it affects all citizens.

There is a problem with the supply of technical professionals not just in Colombia, but globally.

Use of services/platform use

28. Have you been performing any monitoring activities of the use of your platform? How many people used it?

Yes, through the campaigns that we carry out we check whether it was replicated in other countries, how they appropriated the information, whether press releases emerged around the projects we carried out. It is monitored for every specific project.

We investigate manually, we use Analytics on web pages. At this moment we have 400 registered users in Datasketch. However, if we count all the people who have consumed the data visualisations that we have worked with our allies, it can be hundreds of thousands, even millions of people. This is because these visualisations are replicated through the media and diverse newsrooms. For example, with Ojo Público, a partner media outlet, they have a lot of visits per month, so our data visualisations reach many more people.

29. Are there drawbacks from the service design you have noticed? What are those? How could it be improved?

Yes, all the time. It is always improving. At first the data loading system did not work well, or the downloaded information was not understandable by people without technical knowledge, so little by little we have been incorporating different features into the software, but this is a constant job.

There is a great void in user-friendly technologies for non-technical users: in order for data to be available to people, these people must have technical knowledge to take advantage of it.

30. How do you evaluate the success of the service?

With the number of data visualisations created and the volume of shared data.

31. Are users involved in the evaluation process? What is the feedback that you have received?

Through the usual incidence reports due to something is not working, or common questions about how our knowledge base is fed for some users. Throughout all the projects that we have implemented, we receive feedback from the different use cases, in order to make the platform more usable for other users.

32. Is it necessary to offer additional features or services to keep the platform active? Why or why not?

Yes, we are willing to work with any of the strategic projects we are interested in, call them gender issues, fight against corruption, the environment.

33. What other functions could be added to make the platform useful or more participative for citizens?

We are constantly adding new functionalities, for example, one that we are currently working on is a tool to do text analysis on pdf documents, which is a common requirement for journalists who access public information through pdfs instead of machine-readable data in Microsoft Excel.

34. Were there any challenges when engaging citizens to use the services? What were those?

Yes, the same challenges that any new online product could have: how to make it known to the people who need it, how to improve the product so that it is useful for a certain niche of people, those kinds of challenges.

35. How did you communicate the launching of the platform and encourage its use?

An "official" launch of the platform has not yet been made. We are closing the first version that we would be for that launching, this premiere will be in July of this year.

Value created

36. Would you consider the service created has been successful? Why or why not?

Depending on how it is currently doing, yes. If someone is willing to pay for the service or product, that means that somehow the platform is successful. In addition, the campaign was successfully launched on Kickstarter, obtaining people who financed the platform and raised funds for it. This is a first measure of success against other platforms that offer similar services.

37. What kind of value do you think the service has generated? Does it coincide with the initial intention the service had?

Now, small organisations have been given the opportunity to use our Datasketch platform to take advantage of their information using modern data science tools that they otherwise would not have access to. Specially for small organisations, it is difficult to get professionals who know how to communicate data, from the technical, qualitative, and design perspective. Even large organizations have great challenges in getting these professionals to encompass all of these skills, which can be even more difficult for small

organizations. We have managed to provide the tools to seize their data in many of our projects in various countries.

This value does coincide with the initial idea. As soon as we started, the goal was to democratise data science, and so far, we've worked well in that direction. Now it remains to scale it in order to be useful for many more.

38. Were there any additional positive outcomes that the team did not expect?

One of the "unplanned" results, it is that now in Colombia the quality of open government data matters and is discussed; this could be due to the emphasis from our organisation that it is not enough to publish public information in an open format, but also guaranteeing its quality. I know that several senior government officials are now speaking on these issues. Now in the government the quality of the information is discussed, there is greater visibility on the importance of data quality. For example, now with the COVID-19 crisis, the government began publishing the coronavirus data, while we began to record that information and keep the database updated in a format more accessible to others. This includes improving the data, the codes or the visualisations, as well as conducting quality reviews to complement and improve the information, encouraging the government to publish the data in a better format. Thus, we can infer that -at least in some way- we had a strong impact on the publication of the COVID-19 information with better quality and formats.

39. What would you consider doing differently in terms of implementation?

I cannot think particularly in anything I would change; I actually like how our organisation has developed.

40. How do you see the future of the organisation in a short-term (5 years)?

We hope to reach many more small organisations that seek for improving their processes with data science tools, without the need for technical staff within their organisation.

Recommendations

41. If you would be a policymaker, how would you encourage OGD use?

I would encourage the use of OGD in many ways:

- Improving the quality of published data
- Working on the implementation of specifications to ease the discovering of what information is available in every government webpage. An alternative that I would implement immediately would be the specification of the archive data.txt (which aims for the indexation of the page, in order to able machines to discover which open datasets are under the same web domain, but also that provides more simple descriptions that humans could understand too). Basically, to know what information exists in which webpages.

- Any page tells search engines how to index your page, this is done by placing a file called robot.txt in its own domain. Some time ago a specification came out called data.txt, which is a text file that is located in the domain of the page, which describes what data sets are open on the web page.
- Recognising what open datasets are in different government platforms: many times governments are waiting to have a “mother” platform that houses all the data sets of all public entities, but that takes too long to happen. Each public institution has its own way of handling their information and they do it differently. There is no need to wait until there is a “centralizer” of all public information.
- There is a lot of information that possibly nobody will take the work to transform it in an open format, but that does not mean that it is not useful. Thus, it is not necessary to integrate every piece of public sector information into a "super system" that includes all the data of all public entities, what is necessary is to put on your website what information you have and where to find it. It is difficult to access that useful information and, if we find it, it is not in a great format.

*Note: end of the formal part of the interview.

B.b Interview 2

Interview 2: Diálogos co-founder
Interviewee: Carlos Alberto Mendoza
Interviewer: Miguel Angel Alor Flores
Type: Zoom meeting
Date and Time: 06th, 13th and 18th of July 2020, 8:00
Audio file information: 240:00 record duration

*Note: before the start of recording, the interviewer introduced the research topic, explained main objectives of the thesis, and asked the permission for recording the conversation. The interview was held in Spanish and then translated to English.

Introduction

1. Where did the idea come from?

The Violence Observatory was born in 1999, in a think tank called Centre for National Economic Research (or CIEN, by its acronym in Spanish), a study with the Interamerican Development Bank (IADB) on the costs and magnitude of homicidal violence in Guatemala. At that time, there were no official data from the National Police to make a diagnosis, since it was only in 1997 that the National Civil Police had only been created. The first effort to calculate a homicide rate in Guatemala with data, was from the National Institute of Statistics (INE, for its acronym in Spanish).

Diálogos (Dialogues in English) was born in 2015, with the idea of monitoring drug policy and generating evidence-based public policies, this happened because three of the founders were working on the drug commission at the time. On the other hand, Open Society Foundations (OSF) had an interest in carrying out an observatory of violence in Guatemala, but in that year the project was not completed.

Thus, the Observatorio de Violencia (or Violence Observatory project) was born in 2018, with a grant from the Open Society Foundations. The objective is to make it regional, covering El Salvador, Honduras and Guatemala (The northern triangle, one of the most violent areas on the planet).

Along with automated reports, you can download the number of homicides, month by month, from 2001 to the most recent month, the rate, disaggregated by sex of the victim and the type of weapon used by the aggressor. This is from the National Police source, our added value is to order them, publish them and generate the automated report and, in the end, to analyse it respectively. These analyses are shared in various spaces, for example, in the FOS (where there are several civil society organizations specialized in security and justice) or with international NGOs working in Guatemala.

2. What was the main goal of the project?

As the Observatorio de Violencia by Diálogos, the project arose in January 2018. In Guatemala there were two civil society organizations that generate data on violence issues: the GAM and the CIEN.

The Mutual Support Group (GAM, by its name in Spanish) is an organization that has existed since the 1980s, which submitted human rights reports, and then moved on to focus on reports of homicidal violence. Reports were published from journalistic notes, and then they started using data from INACIF (National Institute of Forensic Sciences).

The National Economic Research Centre (CIEN, by its acronym in Spanish) publish reports on criminal activities, receiving funding from a private sector foundation.

However, there were two problems with these institutions. First, they did not publish data so it is available to other people and organisations; and second, they did not systematically monitor all the country's departments and municipalities every month, every year.

Open Society Foundations had been supporting violence observatories throughout the Latin American region, they had a project called Life Instinct (Instinto de Vida in Spanish) and the idea was to reduce violence in the region in half in the next 10 years and they were looking for a partner for it in Guatemala. We started working in Diálogos as a second generation (evidence-based) think tank with a funded project focused on the data issue.

We have the following objectives, focused on three themes: violence, corruption and migration.

- To prepare automated reports, supported by an Excel document, with the number of homicides in all the municipalities of Guatemala, by months, the homicide rate per 100,000 inhabitants, sex of the victim and type of weapon. Our added value is to order the data, share it, generate the automated report, and present the analyses.
- To pedagogically explain the importance of using the homicide rate as an indicator; journalists usually use the total number of homicides or the daily number of them; however, to be able to compare regionally it is important to understand the importance of this data.

3. Does the project have any financial support (if yes, where does it come from?), or is it a voluntary project?

The organizations that have supported the work of Diálogos are: Open Society Foundations (OSF), the National Endowment for Democracy (NED), the US Institute of Peace, the Latin American Faculty of Social Sciences (FLACSO, by its acronym in Spanish), HIVOS, and the Inter-American Development Bank (IADB).

In 2018, Open Society Foundations was the sole funder of Diálogos at the start. Then we won a grant with the National Endowment for Democracy (NED) in 2019, with whom we made a project of public policy and citizen security in the field of presidential elections.

Then we started to be supported by HIVOS, which is in the field of open data and open contracting, especially focused in research with small grants, not so much focused on the observatory, but on the work of Diálogos as an organisation in its contracting strategic line. The last project we have done with HIVOS is about National Police hiring and procurement.

We have done research projects with FLACSO. We worked with Colegio de la Frontera Norte from México on cross-border violence in Guatemala and Mexico. Now we are about to start with another project that is about violence in two municipalities in Guatemala.

We also have done consultancies with the US Institute of Peace, on anti-corruption policy issues. In Dialogues we have a thematic triangle between violence, corruption and migration. The first corruption grant was on Transparency, Accountability and Good Governance. With Open Society Foundations, we are working on what are the alternatives for anti-corruption commissions, as well as trying to make an intervention in a municipality of Guatemala. With the Interamerican Development Bank (IADB) we also have a project, but it is not focused on violence.

As a summary, in 2018, the Violence Observatory held Diálogos. In 2019, the transition was made Diálogos and the Observatorio de Violencia being financially independent. However, the Observatory remains as the Diálogos's largest project.

4. How was the initial problem identified and described? What did the planning and development process look like?

In Guatemala, there has been a reduction in the homicide rate since October 2009. In 2017, OSF reached out to me with the Instinto de Vida campaign, as it goal was to cut violence in half in 10 years, where Guatemala was the perfect example of this reduction, so OSF wanted to know what Guatemala did well.

We are now trying to answer that question. At that time there was not enough data to make such an analysis (there was no updated census for example), the hypotheses are of various types, but now at least we already have data. It is not so much how to stop violence in our case, but understanding what data is necessary to reduce it.

On the other hand, in Guatemala, the pattern of violence is not homogeneous. The homicide rate in Mayan communities is lower than in mestizo areas, where there are high double- and triple-digit rates.

The project was designed from August 2017 to December 2017, although I already had it in my head, and we had made a couple of proposals before. Diálogos is now in a phase of thematic and methodological expansion. We want to make the leap from a second generation Think Tank to a Public Policy Innovation Lab. We believe that our strength is the use and treatment of data.

Open Data Ecosystem

5. Are there policies to encourage the reuse or supply of open data? If yes, which? Were those policies successful?

There are policies but not laws that regulate. The Ministry of the Interior has coordinated a policy; however, now in the context of COVID-19, the need for data is becoming evident, where it is necessary to know public information such as the number of intensive care unit (ICU) beds in the public health system, or the prevalence of chronic diseases in the population, among other data. Such health statistics have been vital for this crisis. The Ministry of Education is one of the ones with the best data quality, while the Ministry of Health is the one with the worst data quality. And neither of them has an open data portal, although their

data can be downloaded in Excel or SPSS or STATA formats. Even the Ministry of Interior, which led the implementation of the open data policy, does not have a data portal.

Thus, in theory, such policies and open data portals exist, but in practice they do not. The first action plan was executed during a government in which the president and vice president ended up in jail, and that was the government where the Open Government Plan was coordinated, that ended up in a discussion with civil society and the project fell.

Quite a few milestones were achieved after having the political support of the minister, but then again everything went wrong when the minister kicked out the United Nations commissioner, so the project fell again.

On the other side, the policies have not been successful because it costs a lot to change the mindset of bureaucrats on the issue of data.

The country's statistical culture is very poor, and the INE (National Institute of Statistics), which is the main statistical public institution in the country, does not have the power for law enforcement: neither public nor private entities share their data with the INE.

There is an institutional problem, this whole wave of open data transparency has been mounted under old legislation and it has not been modified. If you want to access data, they often cite laws from the 1970s, or 1980s as a "statistical secret" that prevents certain data from being shared with citizens and organisations.

There is incompatibility with other laws. In the Ministry of Finance, the officials cite other laws that indicate that they are only repositories of the data of the municipality and that this data belongs to the municipality, hiding municipal data that often hide acts of corruption. They have a whole legal team that supports them to not provide access to government data.

In Guatemala the Access to Public Information Law was made in 2008, but at that time the topic of open data was not well-known yet, therefore this law does not contain any chapter on open data, it is necessary to update it and integrate a chapter on OGD so that it remains as a law, since as a policy it is not enough for enforcing.

6. What about legal frameworks? Do problems exist around privacy and security issues? Have you had to deal with those issues?

Attempts have been made in the Congress for decreeing laws regarding open data, habeas data law and legislation on personal data, but they only remained as initiatives and failed to be legislated.

The only legal framework that exists is that created by the INE, which is the Statistical Secret, but works in the opposite way, it is a barrier to access to public information.

The absence of legislation on personal data leads us to several situations that diminish the privacy and security of people: The Supreme Electoral Court provides all political parties with access to the electoral roll in PDF, we are talking about a list in PDF with the names and personal identification numbers of 8 million Guatemalans. With that I can know at which electoral table each citizen of the country is going to vote, their age, not their sex, but with the name I can assume which sex it is; with that identification it can be accessed to the Justice and Police files.

In the history of Guatemala, we have had cases of telephone espionage, where the lists of calls made and the respective communication interventions from candidates got leaked from telephone companies. This is private sector data used for espionage for political purposes, this is especially dangerous in a context of violence. There is other, the "Bank Secrecy Law", that protects the biggest employers to be known how much taxes they pay, but this has gotten better: before, not even by a judge's order, it was possible to be accessed. This law protects the most powerful ones in Guatemala, where not even the Super Intendency of Tax Administration has access to that.

In Diálogos, we never work with personal data; however, this personal data sometimes reaches us, this because we work with two data sources: one formal and the other informal.

The latter is requested by the Law on Access to Public Information and is the aggregated data at the municipal level. Whilst the former, which without it, it would not be possible to make an analysis of the 200,000 deaths in recent years, because it is detailed on a case-by-case basis. We obtain this information through contacts within the Police and it has the name "La base de Vida" (or Life Basis in English), and sometimes they send it with the names of the victims: personal data can give you information about the causes of death (in case they are journalists, political candidates, etc.).

7. Could we say that the government encourages the use of OGD?

The government discourages the participation of actors outside the government.

Very recently the new Minister of Health came out to say that the registry of infections and deaths from COVID-19 is wrong, now a data laboratory has been built with some civil society organisations that has tried to put together a portal that has data on COVID- 19, collecting information from different public institutions, trying to show true information.

8. Is there any willingness from public servants to collaborate? Does public administration allow for collaboration? What mechanisms exist?

Prevalence of a certain culture of opacity, which creates 4 types of resistance from public officials, who have no data culture (Mendoza, 2017): some of the officials allege that such an effort makes them more vulnerable to political opposition in Congress; other colleagues are less enthusiastic about transparency for reasons of internal power dynamics, thinking they must demonstrate that they are indispensable for the information they generate and monopolize, these are the bureaucrats.

Then there are the fearful public servant which is divided in two types: those who lack their own initiative to release data because they only do what is required by law and those who fear the technical and academic scrutiny of experts on the assumptions, scenarios, projections and calculations in general done by them.

Finally, there are those who deliberately hide information to cover up administrative errors, in the best case, or to hide actions or omissions with unspeakable purposes.

The mechanism we use to access government information is the Access to Public Information Law when they are institutions that keep administrative records. However, this is not enough and that is why informal mechanisms are used, such as the case that I mentioned to you with the informal source in the Police.

Another formal mechanism that exists is to send a letter to the manager of the INE and wait for his response, which can be positive or negative and, if it is positive, this information is not necessarily automatically provided, but often it is not published. So, thanks to the fact that we had a contact within the INE, it is possible to make this mechanism work, but this is not the case for all organizations. Now that the government has been changed, we no longer have as much access to public information as our contact is no longer working there.

9. How do they see the involvement of non-traditional stakeholders?

The government perceives actors outside the government as a threat, because with data you can show the quality of their work, but that also depends on the openness of each ministry.

10. Do you feel that there is an overall willingness to use OGD in the country? From academia, journalists, private sector, NGOs? Does it exist an OGD community?

On the part of citizens, the value of the data is not yet understood, they still see it as something esoteric.
Dialogues has gained some respect for data management and this is recognised by the private sector and some government spheres, but it still has not priority, it is still a paradigm that we are trying to push.
There is still no OGD community in Guatemala, there was some enthusiasm a couple of years ago, but this will fell away. People with this mind set is needed within the government, the so-called “champions” who, from the government, promote the open data culture.
The open data paradigm is still very incipient in Guatemala, with very new NGOs and there is a generational difference in paradigms. Open data is a very generational issue, where the NGOs involved are young and connected to a community at the regional level in Latin America. These movements understand the importance of data and know how to take advantage of it, but they do not even transcend Guatemalan civil society. I believe that this group of actors must make a greater impact and provide them with more support.
Guatecambia, an NGO, held open government and open data conferences, but the project was not sustainable over time and it did not have the participation from older NGOs.
Older NGOs do not understand the relevance of the data but are the ones with the greatest political and social power; on the other hand, the newest NGOs, despite knowing the data paradigm and open government, definitely do not have the impact that older NGOs have.
In the case of the private sector, this might push the data agenda and it would be in their best interest to do so, but they still don't understand it, since there is a lack of data culture.
There are some international NGOs such as SOCIALTIC, which have fellows in Guatemala from a project called Escuela de Datos (Data School), and these fellows organized the “Datos y Tragos” (Data and Drinks in English) event, which tried to create a data community in the country, but they ran out of funding and as far as I know there is no data school fellow in Guatemala anymore.

11. Do you think that open data projects are sustainable?

I don't see that they are sustainable, maybe there are funds to start the projects, but not to continue them. We are discussing with the donors we have, to finance the sustainability of the projects. If Diálogos wants to have the hallmark of data management, we need to maintain projects of this type and make data accessible, design the infrastructure, and hire well paid data science professionals. A well-paid position from a data specialist is needed, this requires funds that are not readily available. Thus, there are no funds to finish some projects and ideas that we have.

We have received support from various organizations that have funds to support NGOs in Guatemala, this is the case of Agency, SocialTIC and Datasketch, but if they run out of funding, we will stay in the air. SOCIALTIC's Data School also ended due to lack of financial support, so the economic sustainability of data projects is unclear.

There was an NGO that closed due to lack of funds: Congreso Transparente (or Transparent Congress in English), which promoted a couple of open government and open data congresses at the Landivar University.

Perhaps the emphasis to be placed is on the model of how these collaborations are financed: it is not the same if we have the money and we pay the consultant to come and train us in the required capabilities; but, if one depends on the others to distribute their time and resources, it is much more complicated to accomplish sustainable goals.

OGD Infrastructure

12. Where did you get the data from?

From some Official Sources:

The National Civil Police (PNC by its acronym in Spanish), the National Institute of Forensic Sciences (INACIF), serves to compare the PNC data. From both sources we get the homicides number.

Also, from the National Statistics Institute (INE), where they publish the official data on criminal acts and deaths from the previous year, altogether with the census data, that, in combination with the homicides we calculate the monthly rate and the year-over-year trend.

However, it is important to mention that there is an important problem with the data availability in Guatemala.

13. Did your team use other data sources?

We also have an informal source, however, without it, no analysis could be made of the 200,000 deaths in recent years, because it is detailed on a case-by-case basis. We obtain this information through contacts within the National Police and it has the name "The Life Base" (Base de Vida in Spanish), and sometimes they send the list with the names of the victims. Personal data can give you information about the causes of death (in case they are journalists, political candidates, etc.).

14. Could you say that the OGD found is of high quality? (machine-readable, interoperable)

They are not of high quality, or we could say that it is in very different qualities. In the methodological notes available on the website, it is explained how the main three sources are compared and assessed under the Bogota Protocol, a regional standard for homicidal violence data.

15. Have you managed the project in an open format? Is this project in GitHub? Do you contribute to the open community?

We share the data with which we work in Excel files and you can download them from the website. Now we are making an agreement with ACLED that is an organisation that map conflicts around the world, because they already use our data to learn about the situation in Guatemala.

Open Data Actors

16. Were there other organisations that contributed to the development of the service? What organisations were involved in the project? How was the partnership network developed?

In the case of the Violence Observatory, in addition to Open Society Foundations, SocialTIC also collaborated with us, they bring a great support to organisations like ours in the data science matter. They were going to build a web platform for the Observatorio de Violencia; however, that became more complicated and in fact we were unable to publish the website of the Violence Observatory. We worked on an open data repository, and the design of dynamic tools that allow you to interact depending on which municipality you live in, gives you the rate. The result has not been finished nor published.
SocialTIC attended one of the congresses on open government issues carried out by Guatecambia, they told us they had a grant and that they had chosen Diálogos, because of the observatory's relevance, to support us with the web platform design. SocialTIC offered mentors from programmers, a service that we did not have budget for, just a small fund but it was not enough. Unfortunately, the product did not come out.

17. How were responsibilities for creating the service shared among the partners? How were the roles divided?

OSF is the donor, but it keeps us in contact with other observatories in the region, where they are partners at the Latin American level. Furthermore, we have been linked with a network of the Organisation of American States (OAS) observatories and with other in the Northern Triangle.

18. What are the main tasks to manage this project? How many people worked on the project and how many are involved in maintaining it? Were all stakeholders involved in all stages of the creation of the model? How was the communication between stakeholders?

In the beginning, our core team was two senior researchers and two junior researchers who supported us in data collection and research. Then we saw the need to have a position that support us in communications, community management and graphic design, since it does not make much sense to investigate if it is not published. In addition, we hired a person who works on institutional relationships to start looking for

funding from other donors. As we got older, we hired an administrative assistant, and now an executive director. Now, we even have an additional area that sees anti-corruption projects.
From SocialTIC side, it had a technical delegate in Guatemala, who was our counterpart and with whom we were discussing the image of the platform, the domains, and the interactive tools, and other in Mexico. However, both had to leave because they were offered other job opportunities. Last year, Datasketch helped us with the new Diálogos website. This thanks to HIVOS, who put us in contact with Datasketch in Colombia.

19. Have you encountered any issues while implementing the project within your partnership or with other social or political stakeholders?

With SocialTIC we had a problem at the beginning that came from us. We had a local consultant from SocialTIC but we were very slow because of the number of people working on Diálogos (just two persons by that time) and, when we had time, they no longer had a grant to continue supporting us. This situation, led to be just half-developed and not finished, even though we invested time and resources in the platform design for a long time.
On the part of political actors, we had a big problem which affected us with UNDP, one of the main financial partners who could have supported us, this because it had a large program called Infosegura, funded by USAID. This Infosegura program is dedicated to the issue of data on violence in Central America, so we were born to work together. They wanted us to have the role of technical advisory to the Ministry of the Interior, specifically to a vice-ministry in charge of violence. The vice minister was working on improving the quality of data from public institutions and we worked well with him. Additionally, the first national perception and victimisation survey had been carried out and the viceminister wanted Diálogos to analyse these results.
Negotiations with Infosegura continued and progress was made on that project, even without contracts in between (thus with no money involvement yet), because the project was already underway in different aspects. However, during the conjuncture where the president decides to expel the United Nations commissioner, the Minister of the Interior is changed in order to expel CICIG (International Commission Against Impunity in Guatemala) a commission created by the United Nations to combat the parallel structures that had been embedded in the state since the time of the war, and that now used that power to sustain corruption in the public sector.
This affected us directly, since we were about to sign the agreement and suddenly excuses appeared for the project to be stopped. Political friction breaks relationships that could have served us for collaborations.

20. Do you feel including people from outside of your organization benefited the creation of the model? If yes, In which ways? If no, why not?

When we started with the collaboration with SocialTIC, we thought that involving external actors would benefit us; however, what really happened was not having the final product, therefore the invested time in

design and development was a waste. Nevertheless, we have started coordinating again with SocialTIC and we will retake this project.

We do believe that there is knowledge and experience that we do not have and that is found in other organisations or collaborations. Now that we are making the transition to a Public Policy Innovation Lab, we have advice from external teams. Help from outside is needed for various purposes.

There are technological issues that our team does not yet handle, but in other countries they are doing geospatial analysis of violence. Here we do not yet have the coordinates of the crimes, but when we do, we will need the know-how of the geospatial analysis of violence.

Perhaps the emphasis to be placed is on the model of how these collaborations are financed: it is not the same if we have the money and we pay the consultant to come and train us; but, if one depends on the others to distribute their time and resources, it is much more complicated.

21. Would you consider involving other organizations in developing this project further? Why?

We are involving the organisation "Agency", which supports us with the transition to the Public Policy Innovation Lab. We want to maintain a high level of quality in our work.

We also have hired Javier Arteaga, who adapted Design Thinking to Latin America, creating a methodology called "feeling". He helped us build our own methodology, called DATOS.

This small community of OGD supporters in Guatemala could also be involved.

22. Which groups or organizations, according to your experience, should not be involved in implementing this project?

It is important to build bridges, but it is also important to make a distinction between first generation think tanks and second generation think tanks.

The first are those who have an ideology and make recommendations in public policies based on that ideology, even recommending people to be ministers; while the latter recommend public policies based on evidence. We believe that to solve a problem it is important to know what works and what does not, and base the decisions on evidence. Relationship with these first generation think tanks is difficult, because there is no generational renewal, and the same directors from 20 years ago are still leading those organisations. They use data to support their arguments, not to guide common interests.

Intermediaries capabilities

23. Was it the first time the organization used OGD? How were previous experiences?

No, we have worked on the following issues: migration, violence, corruption, and public health.

24. What kind of capabilities are needed for using OGD?

Our core team was two senior researchers and two junior researchers who supported us in research and data. Then we saw the need for having a person supporting us in communications; in addition, we hired a person who manages institutional relationships, an administrative assistant, and now an executive director.

We have the capabilities for accessing databases via STATA, R, or SPSS. But not all the team has those capabilities. We just made a recruitment in that regard. The data scientist will support us in those deficiencies that we have, given that data analytical and technical capabilities are required for data processing. In Diálogos we have this capacity for analysis, but we still need an infrastructure that facilitates the handling of large amounts of data.

SocialTIC had a technical delegate in Guatemala, who was our counterpart and with whom we were discussing the platform design, the domains, and the interactive visualisation tools. However, as I mentioned previously, the counterpart in Guatemala had to leave. On that regard, last year, Datasketch helped us with the new Diálogos website. This thanks to HIVOS, who put us in contact with Datasketch in Colombia.

However, we need people who know more about data science, programming, software, hardware, and data management in general. This is our main deficiency in Dialogues. We want to be an organisation focused on the use of data, but we lack the infrastructure to manage this data. We have many databases, but our management is still rudimentary: we do not have a server where we have all the databases available and by order, where they can be downloaded, manipulated and crossed with other data.

25. What kind of non-technical capabilities are needed for developing this kind of platforms/services?

There is a formative bias, there has been a lack of historical concern of the Guatemalan government and a lack of statistical culture in Guatemalan society and there is no concern or importance given to the use of data, whether in surveys, in generating own data, in using government data, on how to properly communicate this data. The National Civil Police stalled on the issue of statistical analysis, a very poor unit with four computers and police officers digitizing spreadsheets.

Additionally, there has been a loss of the institutional memory of the National Police and the Statistics Institute, for whom there is no information or evidence of their work prior to 1995.

Drivers and Barriers

26. What were the key drivers for creating value with OGD based on your experience?

- The private sector, international cooperation and civil society need to push and take advantage of the open data agenda in Guatemala. These actors need to understand the importance of having disaggregated data to understand the context.
- The data ecosystem needs to be nurtured and promoted: young NGOs are pushing the OGD issue, but older NGOs are not. On the private side, the technology companies like the Telecommunication ones could have an important part in this, since they handle a lot of data.
- The need to explain the value and importance of open government data, that this knowledge will allow you to make better decisions and save resources.

27. What were the key barriers for creating value with OGD based on your experience?

- Incomplete data

- Availability of data
- No confidence in the quality of the data and in the information generated from that data, thus the credibility of the data is lacking. Many people did not trust the data of the National Civil Police, but we weigh them with the INACIF data and we can have credibility in the data that the PNC publishes.

Use of services/platform use

28. Have you been performing any monitoring activities of the use of your platform? How many people used it?

Yes, I will send it to you via email

29. Are there drawbacks from the service design you have noticed? What are those? How could it be improved?

We started with a very basic web page and the idea was to make a more functional and eye-catching design, which took a long time, thus the webpage became a simple repository for data and reports. Until now we have not had the adequate platform to socialise and communicate the data.

Last week we launched the new website and now we have resumed contact with SocialTIC, with whom we have developed a prototype of the design of the Violence Observatory, in which you can see the number of victims of violence per day in a more friendly way.

30. How do you evaluate the success of the service?

We have performance indicators related to apparition in media, number of visits to the webpage, presence on social networks, number of webinars on Facebook Live, number of conversations online with the Sophos bookstore in Guatemala.

But also, we have intangible indicators, such as the influence that is achieved in the Congress, or in the Executive power and in policy makers. This is more difficult to measure, but we could say that we have achieved that somehow.

31. Are users involved in the evaluation process? What is the feedback that you have received?

We have done a couple of questionnaires, but we have not been consistent in it. We did a campaign last year framed in a proposal of citizen security with the electoral candidates, but I do not remember what has been the feedback that we have received.

32. Is it necessary to offer additional features or services to keep the platform active? Why or why not?

Yes, we believe that it should be a more interactive platform, easier to use and to find things. Before it was a repository, where people used to get lost with all the published reports. We need to have a well-designed

site, as is the case of the IADB and the Economic Commission for Latin America and the Caribbean (ECLAC) platforms.

33. What other functions could be added to make the platform useful or more participative for citizens?

We need to have a friendlier platform.

34. Were there any challenges when engaging citizens to use the services? What were those?

We have to make it known; we have not worked much on it. Diálogos has still a lot for growing on social networks. On Facebook we have 4500 followers, on Twitter we have 2900 followers. We have not yet managed to reach a comfortable position in social networks in Guatemala; above all, if we want to cover Honduras and El Salvador as well, so we need to articulate a greater communications effort.

35. How did you communicate the launching of the platform and encourage its use?

It was through Twitter and Facebook, but at the very launching of the Observatorio de Violencia we held a more traditional press conference: an event where journalists are invited, the respective presentation is made, a press release is presented, and it is expected that the attendants will follow us on the social networks.

Value created

36. Would you consider the service created has been successful? Why or why not?

It depends on the criteria for assessing success. The Violence Observatory has managed to publish and disseminate data on violence, but question is, it is reaching enough people, especially the people that must be reached? Journalists have already identified us, but we do not reach the whole population or have a greater impact in the public opinion.

37. What kind of value do you think the service has generated? Does it coincide with the initial intention the service had?

We have achieved the transformation of data into useful information for journalists, for policymakers and for a critical mass found on social networks. The Violence Observatory fulfils the function of collecting data, sharing in a timely manner, learning from it and collaborating. This makes this data useful for decision-making in the public and private sectors, and this value coincides with the intention at the beginning of the project.

38. Were there any additional positive outcomes that the team did not expect?

We have achieved an international projection thanks to the support of OSF for belonging to the network of violence observatories in the region. This has enriched us professionally and institutionally.

The Violence Observatory has served as the showcase for Dialogues, where it is demonstrated what our organisation can do and its methodology to achieve our goals, generating other donors to approach to us for working together on other issues.

39. What would you consider doing differently in terms of implementation?

We are a recognised organisation by civil society, but in order to be more successful, we need to strengthen and build capacities in the government counterpart. Work hand in hand with the PNC, with INACIF, with INE and with the Public Ministry; having a strategic plan to work in these relationships, to avoid political shocks and conflicts.

If the government had more capabilities, we would surely be at a higher level, doing more advanced things such as georeferenced analysis, among others.

40. How do you see the future of the organisation in a short-term (5 years)?

I see the future of Dialogues very promising. This transition to a Public Policy Innovation Lab opens up a lot of opportunities in other subjects and the key is to have various methodological tools, in order to grow not only at the national level, but also at the regional level. This depends on the capacity for (1) growing in technical capabilities (data infrastructure, data management and data analysis), since we see that this is one of the areas in which we could have a competitive advantage, and (2) for collecting funds.

In these two and a half years we have grown a lot in terms of issues, team members, budget and influence, so in five years I hope we are more advanced.

In the future of the Violence Observatory, we want to make the methodological leap to more advanced things: we want to make the transition from counting data to understanding data. Not only counting the number of deaths by violence, but also explaining why violence rises or falls in our context.

In addition, I would like the observatory within 5 years to have the capacity to speak of Honduras and El Salvador data with the same reliability from the sources as it is in Guatemala, and eventually cover the entire Central American region not only in terms of violence data, but also for other criminal acts.

Recommendations

41. If you would be a policymaker, how would you encourage OGD use?

I would foster civil society and the private sector participation by: (1) facilitating access to data, (2) providing incentives for using and reusing the data; but not remain in hackathons or one day efforts, but encouraging and supporting an OGD community; and (3) educating about the importance of data, what it is for and how it can be transformed into useful information.

Nowadays, there is no longer just human, natural or mineral resources, but also data and information resources add value to society.

*Note: end of the formal part of the interview.

B.c Interview 3

Interview 2: PODER's Data, Journalism and Technology Director

Interviewee: Eduard Martín-Borregón

Interviewer: Miguel Angel Alor Flores

Type: Skype call

Date and Time: 14th of July 2020, 10:00

Audio file information: 70:00 record duration

*Note: before the start of recording, the interviewer introduced the research topic, explained main objectives of the thesis, and asked the permission for recording the conversation. The interview was held in Spanish and then translated to English.

Introduction

1. Where did the idea come from?

The idea of Quién Es Quién Wiki is born from the founder of PODER, Benjamin Cokelet, who was doing his master's thesis on network analysis of the Mexican Business Council (the most powerful business club in the country, currently they have about 40 members and their industries control more than one third of the country) and it was added to a database, which is Quién Es Quién Wiki. In 2014, data from the Mexican Stock Exchange was incorporated, and I joined as the project coordinator in order to have a higher amount of data, systematise it and have it inside. We started with that, we have made technological rounds by going through several softwares and now we are with the current one that works pretty well. We saw the opportunity of adding public contracts and now we are specialised in that issue.

2. What was the main goal of the project?

The objective has always been to map power in Latin America.

3. Does the project have any financial support (if yes, where does it come from?), or is it a voluntary project?

Quién Es Quién Wiki has been supported by Poder, which has quite varied funding. We have four main donors: Hewlett Foundation, Ford Foundation, Open Society Foundations and Luminate. In the specific case of Quién Es Quién Wiki, Luminate and Hivos contribute directly to the platform, but also to Mexico Leaks.

Open Data Ecosystem

4. Are there policies to encourage the reuse or supply of open data? If yes, which? Were those policies successful?

I would not say that there are policies that directly encourage data reuse, but there are open data policies. Especially in the past government administration, there was a willingness to open up OGD and there were

many middle managers who encouraged these open data policies. Thus, I would not say that these policies were successful, but they were well intentioned.

5. What about legal frameworks? Do problems exist around privacy and security issues? Have you had to deal with those issues?

We have the Institute of Access to Information and there is a regulation on the Privacy of Citizens and a Law on protection of personal data, although we could say that it is not fully complied with.
Regarding Computer Security, organizations that work on the Internet are vulnerable, but this is common. In our case, it would not make much sense since all the data that we publish is open and public.
Regarding Data Protection, every two weeks we receive emails from businessmen requesting that the published information be withdrawn and the answer is the same, "this data is from the government, if you have any complaints, you can send it to the government". It is interesting that businessmen write to us and tell us "this that you are publishing is false, the numbers are not correct", to which we reply "if you can show me that it is indeed false, we could send a request to the Ministry of Finance and the purchasing unit with so that they rectify the data". This allows public sector information to be examined, and allows companies to demonstrate that the published information is false.

6. Could we say that the government encourages the use of OGD?

It does not encourage. The government knows that it is something that has to be done and it does it as a parallel work, but it is not the priority.

7. Is there any willingness from public servants to collaborate? Does public administration allow for collaboration? What mechanisms exist?

There are some public officials who have a lot of will, who understand the role of civil society and who allow our participation. However, there is a majority that does not have any will at all, and there is another part of them that completely ignores us.
There are both formal and informal participation mechanisms:
The formal mechanisms: the OGP commitments, the city calls us once a year to review everything, they also have a discussion portal for Mexico City (https://plazapublica.cdmx.gob.mx/) that is based on Decidim software promoted by the Barcelona City Council.
There are also informal mechanisms: there are community meetings where we meet with officials, where networks are established that will serve us later for improving, for asking questions; there are more events on local and regional size: local events such as Open Data Day, or Datos y Mezcales (an event where you can drink the national liquor and discuss about open data and OGD); or more regional, such as AbreLatam and Con Datos, or some specific event such as Open Contracting.

8. How do they see the involvement of non-traditional stakeholders?

It depends. The champions are delighted that for our participation, because they see new opportunities to improve, to do their work faster. But there are others who are bothered by us, and there are also others who ignore us.

9. Do you feel that there is an overall willingness to use OGD in the country? From academia, journalists, private sector, NGOs? Does it exist an OGD community?

There is no priority for the citizens in the use of OGD, but there is priority in solving their problems. Everyone wants to have the best life possible. Citizens want to solve their problems, if OGD solves problems, citizens will use it, if it does not, citizens will ignore it.

There is an OGD community, there are several groups: the majority are from civil society and members of the government, some journalists, there are few academics.

On the side of the private companies, at the beginning there were some members of OPI Analytics much more active in the OGD community, some of the members continue to participate in these spaces until now and, from time to time, they present projects that they have done with NGOs, but no longer as OPI Analytics but rather on an individual level, than at the institutional level. There is a lot of individual motivation.

This also happened with Carto in Madrid, an OGD map viewer.

10. Do you think that open data projects are sustainable?

On the side of civil society, sustainability is still one of the great challenges. The investment of time that we must do to make long-term sustainable projects is important. The team that work in our project has civic motivations, but they should not be paid less than in the market, where in private companies the same professionals can earn a little more. Thus, we could say that the entire QEQW team has ideals of contributing to a social purpose.

Sustainability is a big problem, the coronavirus and the coming economic crisis are factors that can jeopardize the sustainability of projects, and the work team can be reduced for these reasons.

On the private company side, I highlight the work of OPI Analytics (https://www.opianalytics.com/), who are the best data analysis company now in Mexico.

OGD Infrastructure

11. Where did you get the data from?

You can check the entities and sources are from our webpage, but it is incomplete.

12. Did your team use other data sources?

Yes, additional to the previously mentioned ones, in total we have 16 stock exchanges throughout Latin America and Spain, not just the Mexican Stock Exchange as it says in the webpage.

13. Could you say that the OGD found is of high quality? (machine-readable, interoperable)

Not at all. We apply cleaning and systematisation processes to all the data so that it makes sense. If you enter, for example, in the "Companies" tab and search for "Televisa" (a large TV company), the results that appear are diverse and with many alternative names.
Sometimes contracts go awry, and we have a lot of cleaning work to do.

14. Have you managed the project in an open format? Is this project in GitHub? Do you contribute to the open community?

The data is open. If you enter "Tools" on the QEQW search screen, you can download the data in CSV, or use the published API (application programming interface).

Open Data Actors

15. Were there other organisations that contributed to the development of the service? What organisations were involved in the project? How was the partnership network developed?

At certain points in time, we have received support from many organisations. We have collaborated on specific projects; I am going to make a bigger framework to explain the strategy we have. We understand that a database cannot have a narrative, so QEQW is basically a gigantic phone directory. We create linked projects that show a part of the data and explain it, so that users can generate their own narratives. These projects are mostly built in collaboration with other actors and sometimes we participate jointly in economic funding, where the tasks are divided among the participating institutions. These organisations were for example:
Wingu. They built one of the first front-end that we use in QEQW and also contributed to the project Torre De Control, with the development of the several visualisations.
Collaboration with 15 media in 16 countries, for the Women on the Stock Market project, in order to learn about the situation of women's participation in the Stock Exchanges per country.

16. How were responsibilities for creating the service shared among the partners? How were the roles divided?

Collaborations are framed in specific projects. Specifically in Torre De Control, and the collaboration with Wingu, we needed complex visualizations that allow for a more dynamic use for platform users. We obtained a fund and jointly participated in that fund, knowing in advance that Poder would contribute with the data availability and Wingu with the technological expertise in this regard.

17. What are the main tasks to manage this project? How many people worked on the project and how many are involved in maintaining it? Were all stakeholders involved in all stages of the creation of the model? How was the communication between stakeholders?

The main tasks in QEQW are the following ones: maintaining and improving the page infrastructure, getting more data, and thinking how to give meaning to this data.

Currently in this Project, Poder oversees the total maintenance. The core has always depended on Poder, the collaborations are the complementation of its work.
We are seven people in the team, only in the QEQW department. Among them, a back-end developer, a front-end developer, a technology coordinator, a journalism coordinator, a journalist, a data analyst, and me, in the position of Data, Journalism and Technology Director. We have many different professional skills in the team.

18. Have you encountered any issues while implementing the project within your partnership or with other social or political stakeholders?

In all the projects there are problems, lack of coordination that with external collaboration is even shown a little more, but those are common problems that always happen.
There are some organisations and people who do not like us, who do not like our work or who believe that we are redundant and try to put up barriers to us. It happens, but it does not interfere critically.

19. Do you feel including people from outside of your organization benefited the creation of the model? If yes, In which ways? If no, why not?

Yes, totally. Working with other organisations have helped us to have other perspectives, to grow our contact networks. PODER is known for that, for being one of the most collaborative organisations, one of the most open for sharing. In the last two years we have founded Vía Redes, Interconexión LATAM (Interconexión.lat), Latam Links, among another ones.

20. Would you consider involving other organizations in developing this project further? Why?

Yes, definitely. Quién Es Quién Wiki has this will to "come in and do what you want", or "come in and freely collaborate". For us, QEQW is a project promoted by PODER, not a PODER's project.

21. Which groups or organizations, according to your experience, should not be involved in implementing this project?

We have a business accountability perspective. Civil society projects are to benefit civil society, not companies. Organisations whose primary interest is to generate benefits for privates should not participate in this project.

Intermediaries capabilities

22. Was it the first time the organization used OGD? How were previous experiences?

When I started working in PODER, Quién Es Quién Wiki already existed. We could say that OGD is used in all PODER's projects.

23. What kind of capabilities are needed for using OGD?

Non-technical capabilities: the understanding of how government ecosystem works. During all these years I have seen people with great technical expertise doing technically very good things but with zero impact due to lack of interest in government and public issues.

24. What kind of technical capabilities are needed for developing this kind of platforms/services?

Basic technical capabilities: open a spreadsheet or CSV document, not much more is needed at the beginning. To do more extensive things, maybe knowing how to program or building a technology infrastructure, but it is not necessary, from the start.

Drivers and Barriers

25. What were the key drivers for creating value with OGD based on your experience?

Open data is a public infrastructure such as the streets, the telephone line, the electricity; it is a technological infrastructure necessary for the government for functioning. Here we are building an infrastructure for that. Beyond that, what motives us is not the creation of economic value, but the democratic value that can be obtained from it.

That all people from Mexico have electricity is not an economic issue, it is a democratic issue (or a human rights issue), with open government data it is the same. The opening of government data must be done under democratic and not economic criteria.

26. What were the key barriers for creating value with OGD based on your experience?

Not having data literacy, not knowing how to use OGD.

Not having the resources for accessing a good enough computer or Internet network.

Use of services/platform use

27. Have you been performing any monitoring activities of the use of your platform? How many people used it?

Yes always. To give you an idea, from June 1st to June 30th of 2020, we have had 40029 unique users, who made 1.98 pages per session, with an average session duration of 1.41 minutes and a total of 94000 page-views. These numbers are increasing more and more: in May we had 35000; in April, 28000, each month we increase considerably the amount of use.

28. Are there drawbacks from the service design you have noticed? What are those? How could it be improved?

Yes, a lot. We have found errors in design, but we always work to improve it. Once we made a whole framework and changed a whole system to later realize that the framework that we had implemented made Google to not index our pages. This led us to change that framework. Our team is constantly monitoring and improving QEQW, that is very good for recognising those errors.

29. How do you evaluate the success of the service?

We have several fundamental indicators for measuring success:

- Number of users we have
- Number of research users (academia, journalists) we have and who form a community around the platform.
- All the generated and shared knowledge in reports that allows the impact in public policy spaces for data generation.

30. Are users involved in the evaluation process? What is the feedback that you have received?

We have a survey at the bottom right of the page and in all the created profiles we have a suggestion box and more information about the data.

This usage survey collects several variables: frequency of use of the platform, tools that users use to search corporate information, most QEQW functionalities used, proposals for platform improvement, device used for accessing and participation in BETA versions.

The feedback we have received are requests for new data, some databases that we have not achieved to fix because not even the public administration knows how to fix them; updating the existing databases; there are also claims for the published data, as I mentioned earlier.

31. Is it necessary to offer additional features or services to keep the platform active? Why or why not?

We will continue improving the data, we will continue improving the platform and we are looking for ways to articulate alternative sources of financing. However, QEQW is a project with already 6 years old and we work constantly, it is not a project that stopped at a time and now suffers from seeking financing, we have it clear about our work and what we want to do. At the same time, we have other types of projects in Rinde Cuentas (other project promoted by PODER) and we encourage “Leak” platforms in Latam Leaks.

32. Were there any challenges when engaging citizens to use the services? What were those?

Yes, it is quite a challenge. We do it in complementary ways: by the use of search engines, by disseminating our work through press releases, but advertising a page is quite a challenge as it is building a brand.

33. How did you communicate the launching of the platform and encourage its use?

The 2014’s launch was broadcasted by a press conference. In the successive launches, there are usually a press release, some press reports, agreements with some media to republish us, and distribution of information on specialised channels, that is, for example, in the Open Contracting Newsletter we seek a mention of our project. Also, in specialised data mailing lists, we explain everything that QEQW does, and on Telegram channels as well. We focus our communications strategy to a more specialised public in our subject, which we know that our work is interesting to them.

Value created

34. Would you consider the service created has been successful? Why or why not?

Yes, because of several reasons: we have the largest hiring database in all Latin America, this despite being a civil society organisation; because we have made available data that was not there before; because we have 40,000 users per month; because we had relevant information to stop the airport construction project that was basically a corruption scandal where they wanted to transfer public money to the private sphere; because thanks to QEQW we have made relevant analyses for the situation and others have also published relevant analyses here. We are certainly having the success that can be had.

35. What kind of value do you think the service has generated? Does it coincide with the initial intention the service had?

I feel like it does match. Like all projects, this has pivoted and has had some changes, but yes, I think it is in line with the foundational thinking.

36. Were there any additional positive outcomes that the team did not expect?

Yes, for example, something that we did not expect was all the communication that we are now establishing with companies just from putting the boxes to contact us in the platform. Several different messages arrive every day and that is something we did not expect. The feedback we have received by those boxes has been good.

37. What would you consider doing differently in terms of implementation? How do you see the future of the organisation in a short-term (5 years)?

Many things, I would not have implemented the Meet framework that I mentioned earlier, or the previous to that one. Also, I would have changed them before. We wasted a lot of time, especially in the beginning, having the idea that people would enter data by themselves, we would have lost less time in the beginning if we would have not made forms for editing things and entering data that in the end no one never used. People do not want to enter data for themselves, Wikipedia is just one and there is no point in competing against it. Realising this costed us, time and resources. The very few people who want to work with data just download it as an Excel file, so finding systems to import into Excel files is much more effective.

I see QEQW in 5 years with procurement data from most Latin American countries, having very important web traffic, having found some self-financing models that allow us to stop having such a strong dependence on donations, and with a whole new series of allies around the platform, who use and promote it among local countries, stronger and much clearer than what it is now.

Recommendations

38. If you would be a policymaker, how would you encourage OGD use?

Publishing more but publishing things that really interest citizens. The most downloaded dataset in Mexico City is the location of the radars for photo fines. For civil society, this data is useful, it is very clear that

there are people outside interested in working on this, that there are citizens watching this because this data is useful to them, because they want to avoid being observed when committing offenses while driving. These people are citizens, so post things that interest citizens. Publish the list of hospitals where there are tests for coronavirus, you will see how everyone downloads it. Share government information that is interesting for people, that is the way things should be.

*Note: end of the formal part of the interview.

B.d Interview 4

Interview 2: DATA's co-founder
Interviewee: Daniel Carranza
Interviewer: Miguel Angel Alor Flores
Type: Skype call
Date and Time: 2nd of June 2020, 9:00
Audio file information: 60:00 record duration

*Note: before the start of recording, the interviewer introduced the research topic, explained main objectives of the thesis, and asked the permission for recording the conversation. The interview was held in Spanish and then translated to English.

Introduction

1. Where did the idea come from?

DATA's team wanted to work in education, so we presented a proposal to the ALTEC funding, but without objective. This because we wanted to know what the needs of students were. This was conceivable because ALTEC had a great background with DATA; otherwise, a project without an objective would have been impossible. So, in order to know what the objective was, the focus was posed on a co-creation process with our previously built partnerships (UNICEF and CES) in order to know the issues that students were facing. These partnerships were possible because we built before another service with both institutions; the previous project was called Derechos del Estudiante ("Student Rights" in Spanish).

2. What was the main goal of the project?

To generate a civic technology tool to use open data that existed in education for allowing students and their families to make evidence-based decisions about the educational process they want to follow next.

3. Does the project have any financial support (if yes, where does it come from?), or is it a voluntary project?

Yes, we are financed by the ALTEC Funding, this has a budget of 100000 USD, given it was a long and complicated project.

4. How was the initial problem identified and described? What did the planning and development process look like?

We knew that there was a problem between the educational offer and the educational institutions, this problem was defined in a co-creation process with CES first, and then with ANEP. This happened in two different times because the director of the CES was changed due to political issues; thus, we had a problem there. Then, the ANEP offer themselves to support and continue the project together with us. ANEP is a bigger organisation than CES, including it and three other subsystems: CEIP, CETP and CFE.

The first developed version focused on raw information about the schools (number of hired teachers, percentage of students that pass or fail the course). However, in the second version, worked together with ANEP, the focus was on the transparency about the courses and the studying trajectory, it means, how the students stay, continue or come back to the education system.

We moved from a focus on the centres to a focus on the courses. No longer where do you want to study, but what do you want to study. We came up with an idea, and in the end, we ended up reorienting it to a more useful project for the system.

The launching was together with two more services, the three of them were aligned to the same visual image:

- Vos (an application to visualise the student record and grades)
- Derechos del Estudiante (a platform for knowing student's rights and communicating with high levels of education, namely above school principals)

The three projects ended up being a pack of services for students that deal with different issues for them.

Open Data Ecosystem

5. Are there policies to encourage the reuse or supply of open data? If yes, which? Were those policies successful?

In general, some policies encourage the reuse of open government data; however, the Uruguayan ecosystem is more a practice-oriented rather than normative-oriented. This is because a community of practice has been established, with much trust among the actors involved. Since 2011 there has been a collaboration between actors from civil society, academia, private actors and the government.

Even the open data portal was designed in a collaborative process. Likewise, the redesign was also collaborative. This denotes that there is a substantial incidence of collaboration and co-creation in Uruguay. On the other hand, the success of the policies is also measured in the number of successful cases of civic tech that generate demand among citizens, first with Por mi Barrio and then with A Tu Servicio.

6. What about legal frameworks? Do problems exist around privacy and security issues? Have you had to deal with those issues?

We do not get involved in privacy or security problems. In our services, the creation of users is not required, so we do not use personal data. However, there is an exception with Por mi Barrio, where it is necessary to identify yourself in order to enter any claim officially towards Montevideo Intendency.

Not dealing with personal data is a key strategy in our projects, it is purposely sought not to save identification records, that is, we do not save anyone's personal data whenever it can be avoided.

7. Could we say that the government encourages the use of OGD?

Yes, there has been a good reception: the OGP process in Uruguay is in general very successful. Several of the processes depend on the OGP system: data opening, collaboration with institutions outside the government, among others. However, the elections have just occurred, and the government has just

changed. The middle managers want to continue working, but we do not know if the new authorities would want to continue. Moreover, the conditions also have changed with the COVID-19 pandemic. I don't know what will happen from here on.

8. Is there any willingness from public servants to collaborate? Does public administration allow for collaboration? What mechanisms exist?

The access barrier in Uruguay is shallow, even when civic organisations are tiny. Even more, speaking to public servants and political authorities is easy. That is cultural.

Specifically, DATA has had good receptivity. Nowadays, it has been even easier because the organisation has grown. Since the ABRELATAM Conference, DATA has gained strength.

However, in general, there are links between the public sector, civil society and the private sector in Uruguay.

9. How do they perceive the involvement of non-traditional stakeholders?

In Uruguay, there is a robust civil society. This means there is a significant part of the population that participates in civic activities. There is intense social activism.

This is historically cultural: Uruguay has a tradition of participatory budgeting, referendums, and there is an extensive participation culture.

There are also many public policies executed through civil society, where the government finances projects that are executed by civic organisations; for example, nurseries or maternity centres are executed through civil society organisations.

There is an intense exercise of citizenship, great willingness to work with the government.

Economic weakness. These organisations are small and non-professional, always looking for funding.

10. Do you feel that there is an overall willingness to use OGD in the country? From academia, journalists, private sector, NGOs? Does it exist an OGD community?

The "pioneers" of the open data community have previous experience; however, they all participate not in the same ways and not at the same times:

- Civil society and government have sustained participation.
- Academia has moments, sometimes high, sometimes low. Now we have expectations for the University of the Republic (Universidad de la República), there is an interest in getting more involved in open government processes and more sectors.
- From journalists and media, there is some weakness, with the exception of some cases with the exercise of data journalism, like La Diaria (a newspaper).
- From the private sector, there is a national idiosyncrasy: open government is linked with human development, there is not a perspective of using data for economic development. We could even say that civil society takes away business opportunities from the private sector. Like the saying, the private sector "rests on its laurels".

11. Do you think that open data projects are sustainable?

In DATA, yes. Our projects are a bit old (six or seven years old) and survived different governments. This is because approximately every three years we improve our projects with actualisations and new services. However, there is an economic weakness. These organisations are small and non-professional, always looking for funding.

Open Data Infrastructure

12. Where did you get the data from?

The data used in this application is available for reuse through the AGESIC National Open Data Catalogue and is published by ANEP. The data was not previously published as open data, but was accessible on request, thanks to the transparency Law. The data was downloaded from SIGANEP, a visualisation portal that previously failed due to different reasons: the data was not structured, you could not search among them, you had a map where you clicked and told you what courses were available but without any contextual information.

The different institutions from where we get the data worked independently before, making more difficult the interoperability between their systems.

13. Did your team use other data sources?

Yes, the other sources are the following ones:

ANEP - Educational centres and educational offer

INE - Vector maps (by department)

IDE.uy - Towns of Uruguay

Elijo Estudiar Thesaurus

Banasevich, Isabel et al. (2008) Liceos del Uruguay. Montevideo: CES

Programas y dispositivos, transversal programs to apply in the diverse centres (e.g. inclusive education)

14. Could you say that the OGD found is of high quality? (machine-readable, interoperable)

Uruguay publishes data, so the problem is not the availability of data. The problem lies in the exploitation of the data to make it useful. There is difficulty in enhancing and improving the quality of the data. First, we had to understand the data taxonomy in order to create structures to make the data interoperable: the different systems worked with different semantics.

There is also data inconsistency: the same data was published with different names in different databases (for example the name of the towns).

15. Have you managed the project in an open format? Is this project in GitHub? Do you contribute to the open community?

All work is done based on open source; we use GitHub. We are also working on a Knowledgebase of the projects, but it is not finished yet.

Open Data Actors

16. Were there other organisations that contributed to the development of the service? What organisations were involved in the project? How was the partnership network developed?

When the project was halted with CES due to the change of government, La Diaria (a newsroom) helped us contacting Antonio Romano, who was at that time the Educational Planning director at ANEP, with whom a new agreement to maintain this project began.

While we are committed to the platform development and project management, we partner directly and indirectly with the following organisations:

Directly:

- ANEP. It is the main actor, the primary data provider.
- CES. It was part of the initial co-design process, but when the partners changed, it became one more actor within the new universe of actors, as one of the ANEP subsystems.
- CEIP, CETP and CFE. All subsystems of ANEP. With whom is coordinated the co-creation of the platform.

Indirectly:

- UNICEF, who introduced us to the CES and who was involved at the beginning of the process, however, it did not continue after the project with the CES fell. Now she is looking to get involved again to make improvements.

17. How were responsibilities for creating the service shared among the partners? How were the roles divided?

We are committed to the platform development and the project management; while ANEP is committed to providing the data and participating in the co-creation process, giving legislative approval, project sustainability and communication.

18. What are the main tasks to manage this project? How many people worked on the project and how many are involved in maintaining it? Were all stakeholders involved in all stages of the creation of the model? How was the communication between stakeholders?

In order to ensure sustainability; we have delivered low maintenance projects. Thus, right now, we just have a maximum of two people working on it and not even as a midtime job. By the beginning, in the design process, the entire DATA team was working on the project, that is six people. We would not do it again because people can leave the team at any time, and that can affect the development of the project, that happened to us with this project. The people that left was because of different reasons but not linked with the project.

On the government side, each educational subsystem (CEIP, CES, CETP and CFE) assigns a person to keep the data published and updated.
The communication between the stakeholders has been by meetings, emails and WhatsApp groups.

19. Have you encountered any issues while implementing the project within your partnership or with other social or political stakeholders?

There have been differences and discussions in agreeing but never fighting. Nor with political stakeholders. We could say that we are strategically friendly.
The discussions were mainly in order to know how to ask the questions in the form, because of the many actors that participate in the co-creation process.

20. Do you feel including people from outside of your organisation benefited the creation of the platform? If yes, In which ways? If no, why not?

Yes, the co-creation process is fundamental. We are always learning, and it is a two-way relationship. We also got advice from other organisations on topics that we do not have as much expertise, for example, in inclusiveness.
Now for updating the data for 2020, we see this opportunity as an excuse to integrate UNICEF into the process.

21. Would you consider involving other organisations in developing this project further? Why?

UNICEF is already a partner in the project Derechos del Estudiante, but it is also the partner that we want to add to Elijo Estudiar in order to expand it and star including universities in the platform: Mainly two ones that are already interested UDELAR (University of the Republic) and UTEC (University of Technology). From the academy, these two universities want to add their data to Elijo Estudiar.
We also want to contact new authorities and new financiers. We foresee that the incorporation of UNICEF will allow the entry of new funds: this will let to update the data, to include UDELAR and UTEC universities, that will come accompanied by funding from these academic institutions to add their data and develop new functionalities, based on the logic of our sustainability, previously presented.
We also want a partnership with the SEIBAL plan. This plan aimed to distribute computers in Uruguay, but also to build Internet infrastructure in schools in the whole country. This allows that all primary and secondary students have a personal computer, which at the same time has been an essential factor for the Internet penetration in Uruguay. A partnership with them will bring greater access to students because they are the beneficiaries of the platforms; thus, we believe this could be a vital alliance to incorporate into the project.
We see other opportunities in the requests from existing partners to add things that allow us to give new functionalities to the platforms we develop. So, we need to find new partners to add new functionalities to projects.

One of our projects, Por mi Barrio, was financed by ALTEC. But also, it was financially supported by the replications of the platform in Costa Rica (with the partner ACCESA in two municipalities, where they managed the funding with AVINA) and in Argentina, thus the improvements were financed from different countries and institutions.

Other of our projects, A Tu Servicio, also has interest from the outside: the Bogota Secretariat, CORONA Organization and Wingu, want to replicate the project in Colombia; however, we just guided the implementation, and in the end, they had to make if different, this because each health system is very different. They even had to make the code from scratch. Nonetheless, the replication lied on the concept and aesthetics of the platform.

The same situation happened with other projects: Dónde Reciclo? in Colombia, Por Mi Barrio in Argentina, Por mi Barrio in Argentina, Declaraciones Juradas Abiertas in Argentina.

22. Which groups or organisations, according to your experience, should not be involved in implementing this project?

I think that the wrong choice of a strategic partner can harm a project. However, it has not happened to us.

Intermediaries capabilities

23. Was this the first time the organisation used OGD? How were previous experiences?

No, DATA has worked for many years on civic technology projects together with the government. Thus, we have a long experience; our projects are:

- ¿Qué Sabés?
- ¿Dónde Reciclo?
- Por Mi Barrio, the first big project
- Temporada de Pases
- A Tu Servicio, the biggest project, even awarded by OGP
- A Tu Nombre
- ¿Dónde Pinta?
- Derechos del Estudiante

All these projects have permitted DATA to build an identity and become well known to other civil society organisations and the public sector.

24. What kind of capabilities are needed for using OGD?

Our partners think that what is important are the technical capabilities or the level of knowledge and expertise that we have in the development of websites and applications.

We are convinced that is not the case. None of our tools is technically sophisticated. We do not solve problems with technology; we do not follow a techno-optimistic paradigm. We solve public problems through collaboration. Technology is just a tool that we use for collaboration. It is a mean for lowering barriers, but it is not THE solution.

The main capabilities we think are necessary:

- To empathise with different types of problems and find solutions collaboratively
- To follow an open government paradigm
- To create tools that respond to these problems with a very high level of usability (focus on UI and UX)

If you do develop a platform, but it is not usable, it will not work at all. There is a difference between two solutions to the same problem: SIGANEP vs Elijo Estudiar and it is based on the user interface and user experience, you can see that the interface plays an important role: it allows you to solve the problem and to understand what happens with users when using the tool.
We also do not have a robust testing capacity. Thus, UNICEF helped us testing the applications.

25. What kind of technical capabilities are needed for developing this kind of platforms/services?

Before we used Drupal for the back end, and Ionic for the front end. Now we updated the Ionic version in front end (we use React instead of Angular), and for the back end, we do it in Ruby. With Elijo Estudiar, we reached the limit of what could be requested from Drupal. That is why we now use Ruby.

Drivers and Barriers

26. What were the key drivers for creating value with OGD based on your experience?

To follow the Open Government principles: precisely, the logic of collaboration. Open data is just a tool, not a fundamental solution. We are not interested in just using open data; we are interested in creating civic technology in collaboration with other stakeholders.
When an institution publishes open data, it is tacitly communicating that it is willing to collaborate. Willing that others could use the information they have. For that, they already have understood that public information belongs to everyone, and by making it open, it has to be in a machine-readable format. Thus, there is already a knowledge base about what is open data, why and what for these initiatives are taken.
Another driver could be the credibility of the organisation that is developing the project. In the beginning, they worked with us without any problem, but now we have a well-known experience, and other stakeholders come directly to us.

27. What were the key barriers to creating value with OGD based on your experience?

Decision-making makes a difference. There are two types of decisions: policy decisions and arbitrary ones. Policy decisions have to deal with the measurement of results or, for example, ANEP not emphasising the results of the centres. We can deal with these kinds of decisions; these decisions can be navigated; we still can work with them.
However, arbitrary decisions get in the way. There is no clarity on why those decisions were made, or what were the reasons. This may be because of political party decisions, or it may also be seeking to hide information for dishonest reasons.

Use of services/platform use

28. Have you been performing any monitoring activities of the use of your platform? How many people used it?

Yes, through Google Analytics. The visits are not abundant due to different reasons:

- The project is relatively new. It was launched in November last year.
- The launch date was not in an ideal moment, but rather late when classes were already ending. As the tool was launched in November, only those who had not chosen what to study the following year used it in November and February, as can be seen from the number of visits to the page.
- There were no funds to carry out a proper communication campaign: ANEP just used their own webpage and some media coverage.

29. Are there drawbacks from the service design you have noticed? What are those? How could they be improved?

Yes, errors always appear, and most of them are corrected after the platform launch; this means that we continued working intensively even after publishing the platform.

However, our biggest drawback is to not have implemented what in the beginning we planned to. There are ideas that were not executed because, in terms of data quality, it was more complicated than expected.

All the fixes can be checked in the GitHub account.

30. How do you evaluate the success of the service?

There have been limitations in the platform launch, namely dates, COVID-19 pandemic, change of Uruguayan government. I think that the platform has managed very well. First, because the challenges were enormous and sophisticated, this is, being able to work with the data and creating a tool that could actually work as we expect. Thus, the assessment of the platform can be measured based on three aspects:

- The existence of the page is an achievement in itself.
- Feedback from the different partners of the project, from the people who have used the tool.
- The demand from the users, the additional functionalities that users request to be created.

31. Are users involved in the evaluation process? What is the feedback that you have received?

Feedback is received by email: in the platform, we indicate the address to write to in case of doubts or recommendations in the "About Us" section. Today there is no helpdesk implemented, but we are still working on that.

32. Is it necessary to offer additional features or services to keep the platform active? Why or why not?

Yes, because of sustainability (allows the project to be improved).

33. What other functions could be added to make the platform useful or more participative for citizens?

Every three years, we improve our projects with actualisations and new services. We see from the user's demand; they request additional functionalities: to update the data, to include UDELAR and UTEC universities, even more universities than just those two.

34. Were there any challenges when engaging citizens to use the services? What were those?

No, there are no major obstacles. When there are problems, we receive the notification, and we correct them. In Elijo Estudiar there have not been so many problems, or at least we have not received them, this may also be because not so many people are using the platform right now, when more people start using it, we would be able also to recognise more places for improvement.

35. How did you communicate the launching of the platform and encouraged its use?

Money is needed to communicate and make advertising. The media coverage helps, but does not generate a massive audience. Elijo Estudiar has had good reciprocity in the media. All TV channels, all radio stations. But in the end, there are still people who did not find out about the project, and when they listen to what we are doing, they say: "nice! It is really good; you should advertise it more".

Value created

36. Would you consider the service created has been successful? Why or why not?

Yes. That the platform exists is already a success. But also, we know it from the people's feedback who tell us it has been helpful to them. Even more, there are vocational guides who use the platform to orientate students about their professional options, and they have told us that it is quite useful for them.

I think the platform still has more potential, but it takes money to communicate and advertise. Media coverage helps but does not generate a massive audience. We have had good reciprocity in the media, but it is not enough.

37. What kind of value do you think the service has generated? Does it coincide with the initial intention the service had?

It allows searching and consulting the educational supply from four different public education subsystems: kindergarten, elementary school, high school, technical school and education training school (CEIP, CES, CETP and CFE respectively) through a simple and attractive tool. This searching platform allows a crossover between the user information and the educational options, so the information that appears for each user is different.

38. Were there any additional positive outcomes that the team did not expect?

From Elijo Estudiar, as I mentioned, the project helped vocational guides.

However, in this project, we have not seen that kind of unexpected outcomes, mainly because it is a new platform, and the first feedback cycle is yet to come. That kind of additional positive outcomes sometimes do not come to us directly, but they go in the shape of comments to our partners.
However, we have unexpectedly positive outcomes from other projects:
A Tu Servicio: since the platform showed the costs and fees transparently from every healthcare provider; the citizens started sharing the incredible differences between providers, causing the reduction of some health service providers fees.
Derechos del Estudiante: In Uruguay, the attendance of students in uniform is not compulsory. However, a girl went to school without her uniform, and she was not allowed to get into the classroom to study, so the girl filed a complaint because her school did not allow her to exercise her right to study, which caused a scandal in the media and ended up with a change in the rules and laws, so it will never happen again that any student is returned home because of the uniform.

39. What would you consider doing differently in terms of implementation?

Respecting the partnership formation: I would do it directly with ANEP in order to save time. Or sign the agreement with the CES before. When the government changed, we lost a year of work and the partnership with CES. This time would have been useful to develop more functionalities in that year or to launch the application at a more logical time in the educational calendar and not by the end of it.
On a technical level, I would do some different things: After Elijo Estudiar, we changed some ways in which we develop projects. Before we used Drupal for the back-end development, but now we use Ruby, this because we reach the limit of what Drupal can offer to us.

Recommendations

40. If you would be a policymaker, how would you encourage OGD use?

I would generate regulations that force public institutions to open their data by default and in open source by default, this together with the creation of mechanisms for participation in the different political and administrative processes.
If the right structure is generated, this will facilitate the improvement of processes including new and more stakeholders, but also it would radically reduce the costs and the difficulty of doing them.
Thus, the regulation for the participation mechanisms would allow the citizens and civic organisations could appropriate the public processes in the end. This way, the facilitation of processes is possible.

*Note: end of the formal part of the interview.

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