

The State of Open Government Data in Dutch Municipalities: Transparency, Accountability & Innovation

Marlon van Dijk¹

ABSTRACT

This MaRBLLe project focusses on Open Government Data (OGD) in Dutch municipalities. This is government published data that is available for anyone to use and reuse without any restrictions and no costs. This type of information is not just published with the aim of enhancing government transparency but is supposed to have positive outcomes on innovation as well. Through interviews with relevant stakeholders in the OGD publication process, such as Dutch municipalities and NGOs, this paper identifies which problems have hampered the potential benefits of OGD from not being fully realized yet. It concludes that in each phase of the publication process there are various problems that obstruct the effective usage of OGD.

1. Introduction

Numerous governments have been setting up Open Government Data (OGD) initiatives in the past decade, aiming to create more transparency and accountability towards its citizens. OGD refers to data “which are available for anyone to use and reuse without any restrictions and no costs”, related to government information (Bogdanović-Dinić, Veljković & Stoimenov, 2014, p. 27). OGD platforms collect and publish open data on a wide variety of issues, ranging from economic data to public infrastructure to information on the political processes. These platforms aim to go beyond mere consumption of the information, as citizens are encouraged to interact with this raw data by incorporating it in own projects, such as research or apps. OGD is most commonly analyzed with national initiatives in mind (see for example: Attard, Orlandi, Scerri & Auer, 2015, p. 402; Wong & Welch, 2004). Yet, OGD platforms are not only limited to the state level, as supranational (European Data Portal, EU Open Data Portal) and local platforms have been created as well. It is exactly that dominant focus on national OGD platforms that has sparked the inspiration for this project. My focus is the local OGD data initiatives in Dutch municipalities. This is an appropriate level of investigation since OGD is mostly gathered and owned at the local level. Additionally, Wirtz, Weyerer & Rösch (2017) note: “open government research has produced a considerable body of knowledge, but at the same time lack empirical evidence” (p. 3).

This paper identifies which problems have hampered the potential benefits of OGD from not being fully realized yet. It does so by developing an information flow model that summarizes how the data flows from the producer, to the users, to the intended outcomes of open data. This model integrates different stages of the information diffusion process and relevant elements in each stage, such as the users and possible outcomes. Additionally, the problems which can stand in between the effective flow of information from one phase to the next are incorporated as well. The elements in this model are derived from the academic literature. The validity of this model is empirically tested by interviewing Dutch municipalities and other stakeholders. This model allows us to trace the difficulties in each phase and see why the

¹ This MaRBLLe project was made as part of the Bachelor program European Studies at Maastricht University. Marlon van Dijk graduated in June 2018. He is currently enrolled in the Master program *Politieke Communicatie* at the University of Antwerp. Contact: marlonvandijk@ziqgo.nl, +31624171113

potential of OGD is not yet fully achieved. Obviously, not all Dutch municipalities face the same problems in the same way. Differences between them are analyzed as well.

The first section gives a more detailed overview of the concept of open data. The second section establishes the used model, which is derived from existing literature. This model provides us with a clear picture of the issues facing the effective publication of open data by local municipalities. Thirdly, this model is assessed and empirically supported through interviews and oral data. Lastly, several recommendations are made which can improve the way in which open data is published on a local level.

2. Open government data

Open government data (OGD) is a form of data and information made available by governments or other public bodies. This data is published with the intention that this is "used, re-used, and re-distributed" (Open Knowledge International) by other parties. Citizens and other receivers of OGD are not expected to simply consume the information, but actively participate and engage with it by, for example, incorporating it in their own developed apps. The release of raw data, most commonly on dedicated open data portals or platforms, is a rather new step in open-, and e-governance and changes the ways in which knowledge is consumed and produced by citizens in a society.

OGD can be seen as an actual implementation of democratic governance principles such as open government and civic participation (Bogdanović-Dinić et al., 2014, p. 25; Boon, 2010, pp. 18-21; Wirtz et al., 2017, p. 2). Within the typology of transparency of Heald (2006), OGD would fit in the category of 'downwards transparency'. This concept refers to situations "where the 'ruled' can observe the conduct, behavior, and/or 'results' of their 'rulers'" (p. 27). Citizens can access government data through open data portals and observe the data they collect and actions they take. This transparency from governments to citizens is commonly seen as a defining element of democratic societies (p. 37). Transparency is generally mentioned in combination with accountability, where governments are responsible for their actions towards their citizens. It is debatable to what extent accountability actually crystallizes. This all depends on which and how information is disclosed by the government and how citizens interact with it (Margetts, 2006, pp. 200-203; Wong & Welch, 2004). Such questions are at stake in the case of OGD as well.

The official definition of open data by the Open Knowledge International is "Open data is data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike" (Open Knowledge International). Obviously, when talking about OGD, this definition needs to be complemented by an element which specifies that the data is produced, owned or distributed by a public body (Attard et al., 2015, p. 402). However, this definition does not give exact guidelines on how governments ought to publish their open data. The Sunlight Foundation (2016) has more principles that it regards essential for open data. These are:

1. **Completeness:** governments should publish datasets which are as complete as possible. More data means users have more to work from and understand fully the available scope of information.
2. **Primacy:** the published data should be collected at the source. Ideally, the collection process should be described as well, as this allows users to check on validity.
3. **Timeliness:** (Near) real-time publication of the data will maximise the utility from them.

4. Ease of (physical or remote) access: Barriers to access the data should be as limited as possible. This includes filling out request forms or needing special computer programmes to access the data.
5. Machine-readability: Data should be stored and downloadable in a format that is easily processable by a computer.
6. Non-discrimination: Data should be available without users having to identify themselves or justify their needs for the data. No distinction can be made on a personal or professional basis.
7. Use of commonly owned or open standards: Data should be stored in a format that is used by many people with limited barriers. For example, although Excel is an information processing programme which is used by many people, it does cost money. Therefore, storing data in a format that can be used by free alternatives, such as CSV files, are preferred.
8. Licensing: Any conditions placed on the usage of data, such as attribution or restrictions, harm the public usage. These restrictions should be minimised.
9. Permanence: Data should remain available online or archived. When data is removed or updated, this should be clearly indicated, and older versions should remain retrievable.
10. Usage costs: Any financial costs of OGD, however small, negatively affect the reuse. Open data should thus preferably be available free of charge for the public.
(Sunlight Foundation, 2016; see also Donker, 2016, pp. 204-205).

When one compares the Open Knowledge International's and the Sunlight Foundation's ideas on OGD it becomes apparent that both similarities and differences exist. No single clear-cut operationalisation exists, and government practices vary based on their own experiences and customs.

OGD can be contrasted with two other forms of government data which are related to, yet different from OGD. First, *public* government data, or public sector information (PSI), is defined as "any information (content) whatever its medium (form) ... produced, held or disseminated by a public sector body" (The National Archives, n.d.). This can include documents which are only available in print in archives, or PDF scans that are not machine-readable. OGD is in its essence a form of *public* data but extends beyond that. Second is *linked* data. This means "not only access to data, but *relationships among data* should be made available, too, to create a *Web of Data* (as opposed to a sheer collection of datasets)" (W3C, n.d.). With linked data, a person or machine can easily access the data itself *and* find closely connected data (Berners-Lee, 2009). This ability to make connections with other data is not a condition of OGD. Essentially, OGD can be turned into linked data.

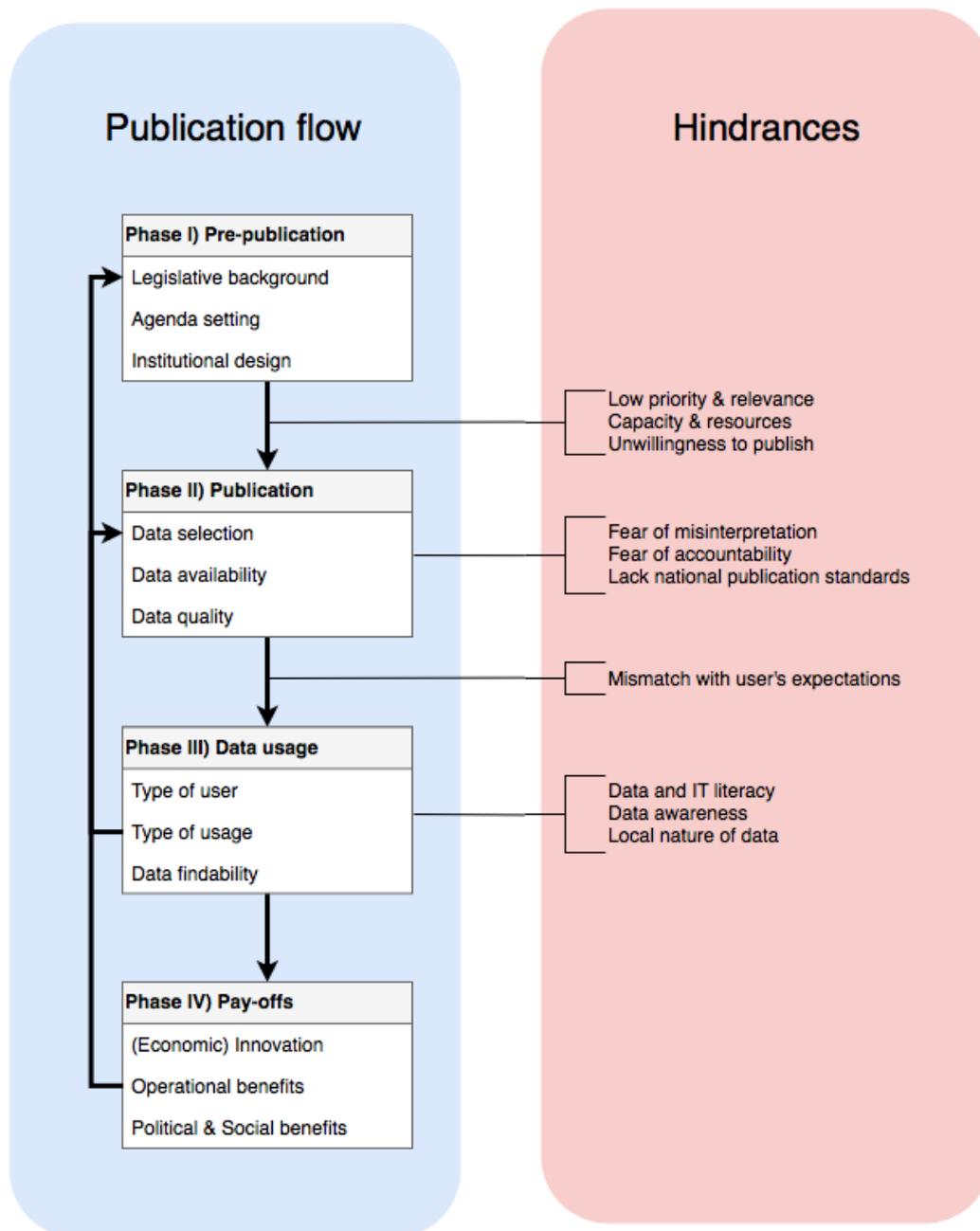
3. Diffusion model

Based on the existing literature, I have created a diffusion model showing the flow of OGD from producer to user. The model presents and condenses information and concepts on OGD that can be found in the existing academic and professional literature. The model describes four essential phases in the flow of OGD, which are described in the left blue column of figure 1. These phases are: the *pre-publication*, *publication*, *data usage* and *payoffs* phases. These stages are connected by an arrow, denoting a flow of OGD from one phase to the next. For example, once the data is made available in the *publication phase*, the next step is *usage* of that data. The last two phases, *data usage* and *payoffs*, link back to the first two phases, *pre-publication* and *publication* in a feedback loop. The corresponding box of every phase contains

several concepts that can influence the exact form of OGD and how it is used. For example, to publish OGD one needs to select which data, where to get it from and in what shape to publish it.

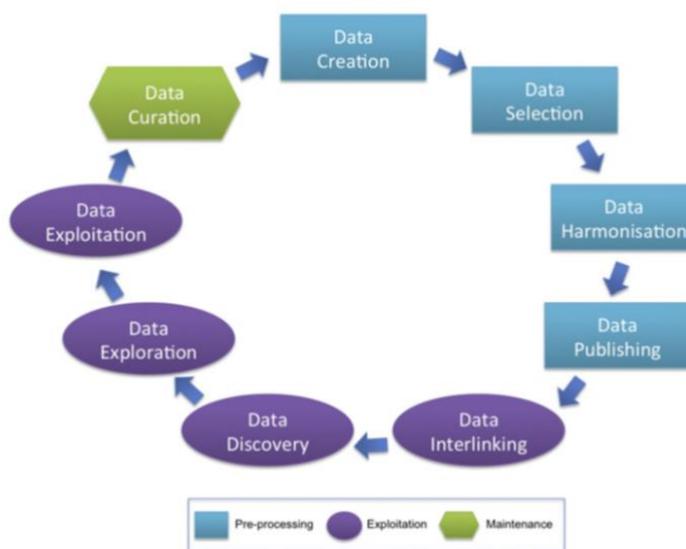
On the right is a red column which described the hindrances of the effective flow of OGD. When attached to a box, these difficulties are associated with that phase only. When attached to a solid line, the difficulties are not necessarily concerned with difficulties within a phase but stand in the way of the flow from one phase to the next. A presence of any of the described hindrances forms an obstacle in the effective flow of OGD. Practically, this theoretical model is used as a guide to the interviews. This allows us to test whether these theoretical observations can be empirically supported when discussing OGD at municipal levels.

Figure 1: Diffusion model



Such a stage approach to OGD is borrowed from the *Open government data life-cycle* model by Attard et al. (2015, pp. 403-404). Their model contains three sections, namely *pre-processing*, *exploitation* and *maintenance*. In their own words these mean “preparing the data to be published, using the published data, and maintaining the published data to be sustainable” (pp. 403-404). These sections are then further redefined in smaller, more concrete steps. The *pre-processing* section is composed of, in order, the creation, selection, harmonization and publication of the data. In the *exploitation* section interlinking (putting the data in categories and highlighting other connected datasets to give additional context and value to the user) is followed by discovery, exploration and exploitation of the data.

Figure 2: Open government data life-cycle (from Attard et al., 2015)



Although these elements are all certainly present in the OGD diffusion process, the fixed direction in which they are presented is flawed. By no means does data creation have to be the starting point, as they already note themselves (pp. 403-404). Data can be gathered with a specific purpose in mind, essentially changing the positions of data selection and data creation. Moreover, maintaining the data is not only necessary after it is consumed, but is a relevant element along the entire life-cycle. It is for that reason that this paper creates an improved diffusion model. The sections *pre-processing* and *exploitation* are borrowed, including the elements that these are composed of, but not the order. They are renamed the *publication* and *data usage* phases to more clearly label what happens in each of these phases. Additions are the *pre-publication* phase and the *payoff* phase. The life of OGD does not start with the publication of data, nor does it end with the usage of the data. Before publication can take place, people need to see the relevance and potential of open data, and an institutional system needs to be designed to publish it. Moreover, the usage of OGD is not the end itself, but serves as a tool for innovation or open governance. These phases are described in more detail in the coming paragraphs.

3.1 Phase I: Pre-publication

One cannot simply start publishing OGD out of the blue. The relevance of OGD needs to be put on the (legislative) agenda and concrete plans on how to publish need to be established. Furthermore, the

respective government branch, in our case Dutch municipalities, needs to set up a framework or institutional design on how to deal with OGD.

Implementation of OGD platforms is often based on Freedom of Information policies (Safarov, Meijer & Grimmelikhuijsen, 2017, p. 11). The legislative backbone of Dutch OGD platforms is the *Wet openbaarheid van bestuur* (Publicness of Government Act), abbreviated as Wob. Firstly, government bodies should actively disclose information which is in the public interest. Secondly, when this active disclosure is not considered enough, citizens are allowed to make information requests (Art. 2 & 3 Wob). In addition to the Wob is the *Wet hergebruik overheidsinformatie* (Re-use of Public-sector Information Act). This updates the Wob for the digital age, by stipulating governments should “as far as possible, disclose information digitally, in a machine processable format” (Art. 5 Who; Kunzler, 2016, pp. 10-12). However, legislation does not only stimulate and spur OGD; it can hamper OGD disclosure as well. There exists an overlapping grey area between OGD legislation and copyright and privacy policies (Safarov, 2017, p. 11).

It should be noted that the previously mentioned policies do provide Dutch municipalities with significant leeway on how to practically implement OGD. Whether it creates a new OGD department or this simply becomes a new responsibility for a communications or information department is up for the municipality to decide. Which procedure needs to be used before moving to the publication phase or which quality standards OGD need to fulfil is at the municipality’s discretion. The institutional frameworks within municipalities vary considerably.

3.2 Phase II: Publication

Data publication entails the collecting of OGD and making it suitable for publication. This means making choices concerning which data may be published and how it can be most appropriately presented to the public. When municipalities fail to disclose the datasets that users find relevant, or the quality of it falls short, the re-use cannot reach its full potential.

First, the municipalities need to select which data is suitable for publication. This selection will depend on the (un)willingness to publish OGD. Factors that can be relevant are the effort and resources required to retrieve, publish and maintain the data. Additionally, municipalities might be hesitant to publish data if they fear the accountability for this data (Attard et al., 2015, p. 400).

Data quality is another concern in the publication phase. Ideally, OGD should fulfil all the OGD principles set out in paragraph 2.1. It comes as no surprise that this is not always the case. Here Tauberer (2014) provides a useful distinction. On the one hand, there are *defining* OGD quality principles, such as being accessible and analyzable (re-usable). Without these traits, the data cannot be considered truly *open* data. On the other hand, there are the *desired* principles, such as being accurate and authentic. Not being accurate and authentic does affect the quality of the OGD, but it is still open data (see also: Bogdanović-Dinić et al., 2014, p. 28). Municipalities can choose to sacrifice on the *desired* principles and affect the data quality, and still publish the data albeit it not being 100 percent perfect.

3.3 Phase III: Data usage

The data usage phase is the bridging element between the publication of OGD and the payoffs phase. When OGD is available but there is no use and reuse of this data, one could question if the goals of

transparency, accountability and innovation indeed can be achieved. The exact form of data usage is shaped by, primarily, the identity and intended use of the user.

The user's identity can be categorized, however somewhat artificially. Theoretically anyone can be a user of OGD as no distinction can be made as to whom may access the data (Sunlight Foundation, 2016, principle 6). Reuse entails the idea that OGD is simply applied for a purpose other than that for which the data was originally collected. The users of OGD are therefore no set group of people (Kunzler, 2016, pp. 12-14). Yet, the users can be grouped by some common characteristics, primarily on their intended usage of the data.

The first, and potentially largest, group of users are the citizens. The active disclosure of OGD facilitates access to government information. They gain access to information on the workings of a government, and therefore reduce information asymmetries that exist. This allows citizens to participate with and evaluate the actions of government bodies (Safarov et al., 2017, pp. 13-14). It is however noticed that the public value of OGD can be limited when citizens do or cannot engage with the data. IT literacy, data quality and findability can make it difficult for citizens to engage with OGD. For that reason, "intermediary tools that demonstrate to citizens how they can use open data ... are necessary" (Safarov et al., 2017, p. 13).

The second group are businesses and developers who make use of OGD. OGD can be used to build new applications and tools which in turn add value to the data. These applications can have as their aim to solve a specific social problem and/or to gain commercial profit (p. 13.). However, businesses do not only create tools for outside use. Internally they can use OGD to develop tools that help them with extracting information and efficient decision-making. For example, it could be relevant for businesses to closely track the policy making process of municipalities or other bodies of government.

The third group are defined by their intent to use OGD to investigate public affairs, such as journalists, researchers or interest groups. Journalist and researchers can use OGD as a source in their works. Interest or pressure groups use OGD to inform themselves on government actions that are relevant to their special interest. This information can be used with the intent to influence policy and raise public awareness on, for example, public spending, environmental affairs or human rights (Kunzler, 2016, p. 13). The common characteristic between journalists, researchers and interest groups is that they do not only use OGD to purely improve their own products. They all apply OGD with the aim of, in one way or another, informing and influencing the public. This type of user has the potential to mediate the connection between OGD and transparency and accountability where citizens lack the ability to engage with OGD (Safarov et al., 2017, p. 13). A concrete example of such mediated accountability is the Dutch expenditure tracker *Openspending.nl*, allowing citizens to compare public spending of Dutch municipalities. This application uses open data published by the Dutch statistics office (CBS) and transforms it into an easy to use tool for citizens.

The last group of users of OGD that should not be forgotten are the government bodies themselves. Municipalities can compare their own performance against other municipalities, allowing them to improve their own performance. Additionally, as more data is available this reduces requests for public information, therefore reducing municipalities' costs of making this available. Moreover, the internal sharing of data in a municipality becomes more efficient. Rather than having to contact the relevant department for information, they can simply refer to the OGD portal to gain access. The relevance of OGD for a municipality itself should not be forgotten (Kunzler, 2016, p. 13).

3.4 Phase IV: Payoffs

In the payoffs phase we look at the outcomes of the OGD publication and usage. Here it should become apparent what the effects and impact of publishing OGD are. These should closely match the reasons why government bodies, municipalities in our case, decide to publish OGD in the first place. OGD initiatives are often initiated with keywords such as transparency, citizen participation and collaboration in mind (Bogdanović-Dinić et al., 2014, p. 25; Weerakkody, Irani, Kapoor, Sivarajah & Dwivedi, 2017, p. 287). Under these broad categories of intended outcomes fall smaller, more concrete results that are worth discussing. All these positive payoffs are fundamentally based on the increased scope of public knowledge and resources. Without the availability of OGD, these payoffs cannot be realized (Attard et al., 2015, p. 414).

Users of OGD are encouraged to actively apply the data in their own projects, such as apps or websites. It is noted that this can stimulate innovation and can have a positive effect on the state of the economy (Janssen, Charalabidis & Zuiderwijk, 2012, p. 261; Weerakkody et al., 2017, p. 286). However, it is not OGD *an sich* that has economic value. Only effective usage of this data has the potential of sparking the economic returns. In contrast, the publishing and maintenance of OGD platforms does cost public resources. The economic returns associated with OGD only become a positive payoff once these benefits exceed the public costs associated with maintaining it (p. 286).

In addition to economic benefits exist operational benefits associated with OGD usage. Publishing OGD on dedicated portals or platforms, either on a municipal or national level, provides one clear access point for government information. Rather than fragmented information being spread across multiple websites and archives, it is now retrievable on a single OGD portal. A single point of entry is not only beneficial for the developers and citizen who use OGD, civil servants or other people working for public bodies benefit from this as well. Having a clear and open picture of all the data a municipality owns reduces the risk of accidentally collecting and publishing data which is already in possession (Janssen et al., 2012, pp. 260-261).

Another operational benefit is the possibility of improved decision and policy making. As more stakeholders can now access information this allows for comparison on a broad array of information. By allowing public access to data, people verify if their conclusions and decisions are valid, which in turn improves the decision-making process. Moreover, OGD does not have to be analyzed in isolation. It is possible to merge OGD with privately held data of, for example, businesses. This equalizes the information position of public and private entities (pp. 260-261).

The abovementioned economic and operational benefits come together in the political and social benefits of OGD. Here OGD is related with the improvement of government transparency, accountability, participation and public trust. Utilization of OGD by civil society does allow for engagement and cooperation between governments and society and commonly address public problems (Safarov et al., 2017, pp. 8-10). OGD does decrease the barrier for citizens to participate with the government by providing them access and insight into their workings. Again, it should be noted that these effects do not follow directly from OGD publication. For these positive payoffs to materialize, it must be actively used. In sum, the effective *usage* of OGD can have economic, operational and political and social payoffs.

4. Assessing the model

4.1 Interviewees

To assess the previously established model, I contacted relevant municipal OGD stakeholders in the Netherlands. They were approached with the intent of letting them reflect on elements of the model and discuss obstacles that could complicate the OGD flow. As a starting point, a convenience sample of the ten largest Dutch municipalities was contacted via e-mail. Not all municipalities responded or agreed to the invitation. However, more stakeholders were contacted after being referred to them by the interviewees. Please note that all quotes used in this paper are originally in Dutch. These are thus my own translations.

The first set of interviewees are, obviously, Dutch municipalities. These include Utrecht, Breda, Tilburg, Eindhoven and Etten-Leur. Utrecht is commonly viewed as the highest achieving Dutch municipality when it comes to OGD (Kunzler, 2016, p. 26). Breda, Tilburg and Eindhoven are all medium-sized Dutch municipalities but vary considerably in their approach to OGD. Etten-Leur is a considerably smaller municipality than the other interviewees but was contacted after being recommended by Breda. As they are in the starting phase of publishing OGD, this provided interesting and relevant insights on phase I and II of the model. The conducted interviews were of a semi-structured nature, with questions designed to reflect on various elements of the model and lasted approximately 45 minutes.

The interviewees were not limited to municipalities. NGO *Open State Foundation* was interviewed as well. They have as their mission to “enhance digital transparency by retrieving public information as open data and making this available to re-users” (Open State Foundation, n.d.; own translation). Another interviewee is *KOOP* (Kennis- en Exploitatiecentrum Officiële Overheidspublicaties), part of the Ministry of Internal Affairs. They are responsible for the publication of municipal OGD on a national platform, data.overheid.nl. As *Open State Foundation* and *KOOP* work closely together with municipalities in the publication of OGD, these interviews targeted at validating findings from the interviews with municipalities. Questions were designed to determine if what was found in the interviews also applied to municipalities that were not part of the interview sample.

The coming paragraphs discuss the phases of the model again, this time with data obtained through the interviews. This gives the opportunity to complement, correct and nuance the model where necessary.

4.2 Assessment

4.2.1 Phase I: Pre-publication

Based on the interviews, municipalities start their OGD journey in two distinct ways. Their starting point can either be a direct request for participation in a (national) OGD project, or a political initiative from the local Council. When asked how OGD came onto the political agenda, Etten-Leur and Tilburg indicate that a project by a third party that requested OGD was their main motivation. The other three municipalities claim OGD has their origin in a political initiative.

The first way to start with OGD publication is from a political initiative. These initiatives are based on the will of “being an open and transparent government” and “seeing the value of open data for the city”. However, they do not necessarily prioritize the often associated OGD outcomes of accountability and economic innovation. As one interviewee claimed: “With every problem we should determine how data

can be used as part of the solution. OGD as a goal is not my formula. It should be a tool". This view is shared by another municipality, and they see OGD as a form of releasing public information, which could be suitable in only certain scenarios. Disclosure of public information is their foundation, and other potential outcomes are seen as nice extra benefits to have.

The second way to start OGD is project driven. When this is the case, the municipality's first experience with OGD came from a specific request for OGD from an interested party. A project that was mentioned by the majority of municipalities is *Waar is mijn stemlokaal?* (Where is my polling station?), which gives an overview of all Dutch polling stations in the 2018 municipal elections. Interviewees find there are two benefits of project driven initiatives. Firstly, such projects increase the priority of OGD within the municipality. A request for specific OGD to the relevant department shows that certain people value the information, therefore increasing the push for municipalities to publish it. Second, national level projects produce peer pressure to release OGD. As one noted: "it would be annoying to see that all municipalities participated, but us". A municipality does not want to appear uncooperative and non-transparent in relation to their colleagues.

When OGD is on the political agenda, an institutional design needs to be created. Which department is responsible for collecting, publishing and maintaining the data and how does it get its resources? This institutional design varies considerably between municipalities. I will illustrate this with two examples. Utrecht has a highly institutionalized approach to OGD. It has an Information Commissioner who actively looks for data in the relevant departments that users have requested. Although there is no department that focusses exclusively on OGD, its practices are highly institutionalized. This can be contrasted with Tilburg, where OGD is the responsibility of the GEO-information department. As they note: "There is still no maintenance on OGD, there is no coordination, simply no money ... We spend about 0,01 percent of our time [on OGD]". These examples illustrate the diverse institutional frameworks of OGD inside municipalities. The other interviewees' institutional designs range somewhere between the two.

Resistance to publish OGD often arises from the sensitivity of the content, commonly based on privacy, competition and legal concerns (Dawes, Pardo & Cresswell, 2004, p. 9, 17). OGD should not be traceable back to individual persons or contain data that is copyrighted, for example. To address these issues, two municipalities indicate to consult with privacy and legal experts before publication. Other municipalities use checklists as consultation to address privacy and legal concerns.

OGD can be placed on the agenda through a request to participate in a project or be sparked by a political initiative. This needs to translate into an institutional framework within the municipality. As noted, these frameworks can vary considerably between municipalities. Once established however, a successful flow to the next phase is not guaranteed. This hindrance can come from a resistance to publish OGD, based on privacy and legal concerns. Additionally, the OGD publisher inside the municipality can lack the necessary capacity and resources.

4.2.2 Phase II: Publication

The publication phase starts with finding, selecting and formatting the data to make it fit for publication. During the interviews two approaches were distinguished which municipalities use in selecting OGD for publication. Some municipalities work primarily supply driven, whereas others are more driven by user demands. A supply driven approach aims to disclose as much OGD as possible without really taking into consideration what users might want to do with it. A "open, unless..." approach falls within this category. No selection is made with regards to the potential application, this is up to the user. This "open, unless"

credo was discussed in interviews with Eindhoven and Breda. As Breda said: "You cannot make up for others what they eventually need. We don't actually want that".

In contrast, a demand driven approach does consider the usefulness of the data for the user before publication. This user-oriented approach seeks to stimulate OGD requests by third parties and use this as a publishing guide. Only data that is regarded as relevant by the user is published. Tilburg and Utrecht primarily work within this frame of thinking, as "Open data as an answer to a specific request, I think, is the only formula in which OGD has true added value".

However, the supply and demand driven approach are not necessarily mutually exclusive. As one interviewee said, "I believe both are vital". Demand driven municipalities might still disclose OGD when they *believe* there is a demand for it or when the data is very easy to make public. Additionally, supply driven municipalities still value user input when selecting their data as this might make it easier to extract from the departments. A majority of the interviewees find the supply driven approach to be particularly useful when just beginning with OGD. This is because "we had the belief that we needed body in the data portal" and "that is an easy way to score". In the early stage, the quantity of data is found to be more important than the quality of it.

The *Municipal high value data list* is considered to be a valuable tool in selecting which data is relevant for publication. This list is developed in 2016 with the intent to "support municipalities with the publication of OGD. [This] helps them to choose which data to publish with priority" (Ministerie van Binnenlandse Zaken, n.d.). It includes, among other, requests for public information, activities in the city council, public artworks and monuments. All but one of the interviewees consider this list to be helpful in their selection process of OGD. After municipalities have selected which data they consider to be relevant for publication, it needs to be collected from the corresponding departments. Note here that a municipality is not one coherent actor, as we should distinguish between the unit responsible for the OGD and the individual departments. It is the individual departments which, in most cases, collect and own the data, the person(s) responsible for OGD is merely the publisher. It does happen that the departments themselves contact the OGD unit with relevant data to be published. Yet, in most cases the OGD unit needs to actively pursue this data. The OGD units commonly find hindrances when they do so, mostly based on a fear of accountability, misinterpretation and a low priority given to OGD, combined with the already discussed privacy and legal concerns.

Although government accountability is commonly seen as a positive payoff of OGD, it can form a hindrance for the municipality to publish. An example concerning playground equipment is worth exploring here. One municipality wanted to publish a dataset containing the playground equipment in public spaces, which was subject to heavy debate.

What do we want to include? Look, the location, where they are, is not a problem ... But once you start talking about when it was installed, when it is due for inspection, when it needs replacing... Those are discussions that arise, are we going to publish that? Because won't this give rise to any damage claims?

Once there is a possibility that the content of OGD might backfire at the municipality, they become resistant in publishing it. Another reason for municipal departments to be hesitant to give their data to the OGD unit is their fear it might be misrepresented. Municipal departments feel users lack the knowledge to correctly interpret the data. Something that seems 'off' at first glance can be reasonably explained with

more information the user may not necessarily have. Fearing wrong conclusions from the data makes municipalities less willing to publish the data.

The last reasons why OGD units have difficulties extracting data from the departments is simply that they give OGD low priority. A quote from Utrecht sums up this conversation nicely:

Not everyone understands the value of OGD. I understand very well when the manager [of the department] says: "I don't have time, I'm very busy. It's an extra task and costs times and money to disclose. I need capacity. And the future perspective that someone might once do something with it? I don't see that." Yes, I get why some think that it's a pretty plausible argument.

Or as put more bluntly by Tilburg: "Priority? At this moment? Zero!". It becomes clear that even though the OGD units might want to publish OGD, this is not always shared within the other departments. It is often noted that project driven requests as described in the previous paragraph tend to increase priority, making it easier to extract the OGD.

Another relevant aspect in the publication phase is the quality of the data itself. Even though municipalities feel they should strive for data of the highest possible quality, they also think striving for perfect data cannot become an obstacle to publish something. As one interviewee notes: "I prefer perfect data, but don't let it become an obstacle and publish nothing when the data is 60 or 70 percent perfect. Give us what you have, mention it [the imperfections], and publish it". One interviewee notes that OGD which is published can always be retracted if too many flaws are found. Striving for perfect data must not mean one endlessly postponed publication.

All municipalities have their own standards on what the dataset should look like, the data formats that are used, and how much information it should contain. They often put these in a checklist that is followed before the OGD is actually published. However, this is where the problem mostly mentioned by the interviewees comes from. Although municipalities have their *own* publication standards, *common* national standards do not exist. The lack of national publications standards causes two problems. First, municipalities that want to start publishing OGD do not have a clear guideline how to do this. Second, users that want to combine OGD from multiple municipalities have to put a lot of effort in editing the data to make it compatible. The lack of national publication standards causes problems in the data usage phase, the publication phase, and the pre-publication phase of novice municipalities.

The best way to reach standardization in publication standards can be debated. One option is through following the 'best practices' by the OGD frontrunners. Meetings between various municipalities take place regularly where they share their experiences on what works best and what does not. This more liberal approach is favored by two interviewees: "When looking at OGD there should be standards of sorts, but not have 180 rules at the start on how you should publish. Eventually you can reach the same point [common standards that is] but it matters how this evolves". Other interviewees favor a more binding approach by laying down fixed standards on how they should publish OGD.

In the publication phase municipalities have to select and format the data to make it fit for publication. However, inside the municipality there can be tension between the OGD unit and the data owning departments. These might give lower priority to OGD, or fear accountability and misrepresentation of the data by the user. Another hindrance is lack of national publication standards. Not having these make it more difficult for a municipality to know how to publish and make reuse more troublesome.

4.2.3 Phase III: Data usage

In the data usage phase, the action moves from the municipality to the users. During the interviews it became apparent that many municipalities find it difficult to fully grasp who the users of OGD are, and how they use it. What complicates a municipality's view on their data usage is that their OGD is not only accessible via the municipality's OGD portal, but at a national and European portal as well. Although these multiple access points are considered desirable, it makes monitoring (re)use of the data more complex. The users that were mentioned most regularly were (app)developers, citizens and the municipality itself.

One interviewee said "I believe the prime target audience are people who can technically make something with it. For example, an app that in turn can be used by the general public". It was argued that the general public lack the IT skills necessary to meaningfully engage with OGD, as this is of a rather technical nature. In this view, transparency and accountability associated with OGD needs to be mediated through a more accessible format. One way in which they seek to attract more visitors to the OGD platform is to potentially move to a platform which includes both open and public data, as public data tends to be more understandable. This separation however needs to be clearly labelled.

When municipalities see information disclosure as the prime purpose of OGD, as described in §4.2.1, they tend to see the target audience of it as the citizens in general. This follows from the reasoning that information in the broad sense of the word helps in concrete problems, where OGD can in some of those problems be the appropriate solution. The last user of OGD that was mentioned in multiple interviews is the municipality itself. Having an OGD platform provides a nice overview of all the data the municipality has in its possession. This in turn makes it less likely that different departments are gathering the same information, ensuring no-one is doing double work. This tends to increase efficiency inside the municipality.

Several municipalities indicate to be somewhat disappointed with the re-use of their data. Quotes as "We do not really see the effect yet of OGD re-usage" and "re-use is disappointing, mostly the creation of exiting innovations and apps" illustrate this. This lack of re-use is explained in two ways. First, citizens "are not fully aware of what is available". Citizens are unaware of the available data, or do not know where to find this. Second, four interviewees said they see the value of OGD is not necessarily on a local, but on a national level. This view is shared by both small and large municipalities alike. Developers commonly prefer to build apps for the entire country, not a single municipality. The main obstacle in this national re-use is again the lack of publication standards. As one interviewee notes "We do not have the illusion that OGD from our city alone will make a company happy. This will only work if we have some common standards". A lack in common publication standards makes national re-use of OGD troublesome for the users.

4.2.4 Phase IV: Payoffs

The envisioned payoffs from OGD closely match the reasons for starting publication in the first place. (Economic) innovation, operational benefits, and political and social benefits were all mentioned when asked about the value of OGD. It was commonly noted that the publication of information is in itself valuable, which in turn can lead to the other outcomes. However, to what extent these payoffs actually crystalize is debatable, as data re-usage is considered by some to be somewhat disappointing. Of course there are practical examples of OGD being used in applications, such as the already mentioned *Waar is mijn stemlokaal?*. When publication is the result of a specific request for OGD, re-usage is not necessarily

a problem. However, the re-usage of OGD made available without anyone asking for it is not fully understood by the municipalities.

4.2.5 Feedback loop

On vital addition to the model is the user feedback loop that connects multiple phases of the model with each other. Users can shape *what* is being published by asking for specific data. This increases the connection between OGD and the user expectations, as they find the data to be more relevant. Moreover, it was commonly noted during the interviews that data requests increase the priority given to OGD. OGD units find it easier to extract data from the departments when they do this with a specific request in hands. Seeing actual positive payoffs of OGD for its users can bleed into the pre-publication phase in terms of resources for the OGD unit.

User feedback can shape the quality of the OGD as well. A user can spot mistakes in the data and refer this back to the OGD unit, who can in turn incorporate this feedback. With this user feedback the quality of the data is increased, which makes re-usage easier. This user feedback on quality can come from several sources. One municipality notes this comes primarily from civil servants who use the data themselves. Other municipalities do however find there is plenty of feedback from developers and citizens, who directly contact them with mistakes and recommendations. Additionally, *KOOP*, who publishes local data on a national platform, monitors the accessibility of the data and supplies the municipalities with feedback as well. User feedback can increase the quality of the OGD and make the publication of it easier.

5. Recommendations

During the interviews, it became clear that every municipality has their own ideas and expectations from OGD. Municipalities face different problems and there is thus no single recipe which they can follow to overcome these. Due to the rather new nature of OGD, municipalities are trying to figure out how the best can publish. As one interviewee puts it: "We are using trial and error, what works and what doesn't?" Municipalities consider the following recommendation useful starting points to improve the state of OGD.

Insight into the re-use of OGD is often lacking at a municipal level. Getting more insight into this is important for two reasons. First, this shows which data is valued by users. This allows municipalities to better adjust their data to the wishes of their users. Second, having practical examples of re-usage can increase the visibility and priority of OGD, both within a municipality and to broader society. This can be achieved by actively engaging in dialogue with the users of the data. Ask what they want, need, and think about ones OGD. Such a user-oriented approach can help in selecting relevant data and creating a more collaborative atmosphere in which positive feedback is more likely to occur. Additionally, municipalities could advertise more openly about the specific applications of their OGD. Posting articles on the data platform and municipality's website about a project that incorporated its OGD illustrates the positive payoffs and again can increase the priority of OGD. Such increased visibility of OGD re-usage helps citizens and developers to more easily find the OGD. In turn, re-users are more likely to be willing to acknowledge the foundational importance of OGD for their own projects.

Another development that some of the interviewees considered to need stimulation is the spread of OGD to smaller municipalities. Faced with less resources than their larger counterparts, small municipalities should be guided by OGD frontrunners in the region in the setting up of their own OGD platforms. It became apparent during the interviews that some municipalities already feel the duty to help smaller municipalities with their OGD knowhow. Recognising that the potential of OGD lies predominantly

at a national level, it is vital that all municipalities publish OGD. This process can be stimulated through regional cooperation, with the larger municipalities sharing their experiences.

6. Conclusion

This paper has found several problems why the potential benefits of OGD have not fully crystalized, which were indicated by the interviewees. These problems all relate to various phases in the discussed model and harm the flow from one phase to the next. The most prominent problems according to the interviewees are the absence of national publication standards, the lack of re-usage of the data and an unwillingness to publish OGD. This unwillingness of the departments stems from a fear of accountability, fear of misrepresentation and low priority given to OGD. The lack of re-usage can come from the quality of the data itself, the unawareness of users about the existence of this data, or an IT literacy deficit of the user. In addition to these problems, I have found several approaches municipalities can take in relation to the start of OGD (sparked by a political initiative or a project) and their data selection (supply or demand driven). Additionally, the importance of the feedback loop is discussed as this can increase the quality of the data and increase the priority given to OGD.

The input from *KOOP* and the *Open State Foundation* was vital in validating the findings from the interviewed municipalities. Their 'helicopter-view' helped to determine whether the identified issues play in other municipalities as well. This however still neglects those municipalities that do not publish any OGD at all. Why these do not see the importance of OGD or decide not to implement this are questions that cannot be answered through these interviews. Furthermore, future research should find methods to measure the (re)use of OGD and the envisioned (economic) innovation, operational and social benefits.

The rapid developments of OGD initiatives at local, national and supranational level in the past decade fits the trend of governments wanting to become ever more transparent. OGD can be seen as a practical implementation of democratic principles such as open government and civic participation, combined with economic and innovation interests. However, it can be questioned how useful this transparency push is if citizens find it difficult to access, use and engage with the disclosed information. Government transparency is not the end by itself, but should be a means to foster public participation, trust and accountability.