Open Data Policy Effectiveness

A qualitative study about the factors that determine the effectiveness of open data policies in Dutch municipalities

by

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Abstract

Open data is considered beneficial for citizens, businesses, and public administrations. It increases community engagement, enhances innovation, reduces costs, increases transparency, and reduces corruption. Despite the widespread adoption of open data policies, challenges arise in achieving genuinely open and high-quality datasets. Specifically, local governments demonstrate underdeveloped open data practices, which frequently hinder the effectiveness of the policy. Therefore, this thesis aims to analyze which factors determine the effectiveness of open data policies in Dutch municipalities, posing the research question: *"Which factors determine the effectiveness of open data policies in a municipality?"* The first step involves a literature review that delves into three key concepts: open government, open data, and policy effectiveness. To address the research questions, the researcher analyzes six case studies using a holistic case study approach. This method provides insights into how these municipalities implemented their open data policies both on paper and in practice, as well as identifying key factors they deem important for an effective open data policy. The findings of this research are intended to help policymakers and citizens understand what is needed for an effective open data policy.

1. Introduction

Emphasis on transparency and accountability in government, innovative policy execution, and data-driven management within municipal organizations is growing, leading to a heightened focus on the role and significance of open data (VNG, n.d.). As a result, more data is available to the public now than ever. Increasingly, governments have developed an open data agenda with clear policies and strategies for making data accessible to the public (European Data Portal, 2020). When public bodies make their datasets available, public institutions become more transparent to citizens (OECD, n.d.), ultimately reducing corruption and enhancing integrity and accountability over time (Edmiston et al., 2021). Moreover, encouraging the use, reuse and free distribution of datasets has the potential to deliver economic growth, as it can help organizations making more informed decisions, utilizing their existing resources more effectively, and having access to data that would otherwise require costly data collection (Edmiston et al., 2021; European Data Portal, 2020; OECD, 2021).

Despite the fast adoption of open data policies, there has not been much improvement in the quantity of truly open datasets worldwide, leading to open data portals that do not allow professional reuse of their data (Abella et al. 2022; Open Data Barometer, 2017). Abella et al. (2022) refer to those as *pretender open data portals*. Open Data Barometer (2018, para 1.1) also states that "fewer than 10% of all datasets surveyed are open and governments have been reluctant to publish the datasets that can most benefit citizens. When available, such data is typically incomplete and of poor quality,"

Particularly local governments seem to have ineffective and underdeveloped open data practices (Sheffer-Correa; Mendes-de-Souza; Soares-Correa-da-Silva, 2019 as cited in Abella et al., 2022, p. 3). At times, the government focuses on presenting data in a way that enhances political visibility, which restricts the accessibility and sharing of data with stakeholders who want to reuse it (Beltrán-Orenes; Rodríguez-Mateos, 2020 as cited in Abella et al., 2022, p. 3). The research of De Jager-de Lange (2017, p. 3) shows that 42 Dutch municipalities (11%) collectively released nearly 2,000 datasets as of early 2017. Only a quarter of the datasets are discoverable through the data portal of the Dutch government. These fragmented datasets from a limited number of municipalities hinder the reuse of datasets (Jager-de Lange, 2017). A significant amount of Dutch government data was not readily accessible for reuse, lacked standardization, and was insufficiently shared in 2020 (Leeuw, 2020).

When open data is incomplete and of poor quality, it cannot reach its objective of enhancing participation, collaboration, accountability, and transparency in government, causing the implemented policy to be ineffective (Attard et al., 2015; Royo-Montañés; Benítez-Gómez, 2019 as cited in Abella et al., 2022). Yang et al. (2015) argues that there are no suitable metrics for evaluating the success of open data initiatives. This raises the question of which factors municipalities consider when determining whether their implemented open data policies are achieving their goals. Therefore, this research focuses on identifying the factors that contribute to the effectiveness of open data policies. The research question is as follows: *"Which factors determine the effectiveness of open data policies in a municipality?"* Identifying these factors helps to evaluate the extent to which open data policies in Dutch municipalities are effective.

To answer the research question, four sub-questions have been formulated. Before examining which factors determine the effectiveness of open data policies in a municipality, it is important to get a clear definition and understanding of the term *effectiveness* as it applies to open data. Therefore, the first sub-question is: *"How is effectiveness defined in the context of open data?"* It is also important to establish a basis and provide additional understanding of the factors that are necessary for a policy to be effective across different domains. The second sub-question is: *"What factors contribute to the effectiveness of a policy?"* By examining general factors influencing policy effectiveness, such as completeness and timeliness, the researcher can identify similarities and patterns that may apply specifically to open data policies in municipalities. This broader perspective helps develop a comprehensive (theoretical) framework, leading to clear interview questions and better results.

The researcher examines the open data policies of six municipalities by analyzing their open data policy and their documents. However, what is written on paper might differ from what happens in practice. Comparing what is outlined in policy documents with practice helps shed light on potential challenges and areas for improvement regarding the open data implementation. Therefore, two sub-questions are: *"What is the content of the municipality's open data policy?"* The other question focuses on practice: *"How does the municipality act upon their open data policy?"* These questions provide insight into the nature of open data practices, their purpose, and how they are applied within the municipality. The researcher compares the open data policies of two big, medium, and small Dutch municipalities.

1.1. Scientific and societal relevance

1.1.1. Scientific Relevance

Investigating the factors that determine the effectiveness of open data policies in six different municipalities contributes to the academic field. While there have been similar studies on open data—such as the effects of open data, the research of Surbakti et al. (2020) on factors influencing the effective use of big data, or Juana-Espinosa and Luján-Mora's (2019) research on open data portals in the European Union—these focus more on the European and/or central government level. Research has also been conducted on open data in specific sectors, like healthcare, exemplified by Kostkova et al. (2016). However, few studies address open data policies at the municipal level, and even fewer examine the practical implementation of these policies compared to their theoretical frameworks. The focus on open data policy and its transparency at the local level may be deemed more significant, as citizens have closer proximity to their municipality than to the national government (Jongquière et al. 2023).

Furthermore, a common issue in the existing literature is the lack of a clear understanding of the concept *effectiveness*. Despite mentioning effectiveness as a crucial factor in policy evaluation, literature often falls short in providing a practical definition of policy effectiveness (Henman, 2016; Vitezic et al., 2019; Vyas, 2010 as cited in Verkroost, 2021). Without a clear understanding of when a policy or service is effective, it becomes challenging to measure the effectiveness of municipal open data policies and to improve the service (Verkroost, 2021). Zuiderwijk et al. (2019, p. 665) argue that it is difficult for civil servants to clearly define the objectives related to open data. They state that "open government data initiatives objectives are often generic, focusing on objectives like transparency, participation, and economic value. This makes it difficult for practitioners to know exactly what should be done to achieve the objectives." (Zuiderwijk et al., 2019, p. 665). Therefore, this research adds to the literature by first capturing the perspective on policy effectiveness and then analyzing the factors that determine the effectiveness of open data policies in municipalities.

1.1.2. Societal Relevance

Examining the factors that influence the effectiveness of an open data policy within municipalities is also of societal importance. According to the European Data Portal (2020), implementing open data enhances participation and includes marginalized groups in society. The European Data Portal (2020) also mentions: "Due to the increased government transparency through open data, citizens can study the data reports and form their own opinions." It does not only allow citizens to make better-informed decisions, but it also allows citizens to have a say in designing policies that meet their needs and build a better connection with their government (European Data Portal, 2020). Therefore, if an open data policy proves ineffective and the municipalities are unaware of the underlying causes, it can jeopardize government transparency, collaboration, and citizen involvement. Hence, it becomes crucial to identify the factors influencing the effectiveness of municipal open data policies. Recognizing these factors provides citizens with valuable insights into their municipality's operations. When these influencing factors are identified, both the municipality and citizens gain a clearer understanding of the requirements for a successful open data policy. This awareness allows individuals to make informed decisions, actively participate in community initiatives, and engage meaningfully in the democratic process (Open Data Barometer, 2018). Consequently, this research has the potential to close the information gap between governments and citizens, encouraging a more informed and engaged public.

1.2. Structure of the thesis

The research is structured as follows: it begins with a literature review where three concepts are explored: open government, open data, and policy effectiveness. This is followed by the theoretical framework that includes four assumptions. Next, the methodology of the research is discussed. The methodology includes the research design, sample, data collection, data analysis, the reliability and validity of the research. The concepts in the methodology are also operationalized. The analysis is covered in the fourth chapter. In this section, the results of the interviews are discussed in order to answer the research question. Finally, the conclusion is presented. The conclusion consists of the key findings, provides an answer to the research question, discusses the limitations of the research, and offers suggestions for future studies.

2. Literature review

In this chapter, the focus is on reviewing the relevant literature and defining three key concepts: open government, open data, and policy effectiveness.

2.1. Open government

Meijer et al. (2014, p. 13) define openness of government as "the extent to which citizens can monitor and influence government processes through access to government information and access to decision-making arenas." Their definition, which emphasizes monitoring and influencing as important activities for citizens, encompasses both transparency (typically through access to documents) and participation (which can manifest in various forms such as lobbying or consultations). The concept of open government promises to fundamentally change governments, making them more open, participatory, and collaborative (Hansson et al., 2014). Open government requires that governments actively release information in an accessible manner, thereby facilitating participation. This involves developing, monitoring, and updating websites and social media platforms (Grimmelikhuijsen & Feeney, 2017, p. 7-8).

By sharing government information more broadly and actively, transparency around policy decisions increases (Open Overheid, n.d.). Open government entails not only being transparent about their actions, but also listening to the citizens of their country, being accountable for their policies, and improving processes based on feedback and criticism (DAPOG, 2023, p. 5). The article of Gil-Garcia et al. (2020) shows that open government involves more than just transparency, also emphasizing participation and collaboration. Citizens engage in decision-making through democratic processes and communication tools. While participation involves all citizens in open government, collaboration is more focused, involving individuals with expertise who work with the government on specific tasks (Noveck, 2009 as cited in Gil-Garcia et al. 2020). Research suggests that citizen co-production can improve government services, enhance citizen engagement, and build social capital (Gil-Garcia et al., 2020, p. 5).

In recent years, progress has been made with several policies now supporting these efforts (DAPOG, 2023). First, there is the Open Government Act (Woo). The Open Government Act aims to make governments more transparent. Governments are required to actively disclose more information from May 2022, such as research reports. Moreover, everyone has the right to submit a Woo request for information to an administrative body or an institution, service, or

company operating under the responsibility of an administrative body, with the exception of personal information (DAPOG, 2023; Rijksprogramma voor Duurzaam Digitale Informatiehuishouding, n.d.). There is also The Reuse of Government Information Act (Who). This law is intended to enhance the accessibility and reuse of data managed by public organizations, also known as open data (Rijksoverheid, n.d.). Lastly, the European Data Governance Act aims to enhance trust in sharing data, enhance mechanisms to improve data availability, and eliminate technical barriers to data reuse, (European Commission, n.d.). In short, these laws aim to improve access to government information, to be accountable to the public, and to promote active and open collaboration between the government and society (Rijksoverheid, n.d.).

2.2. Open data

2.2.1. What is open data?

Open data is defined as data that is not privacy-restricted or confidential, created with public money, and freely available for redistribution without any restrictions (Janssen et al., 2012, p. 258) Government bodies provide this data to the public for use and reuse, encouraging innovative purposes (De Juana-Espinosa & Luján-Mora, 2019; Janssen et al., 2012). To be considered open, data must be accessible under an open license and offered in a user-friendly, modifiable format that computers can easily read and process (European Commission, 2015, p. 21). Open data platforms gather and publish open data on a variety of topics, including economic statistics, public infrastructure, and political processes. These platforms aim to promote active engagement with the data, encouraging citizens to use the data in their projects, such as research or app development, rather than just consuming the information passively (Van Dijk, 2018).

The aim is to facilitate easier data exchange and to provide insight into government actions (Data Overheid, n.d. a; Digitale Overheid, n.d.). Traditionally, access to these datasets has been restricted due to their high creation costs and because they contain valuable information. Restrictions often involve limiting access to certain users, charging a fee, or imposing restrictions through licensing or policy. Even when datasets are available, they often require specialized equipment and skills. As a result, data and the knowledge they provide have mostly been kept closed within institutions or archives (Kitchin, 2014, p. 48). Nonetheless, governments worldwide are now embracing open data initiatives not only due to legislative requirements but also to enhance democratic and economic processes. These initiatives are

expected to promote transparency, participation, and create opportunities for developing new products (Dawes & Helbig, 2010; Halachmi & Greiling, 2013; Janssen, 2011; Lourenco, 2015; Ruijer, Grimmelikhuijsen, & Meijer, 2017 as cited in Ruijer & Meijer, 2019).

Open datasets are released gradually, passing through multiple stages before publication. Even after publication, considering their usage and reuse is important. Attard et al. (2015) developed the open government data life-cycle, providing a standardized process for stakeholders to follow when making data publicly available. The cycle, illustrated in figure 2, consists of three main sections: pre-processing (rectangle), exploitation (oval), and maintenance (hexagon). These sections, in order, prepare the data for publication, use the published data, and ensure its sustainability.

The life cycle typically begins with data creation, which is usually part of daily procedures in public or governmental entities, although data can also be collected specifically for publication purposes. The next phase, data selection, involves choosing the data to be published, removing any private or personal information, and determining the conditions for its publication (Zuiderwijk et al., 2014, as cited in Attard et al., 2015). Following this, data harmonization involves preparing the data to meet publishing standards, such as the Eight Open Government Data Principles, which are detailed further in the research (Attard et al., 2015, p. 5).

Once prepared, data publishing entails making the data available on government portals. Following this, data interlinking refers to ensuring that the published data is machine-readable and linked to other external datasets, adding value by providing context. The next step, data discovery, emphasizes that only publishing data is insufficient for reuse; data consumers must be made aware of its existence. Awareness can be raised through activities such as hackathons (p. 5).

Data exploration is a basic method of consuming data, where users passively examine open data by visualizing or scrutinizing it. Data exploitation is a more advanced method, where users actively use, reuse, or distribute the open data through analysis, creating mashups, or innovating upon the open data. Finally, data curation, although not always happening at a specific stage, is crucial for maintaining the sustainability of published data. It encompasses various processes such as updating outdated data, enriching data and metadata, and cleansing data (Attard et al., 2015, p. 5-6).

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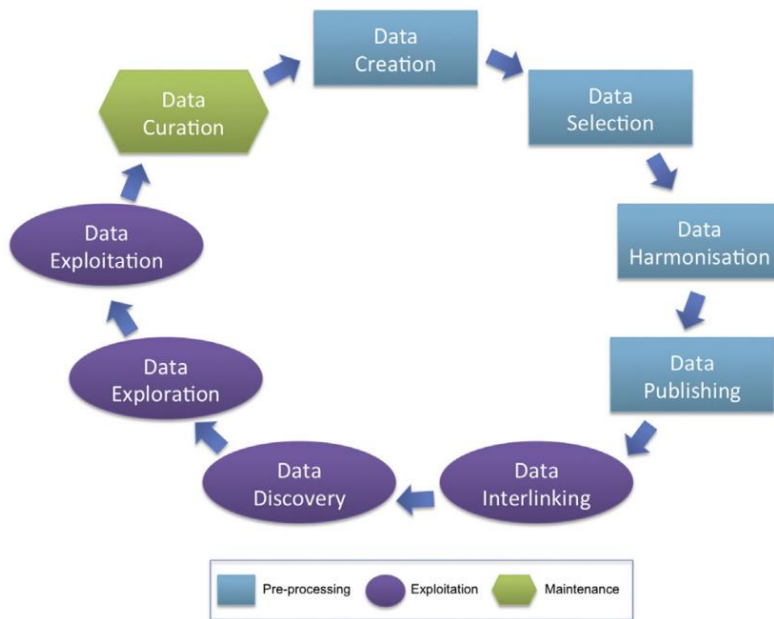
Source: Adapted from Attard et al. (2015)

2.2.2. Open data in the Netherlands

In the Netherlands, government data is also actively made available as open data for third-party reuse, except when there are valid reasons to restrict access (Data Overheid, n.d. a; Digitale Overheid, n.d.). The Netherlands created a national open data portal in 2015, data.overheid.nl. This portal contains over 20,000 datasets released by the Dutch government and more than 150 other government organizations (Data Overheid, n.d. b). Since March 2024, the Dutch House of Representatives has decided to make data reuse easier and more affordable. This decision allows non-government entities to create new products and services based on this data. The data can be used for purposes other than those for which it was originally collected, except for data that can be traced back to individuals. An example of this is traffic reports maintained by Rijkswaterstaat. By sharing this data, it can also be used in apps (Reijner, 2024).

The Open Government Act (Woo) also applies to municipalities. Despite legislation like the Who and Woo, and the increasing prioritization of open data on the agendas of Dutch municipalities, research conducted in 2021 found that only 1 in 5 municipalities (19.9%) actively make data available as open data. This is primarily done by larger municipalities that actively publish open data. Among small municipalities (<25,000 inhabitants), only 8.1% publish open data (Spynk, 2021). It is not an obligation to publish open data; it is the responsibility of each municipality to choose to do so. The legislation mentioned before, Woo

and Who, merely provide guidelines and are flexible in how open data is implemented in practice. There is not a clear, national standard that municipalities must adhere to. Therefore, the procedures municipalities follow to publish data and the quality standards they adhere to can vary from one municipality to another (Van Dijk, 2018, p. 6). This inconsistency can be problematic, as municipalities that wish to begin publishing open data lack clear guidelines on how to do this, potentially leading to issues in data usage and publication (Van Dijk, 2018, p. 12). To put the Dutch status quo into a European perspective, the data from the European Open Data Maturity Assessment can be used.

2.2.3. European Open Data Maturity Assessment

The European Open Data Maturity Assessment (Data.Europa.EU, 2023a) aims to see how European countries are progressing in making public sector information available and encouraging its reuse. The assessment serves as a tool for comparing and learning. As a result, countries can understand their maturity compared to others, track yearly progress, and find areas for improvement.

The assessment covers four dimensions: open data policy, open data impact, open data portal, and data quality, each with specific indicators to evaluate policies, usage, portal features, and data compliance. Open data policy examines countries' strategies and policies for open data. Open data impact looks at whether countries have defined how data can be reused and how well they measure this reuse. It also considers what actions countries take to understand users' needs. Open data portal evaluates how well national open data portals function, how they meet user needs, the range of data available across different fields, and efforts to sustain the portals. Lastly, open data quality assesses how well portal managers collect metadata on time and systematically, and monitor if the published metadata meets certain standards and other quality requirements (p. 4-6). Each area is assessed through specific questions designed to measure these concepts, and countries receive scores based on their answers to these questions (Data.Europa.EU, 2023a, p. 12).

The results from the 2023 maturity assessment indicate that the Netherlands is not a frontrunner in comparison to other countries. Its performance is average, neither outstanding nor bad. The table below provides an overview of each country's scores across various dimensions in 2023. The Netherlands ranks 19th out of the 35 participating countries, as highlighted in yellow in table 1. It is evident from the figure that the Netherlands scores particularly low on dimension

2: open data impact. This indicates that the Netherlands lacks a national definition of open data reuse, has no mechanisms to monitor and promote open data reuse, and lacks tools to identify which datasets are being reused and how (Data.Europa.EU. 2023a, p. 4-5).

Table 1. Score Overview

Country	Weighted Percent	Overall Ranking	Cluster Name	Cluster Number	Dimension 1: Open Data Policy	Dimension 2: Open Data Impact	Dimension 3: Open Data Portal	Dimension 4: Open Data Quality
Belgium	72,2%	27	follower	3	80,78%	53,33%	84,62%	70,15%
Bulgaria	74,0%	26	follower	3	83,13%	67,50%	82,62%	62,92%
Czechia	87,8%	15	fast-tracker	2	93,75%	100,00%	68,31%	89,23%
Denmark	90,4%	12	fast-tracker	2	92,50%	90,83%	83,85%	94,62%
Germany	85,1%	17	follower	3	92,50%	78,33%	84,00%	85,54%
Estonia	96,2%	4	trend-setter	1	100,00%	100,00%	96,92%	87,69%
Ireland	92,1%	9	fast-tracker	2	97,19%	86,67%	96,92%	87,54%
Greece	60,1%	30	beginner	4	80,00%	21,67%	69,54%	69,38%
Spain	94,7%	5	fast-tracker	2	99,22%	96,67%	95,54%	87,54%
France	98,3%	1	trend-setter	1	100,00%	100,00%	96,46%	96,92%
Croatia	59,2%	31	beginner	4	61,25%	32,50%	72,15%	71,08%
Italy	92,4%	8	fast-tracker	2	97,97%	94,17%	92,92%	84,46%
Cyprus	94,0%	6	fast-tracker	2	98,44%	100,00%	93,85%	83,54%
Latvia	79,9%	22	follower	3	89,38%	58,33%	87,23%	84,77%
Lithuania	93,5%	7	fast-tracker	2	92,50%	97,50%	95,38%	88,62%
Luxembourg	82,6%	20	follower	3	87,50%	74,17%	89,85%	78,92%
Hungary	79,4%	23	follower	3	96,88%	73,33%	66,62%	80,77%
Malta	51,3%	33	beginner	4	76,56%	10,83%	50,77%	67,23%
Netherlands	83,0%	19	follower	3	79,22%	76,67%	92,92%	83,08%
Austria	90,5%	11	fast-tracker	2	95,63%	90,00%	90,15%	86,15%
Poland	97,9%	2	trend-setter	1	100,00%	100,00%	98,46%	93,08%
Portugal	85,3%	16	follower	3	78,44%	92,50%	80,92%	89,38%
Romania	64,6%	28	beginner	4	73,44%	39,17%	85,38%	60,46%
Slovenia	90,0%	14	fast-tracker	2	96,09%	82,50%	95,38%	85,85%
Slovakia	91,6%	10	fast-tracker	2	92,97%	98,33%	85,23%	90,00%
Finland	83,3%	18	follower	3	90,94%	69,17%	89,38%	83,85%
Sweden	81,0%	21	follower	3	85,47%	84,17%	77,85%	76,46%
Iceland	57,5%	32	beginner	4	71,41%	45,00%	62,15%	51,54%
Norway	90,2%	13	fast-tracker	2	87,03%	87,50%	95,69%	90,77%
Switzerland	78,7%	24	follower	3	84,38%	72,50%	76,15%	81,85%
Bosnia and Herzegov	14,3%	35	beginner	4	37,50%	5,00%	8,46%	6,15%
Montenegro	62,3%	29	beginner	4	78,91%	50,00%	64,15%	56,15%
Albania	41,7%	34	beginner	4	69,84%	17,50%	54,31%	25,08%
Serbia	75,3%	25	follower	3	73,44%	73,33%	84,46%	70,00%
Ukraine	96,3%	3	trend-setter	1	97,66%	100,00%	93,38%	94,00%

Source: Adapted from Data.Europa.EU (2023).

In the maturity assessment, the participating countries are categorized into four clusters based on their overall maturity scores: trendsetters, fast-trackers, followers, and beginners, as shown in table 1. Trendsetters, which include four countries such as France, score between 96% and 98% and have advanced open data policies. Fast-trackers, exemplified by Ireland, score between 88% and 95% and offer portals with functionalities that meet the needs of both basic and advanced users (Data.Europa.EU, 2023b, p. 143-145).

Followers, with scores ranging from 73% to 85%, comprise most of the countries, including the Netherlands. This indicates that the Netherlands has an open data policy supported by implemented measures. Their open data portal offers standard features, but some features need to be enhanced for more advanced users. There are limited activities for monitoring reuse and measuring the impact of open data in the Netherlands. While some efforts are made to boost the publication of high-quality data, there is no systematic approach to ensure consistently high publication quality (p. 143-145).

Lastly, beginners, scoring between 14% and 65%, have open data portals with limited features or datasets and need action to enable high-quality data publication. This group includes eight countries, one of which is Greece (Data.Europa.EU, 2023b, p. 143-145). According to the European Data Maturity Assessment (2023b, p. 38), one of the key factors for categorizing a country is its open data standards, which serve as guidelines for identifying high-value datasets.

2.2.4. Determinants of open data

Khurshid et al. (2020, p. 1) identify the determinants that influence the adoption of open government data in public sector organizations, such as an organization's digital capacity, financial resources, legislation, policy, organizational culture, political leadership, management support, and data quality. Similarly, Schnell and Jo (2019) found that executive constraints and citizen education impact data openness. Educated citizens are more likely to engage with government information, demand transparency, and hold officials accountable (p. 948). They found that in countries with higher education levels, governments tend to provide more and better information. Moreover, the extent to which legislatures and accountability institutions have established mechanisms to hold the executive and public agencies accountable influences the level of openness (p. 947). Schnell and Jo (2019, p. 947) suggest that countries with greater constraints on the executive tend to release more information to the public.

Other determinants of open data include eight important guidelines for open data, as outlined by Attard et al. (2015) and the Eight Open Government Data Principles (2007). The principles serve as a guide for data publishers, ensuring the production of open government data that is of high quality, leading to a more effective (re)use by stakeholders (Attard et al., 2015, p. 11; van Hesteren et al., 2022).

1. *Complete*: all accessible data should be disclosed unless privacy limitations apply (Attard et al., 2015);
2. *Primary*: the data must be presented in its source form without aggregation or modification (Attard et al., 2015);
3. *Timely*: another primary principle is the timeliness of data. Open data holds value when it remains relevant. A quick and comprehensive publication of information is crucial for its potential success. If a portal fails to deliver timely data, users are less likely to trust the data (Open Data Charter, n.d; Publications Office of the EU, 2021);

4. *Accessible*: everyone must have free access to the data to encourage widespread use (Attard et al., 2015).

5. *Machine Processable*: the open data must be presented in a form that allows readily processing by a computer. When registering a dataset on the Dutch government data portal, you can choose from various file formats, such as ZIP and HTML (Data Overheid, n.d. c);

6. *Non-Discriminatory*: The data must be non-discriminatory and without any form of registration, making it equally available for various stakeholders like policymakers, citizens, data processors and data collectors, unless there are valid reasons for it to be restricted or kept under closed sharing arrangements (Carolan, 2016, p. 3; Kalampokis et al., 2011 as cited in De Juana-Espinosa & Lujan-Mora, 2019);

7. *Non-Proprietary*: data is released in a format that is not solely controlled by a single entity (Attard et al., 2015, p. 11);

8. *License-Free:* apart from reasonable privacy, security, and privilege restrictions, data is free from limitations on its use imposed by copyright, patent, trademark or trade secret regulations (Attard et al., 2015, p. 11).

In addition to the principles discussed by Attard et al. (2015), Open Government Data (2007) emphasizes the principle of data reviewability. They state that the public should participate in regularly assessing and reviewing how the policy is put into action. Governments should provide opportunities for the public to provide input on the quality, quantity, selection, and format of data, as well as on how easy it is to access. Moreover, this feedback should be formally taken into account and addressed during policy reviews, as feedback offers insight into the user's perspective and needs (Janssen et al., 2014; Sunlight Foundation, 2016). Kitchin (2014) further elaborates on this. He states that after buying an item, users might be asked for further data after an exchange. This might involve rating the website's performance or customer service or reviewing the purchased item itself. This review data helps improve the site's design and offers useful feedback to other consumers about product quality and performance. Kitchin (2014) states that this can also be applied to open data.

2.2.5. The impact of open data

Open data gives citizens and organizations easy access to government information, leading to long-term transparency of government information (Jaeger & Bertot, 2010; Zuiderwijk & Janssen, 2014). When governments share their data, it helps citizens gain a clearer understanding of how the public sector operates. Furthermore, the availability of information enables citizens to monitor the performance of governmental bodies, government initiatives, and their legitimacy (Attard et al., 2015; Open Data Soft, n.d.). According to the European Union (2020, para. 4) "citizens can study the data underlying reports and form their own opinions." With increased transparency, encompassing the sharing of information and providing insights into the activities, revenues, and expenditures of government bodies, there also comes increased accountability and less corruption (Edmiston et al., 2021; Pronk, 2015). However, simply releasing public data does not automatically lead to increased transparency and accountability. Achieving these outcomes necessitates meeting several preconditions (Safarov et al. 2017).

Moreover, there is an increasing desire among citizens to actively participate in policymaking processes. Making government data publicly available enables stakeholders to take informed action and advocate for themselves and their communities (Attard et al., 2015; Edmiston et al., 2021). This transparency fosters a stronger and more equitable connection between citizens and government by involving them directly, improving their access to information, and building trust (Ministry of the Interior and Kingdom Relations, 2013). Informed citizens are better equipped to contribute effectively to democratic processes, understand the rationale behind decisions affecting them, and are better able to shape their living situation (Ruijer et al., 2017).

Another benefit of open data is that it fosters economic growth. Individuals with innovative ideas now have access to large amounts of information they can use to launch new products and services into the market, which sets the economy on a rising growth trend (Safarov et al., 2017; The White House, 2013). Private companies can develop approaches to encourage others to share valuable data, exploring inventive ways to integrate data from various sources and entering markets that were previously inaccessible (Manyika et al., 2013). The easy access to information also enables organizations to make better-informed decisions and optimize the utilization of available resources (European Union, n.d.). However, van Dijk (2018) states that the economic value does not lie in open government data itself. It is the effective utilization of this data that can potentially generate economic growth. On the other hand, the publication and

upkeep of open data platforms require public resources. Economic benefits from open government data only result in a net positive payoff when these benefits surpass the public costs involved in maintaining the platforms (Weerakkody et al., 2017, p. 286 as cited in van Dijk, 2018).

Zuiderwijk and Janssen (2014) also highlight the potential undesirable consequences of open data in their article. While transparency is often seen as an advantage of open data, it can also lead to a more negative perception of the government. Public trust may decline if datasets of poor quality are released (Zuiderwijk & Janssen, 2014). For instance, McLean et al. (2021 as cited in van Ooijen et al., 2023) investigated the consequences of an incident where the Spanish Prime Minister cited COVID-19 testing statistics from a third-party data aggregator and visualizer during an official briefing. These statistics were later found to be incorrect. Critics subsequently questioned why the government had depended on this intermediary, considering that its methodology was not transparent (van Ooijen et al., 2023).

Furthermore, the responsibilities and accountability related to open data are often unclear. It is unclear whether the data owner or the user is accountable for wrongful use, interpretation, or poor data quality (Zuiderwijk & Janssen, 2014). In the Netherlands, the government is often expected to ensure high data quality and proper usage. Zuiderwijk and Janssen (2014) provide an example where, in cases of meat inspection issues, citizens tend to blame the government for inadequate oversight and enforcement, whereas the responsibility lies with the company managing the meat factory. Additionally, Zuiderwijk and Janssen (2014) point out that complex data are often not shared publicly due to the high risk of misinterpretation and misuse. In one organization they studied, some datasets were too poorly documented to be interpreted correctly. Open data can be used by anyone, including those with limited understanding, leading to potential misinterpretation and incorrect conclusions.

Lastly, although governments have attempted to demonstrate the value generated by open data initiatives (Horrigan, Rainie, & Page, 2015, as cited in Wang et al., 2022) and have made evaluating open data impacts a central component in current public discourse (Ribeiro, 2017, as cited in Wang et al., 2022). However, organizations and researchers have criticized open data initiatives for not yet delivering their promised positive impacts (Horrigan et al., 2015, as cited in Wang et al., 2022). This raises the question of how open data can effectively achieve its intended impacts.

2.3. Policy effectiveness

2.3.1. Effectiveness

According to Agostino and Arnaboldi (2017, p. 299), effectiveness refers to the extent to which a policy has achieved its objectives. It is an important measure in public administration, as it determines how well government initiatives align with their goals and serve the public interest. Garcia-Sanchez et al. (2013, p. 567) argues that government effectiveness aims to match services with the preferences of citizens, thereby bringing governments closer to the people they are intended to serve. Effectiveness in policy is always situational. The definition of effectiveness can change based on various factors, including the organizational environment, the type of organization, and the goals of the organization (Cohen, 1993, p. 48).

Despite the importance of policy effectiveness, existing literature often highlights a gap in clearly defining and measuring this concept in practical terms, leading to debates on how to measure the effectiveness of public services (Agostino and Arnaboldi, 2017, p. 299; Verkroost, 2021). Some authors argue that policies are best evaluated by the organization implementing them, conducting assessments internally. Conversely, other authors advocate for external evaluation of policies and performance (Verkroost, 2021). Vitezic et al. (2019) proposes a performance measurement framework utilizing a combination of data and scores. Scores are intended to translate strategic objectives into measurable and concrete performance indicators (p. 201, 204). Their model is applicable for internal assessment of efficiency and effectiveness (p. 201). These methods serve as internal evaluation tools, involving assessments conducted by individuals within the organization (Verkroost, 2021; Vitezic et al., 2019, p. 199-200).

In contrast to internal assessment, a common approach to evaluate the performance of public agencies is to seek the opinions and feedback from the consumers of a specific service (Vyas, 2010, p. 150). Reshetnikova (2016, as cited in Verkroost, 2021, p. 9) states that the quality of a public policy can only be accurately assessed by its recipients. Therefore, conducting an external assessment to gauge user satisfaction with public services is considered advantageous. Agostino and Arnaboldi (2017) further emphasize that assessing user satisfaction is important for evaluating effectiveness (p. 297). Moreover, many authors advocate for a combination of internal and external assessments (Verkroost, 2021, p. 9). This approach facilitates a 'balanced assessment' of public policy by considering perspectives from both internal providers of services and external recipients (Vyas, 2010, p. 150). Incorporating viewpoints from various stakeholders, including both those involved in implementation and those affected by the policy,

offers a more comprehensive understanding of its performance and effectiveness (Di Meglio et al., 2015, p. 328; Martin, Nutley, Downe, & Grace, 2016, p. 144 as cited in Verkroost, 2021, p. 9).

2.3.2. Long-term consequences of ineffectiveness

The increased transparency, accountability, citizen participation and economic growth are foundations for most open government data initiatives. However, it remains a challenge to achieve the full potential of open government data and support all stakeholders in effectively sharing and utilizing this data (Attard et al., 2015). Only establishing open data portals does not ensure increased transparency, accountability, or economic growth (Attard et al., 2015; Royo-Montañés; Benítez-Gómez, 2019 as cited in Abella et al., 2022). Abella et al. (2019 as cited in Abella et al., 2022) found that certain portals do not meet the minimum requirements for making their data reusable. When data does not meet certain standards, it can lead to issues like unreliable or incomplete datasets, poor data quality, and a lack of standardized procedures for government portals (Attard et al., 2015, p. 12).

The Dutch Digital Government (n.d. b, para. 4) states that "data can only be reused if the information is accurate, complete, and up-to-date. Moreover, data must be effectively managed and used correctly. In short: government organizations must have their data in order." According to Schenk (as cited in Jong, 2019), the emphasis lies more on publishing datasets rather than assessing which data can truly add value. Schenk also states that it is not just a matter of uploading datasets online, but that the quality of the data also needs to be checked, and sometimes data needs to be organized differently to be accessible. A common issue with open data is often the limited opportunities available to report or correct errors in the data. It is also common for Dutch municipalities to make use of open data and provide data to organizations such as Statistics Netherlands (CBS), but a policy (document) regarding open data might be lacking (De Jong, 2019).

Van Dijk (2018) also explains that there is a lack of clear, common standards for publishing open data across different municipalities. This inconsistency creates difficulties for publishers and users of the data. Municipalities struggle with knowing how to properly publish data as they do not have clear guidelines on how to do this, and users face challenges in combining and using data from multiple sources due to incompatibility (p. 12). The public value of open data may be restricted if citizens are unable or unwilling to engage with it. Factors such as IT literacy,

data quality, and findability can hinder citizens' ability to effectively use open data. (p. 7). Therefore, it is important to identify the factors that determine the effectiveness of municipal open data policies.

2.3.3. *Public values and policy effectiveness*

Public values offer a comprehensive perspective through which to examine policy effectiveness. Policy effectiveness, when examined through the lens of the public values approach, extends beyond the traditional measures of efficiency and effectiveness. The public values approach focuses on developing and maintaining values that benefit society, addressing the democratic, ethical, and social dimensions of public administration (Bryson et al., 2014, p. 447). Public values integrate several key elements that are crucial to understanding policy effectiveness: inclusive dialogue and deliberation, the government's role as guarantor of public values, collaborative governance, active citizenship, and evaluation of public value (Bryson et al., 2014, p. 447-451).

Public values are best identified and prioritized through inclusive dialogue that involves a wide range of stakeholders, including citizens, businesses, and non-profit organizations. This approach ensures that policies are aligned with the collective preferences and needs of the community, thereby enhancing their effectiveness (Bryson et al., 2014, p. 447). Moreover, according to the public values approach, government agencies are not merely service providers but also stewards of public values. This involves creating policies that are valued by the public and good for the public (Briggs 2008 as cited in Bryson et al., 2014, p. 447), and ensuring that policies promote democratic engagement. Effective policies are those that uphold these values and contribute to the common good (Bryson et al., 2014, p. 448).

Public values also emphasize the importance of networked and collaborative governance. In this model, public managers act as conveners, catalysts, and collaborators who facilitate cooperation among various sectors to achieve public value. The government plays an active role in creating networks of deliberation. This collaborative effort is important for addressing complex societal problems and enhancing policy effectiveness (Bryson et al., 2014, p. 446, 449).

The public values approach also underscores the role of citizens as active participants in the governance process to achieve mutually agreed objectives (Agranoff 2006; Fung 2006; McGuire 2006 as cited in Bryson et al., 2014, 448). Policies are more effective when citizens are engaged as co-creators and problem-solvers rather than recipients of services. This active engagement fosters a sense of responsibility among citizens, leading to better policy outcomes (Bryson et al., 2014, p. 450). Public values also advocate for a comprehensive evaluation of policies based on their contribution to a broad array of public values. These include efficiency, effectiveness, democratic and constitutional values (Bryson et al., 2014, p. 446, 451).

2.4. Conclusion

Open data offers numerous benefits, such as enhancing transparency, fostering public participation, and promoting economic growth. However, it can also have undesirable consequences, including misuse that may result in misinterpretation and incorrect conclusions. For data to be considered open, it must comply with the eight open data principles as provided by Attard et al. (2015) and the Eight Open Government Data Principles (2007): complete, primary, timely, accessible, machine processable, non-discriminatory, non-proprietary and license-free.

Despite its potential, open data has been criticized for not reaching its promised impacts. Evaluating its effectiveness can be challenging, but various methods to measure effectiveness exist. Organizations can assess effectiveness internally, or recipients of public services or products can provide external evaluations. Alternatively, (public) organizations may opt for a combination of both approaches. Effective policy implementation also relies on accurate, complete, and well-managed open data to ensure that public values are upheld, thereby improving governance and societal outcomes. Addressing the challenges in open data management is crucial for realizing its full potential and ensuring policy effectiveness.

3. Theoretical framework

Based on the analysis of relevant literature and conceptual insights, assumptions can be formulated. The assumptions provide an understanding of the key elements that contribute to the effectiveness of open data policies in municipalities. There are four assumptions that will be used as a guideline for the following empirical analysis.

According to van Dijk (2018), each municipality establishes its own standard on what their dataset should look like, what data formats are used, and the amount of information included. In the Netherlands, there are no clear, national standards for data publication. This lack of uniformity not only makes it challenging to harmonize data from various municipalities, but also results in potential inconsistencies in the data (p. 12). Creating clear regulations and guidelines can ensure strong and reliable policies (Sunlight Foundation, 2016). They help ensure that data is consistent, high-quality, and user-friendly. This consistency is important for enabling data usability, making it easier for users to find, understand, and reuse the data. Without these standards, municipalities might produce datasets of lesser quality, which could hinder the policy's effectiveness (Attard et al., 2015). The first assumption is as follows:

> *A1.   Municipalities with clearly defined standards and guidelines for publishing open data are more likely to have effective open data policies.*

Public values play an active role in helping and creating networks of deliberation and help maintain and enhance the effectiveness, accountability, and capacity of a system. This approach emphasizes democratic engagement, ethical governance, and social dimensions. Effective policies are those that uphold these values, fostering an inclusive dialogue with stakeholders, promoting collaborative governance, and encouraging active citizenship (Bryson et al., 2014). Open data policies that prioritize these values are likely to be effective. Therefore, the second assumption is:

> *A2.   Considering public values when publishing open data is more likely to lead to an effective open data policy.*

According to the resource-oriented perspective, many small organizations not only lack the resources required for innovation but also likely lack the specialized and co-specialized assets needed to fully benefit from their innovations. Consequently, they need to form cooperative arrangements with larger organizations or other small organizations to overcome these barriers. These resources include human capital, as small organizations often cannot afford to hire experts or specialized labor, resulting in a lack of specialized knowledge. Additionally, their

small size may limit their lobbying capabilities and increase bureaucratic challenges. In essence, size is an indicator of the availability of financial and physical resources. (Hadjimanolis, 2000). De Jager-De Jong (2017, p. 11) states that larger municipalities more frequently make open data available than smaller municipalities. Small municipalities often struggle to maintain high-quality open data platforms due to small budgets, fewer experts and lack of technical expertise. Conversely, large municipalities with more extensive data teams and better resources are generally better equipped to implement and maintain high-quality open data platforms. These municipalities can invest in advanced data management systems and experts due to their budgets, which contributes to more effective data publication and management (Van Dijk, 2018; Langejan & Taal, 2020). The second assumption is as follows:

> *A3.   Larger municipalities are more capable of implementing effective open data policies compared to smaller municipalities.*

The presence of user feedback mechanisms is assumed to play a role in the effectiveness of open data policies. According to Janssen et al., (2012), governments should not only engage in one-way communication when opening their data but should also expect or actively seek feedback, and be able to interpret it. Feedback allows users to report issues, suggest improvements, correct mistakes in the data, and share their experiences. This feedback process offers the government an opportunity to learn from the public and continuously improve their system. Municipalities that actively seek and incorporate feedback from data users are better positioned to understand and meet the needs of their consumers. This can lead to improvement in data and ensure it remains useful, thereby enhancing the policy's effectiveness (Janssen et al., 2012, p. 259). The last assumption is as follows:

> *A4.   The effectiveness of open data policies is positively influenced by the presence of user feedback mechanisms.*

Figure 3. Overview of assumptions
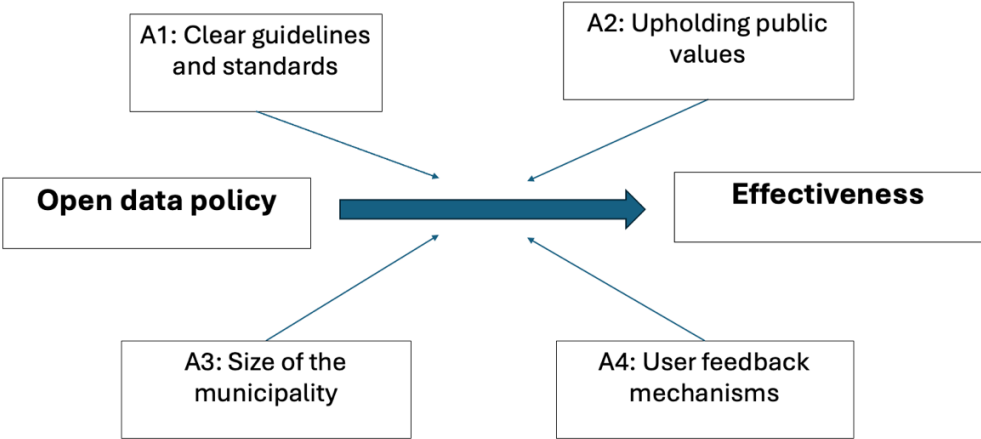
4. Methodology

This research aims to identify the factors that influence the effectiveness of an open data policy in six different municipalities. The methodological framework discusses the methods and techniques used to identify these factors.

4.1. Strategy and design

To investigate the alignment between the open data policies of the selected municipalities as described on paper and their implementation in practice, semi-structured interviews are conducted. The semi-structured interviews are guided by a predefined interview guide, focusing on exploring the alignment with the guideline established by Attard et al. (2015) for effective open data policies. Throughout the interviews, participants are asked a series of open-ended questions aimed to elicit their perspectives on either the documented open data policy or their vision of it, and how it is practically implemented. This approach makes the research qualitative.

4.2. Sample and sampling

This research employs a holistic case study approach. The objective of a holistic approach is to comprehend 'the case'—its nature, its functions, and its interactions within its real-world context, in this instance, open data (Yin, 2018, p. 24). Case studies enable the researcher to deeply focus on a case while maintaining a comprehensive and real-world perspective, such as in the examination of organizational and managerial processes (p. 35).

To analyze the influential factors adequately, participants are selected based on their involvement in the development and implementation of open data policies within their respective municipalities. Their involvement is important because those deeply involved possess a sufficient understanding of how open data operates in their municipality. They can provide detailed examples and insights based on their experiences and respond adequately to interview questions.

There are six units of analysis for this research. The researcher conducts interviews with participants from six municipalities of different sizes that engage with open data. According to Uitvoering van Beleid SZW (n.d.), a large municipality in the Netherlands is defined as having a population of 100,000 to 900,000 inhabitants, a medium-sized municipality has a population

ranging from 50,000 to 100,000 inhabitants, and a small municipality is characterized by having fewer than 50,000 inhabitants.

The researcher thinks that the size of the municipality influences the factors and that these factors may vary for each municipality. For instance, the researcher assumes that larger municipalities are likely to have more data at their disposal and take the topic of open data more into account. They often have larger teams and access to more qualified personnel for data analysis, allowing them to process data more effectively, unlike smaller municipalities, which typically have smaller teams and smaller budgets for investments in data technologies and projects. According to the report of VNG (2020, p. 20), the low usability of open data is caused by limited knowledge, skills, standards, and tools to properly share high-quality data. They state that this is more common in smaller municipalities.

By examining multiple municipalities, this research aims to identify factors that may be generalizable across different contexts. This allows for a comparative analysis, enabling researchers to draw broader conclusions about the factors influencing the success of open data policies in different settings. The interviewed municipalities were selected randomly. When searching for Dutch municipalities and their open data on Google, both small and large municipalities appear. The researcher examined their data platforms to determine if they consistently published open data or if it was primarily statistical information. The latter was deemed less relevant for the research, as the primary focus is on open data. Once the researcher confirmed they were regularly publishing open data, the researcher sent them an email. Many of these municipalities provide an email address on their websites, specifically for inquiries about open data. The researcher sent emails to multiple municipalities simultaneously, recognizing that not all of them may respond. At first, emails were sent to 5 large municipalities, 5 medium-sized municipalities, and 5 small municipalities. Due to a poor response rate, the researcher expanded the outreach to additional municipalities.

Additionally, the researcher used LinkedIn to recruit participants. The researcher first searched 'Open data municipality' in the LinkedIn search bar. However, this only yielded results from large municipalities. To target medium and small municipalities, the researcher adjusted the search strategy by combining city names with 'open data.' The researcher used a ranking list of the largest and smallest municipalities by population in the Netherlands to find municipalities with populations ranging from 0 to 100,000 inhabitants. However, this LinkedIn approach did

not yield accurate results, often mixing in unrelated hits such as 'Open University' due to the keyword 'open.'

Finding open data employees from medium and small municipalities proved challenging. Out of 27 municipalities contacted via email and LinkedIn, only a few replied despite sending reminder emails. A few small and medium municipalities stated that they have limited progress with open data and were unable to participate. Therefore, the researcher relied on responses to emails rather than actively seeking out participants.

Initially, the researcher aimed to filter the municipalities based on their size, their willingness to share policy documents and progress with their open data policy. Their progress is important because it requires time for the policy to settle before evaluating the factors that influence open data policy effectiveness. According to Overman (2015), it is advisable to evaluate outcomes after a year or more. This is accurate since the initiation of open data within municipalities mostly began in 2015, and some open data policies are still under development. However, due to limited responses, this filtering process was not possible. There were seven participants interviewed in total. The table below provides an overview of all participants.

Table 2. Overview of participants

Participants	Municipality	Role
Participant 1	Big municipality 1	Information Architect, Data Function and Data Platform
Participant 2	Big municipality 2	Senior Advisor Geo-Information Management
Participant 3	Medium municipality 1	GIS Specialist
Participant 4	Medium municipality 2	Business Analyst Information and Data Management
Participant 5		Data modeler
Participant 6	Small municipality 1	Application Manager Geo-Information
Participant 7	Small municipality 2	Advisor Automation and Information Technology

4.3. Data collection

Before conducting the interviews, the researcher emailed the participants to request their policy papers. Obtaining policy documents was difficult, as participants often stated that it was confidential and had to ask for permission before sharing. Some participants did not send the policy papers immediately, so the researcher followed up with them during the interview. Two municipalities did not have policy documents and one big municipality did not send their documents. As a result, the researcher received documents from three municipalities, resulting in a smaller dataset for comparison. This lack of transparency conflicted with the principles of open data.

Individual interviews were chosen as the most suitable method for data collection because they allow exploration of the underlying thoughts, motivations, and experiences of the participants (Mack et al., 2005, 51-52). Additionally, interviews provide the researcher with the opportunity to pose follow-up questions and allow participants to elaborate in detail on the processes involved in open data. A focus group discussion, for example, would allow the participants to share their experiences with each other, however, this is not the main focus of the thesis. Participants may influence each other or may not trust each other (Mack et al., 2005, p. 51-52; Yin, 2018, p. 120). Not only would it be difficult for the researcher to get a clear and detailed answer to the interview questions, but participants might have a tendency to provide responses that align with social norms, expectations, or what is perceived as socially acceptable. Additionally, one-on-one interviews provide the researcher with the opportunity to pose follow-up questions and allow participants to elaborate in detail on the processes involved in open data (Mack et al., 2005, p. 34). The questions cover various aspects of the guidelines, including data accessibility, completeness and timeliness.

However, in one interview with a medium-sized municipality, two employees participated simultaneously. One was a business analyst focusing on social and operational domains, while the data modeler extracts data from sources and prepares it for analysis. Both employees work on the data platform but perform different roles. They complemented each other well during the interview as each had slightly different perspectives. The researcher encountered no issues during questioning, and there was no sign of distrust between the participants.

Initially, the researcher planned to gather insights from different perspectives by interviewing two employees from each municipality: one in a leadership role and another involved in the implementation. However, due to a poor response rate, with only one person from multiple municipalities replying, the data collection had to be adjusted. Consequently, the study's scope was changed from interviewing two employees from three municipalities to interviewing one employee from six municipalities. All participants were in leadership roles, and involved in developing and implementing their municipality's open data platform.

All six interviews were conducted through a video conferencing tool, specifically Microsoft Teams. The audio of the interviews were recorded with a phone so that the researcher could adequately incorporate the conversation into the study. The interviews were conducted in Dutch, as it is the operational language of the policy and the native language of the participants.

4.4. Data analysis

Document analysis was employed in order to examine the open data policy in both theory and practice. This approach involves systematically reviewing and analyzing relevant documents, such as official policy documents, guidelines, reports, and other related materials from the municipality. By examining the policy documents immediately after conducting the interviews, the researcher found it easier to identify connections between key words and phrases, like accessibility, in the documents and the information gathered during the interviews. These connections were quickly noted while the details were still fresh. The purpose was to evaluate how well the documents aligned with the interview findings and to identify any discrepancies. No coding was applied to the policy documents.

The documents received from the participants included explanations about open data, definitions, and open data principles. They also contained information about laws regarding open data, guidelines on how to make data public, what can and cannot be made public according to a decision tree, a juridical check, best practices, and future visions. These documents provide insights into the intended goals, objectives, and guidelines of their open data policy as articulated by policymakers.

The audio of the interviews were transcribed using Amberscript. However, the transcriptions provided by Amberscript were not entirely accurate, so the researcher reviewed all transcripts to ensure accuracy. To process the information from the interviews in a structured way, the interviews were coded with the help of qualitative coding software, namely Atlas.ti. The researcher has assigned various labels to the participants' responses to categorize the data. The coding scheme can be seen below.

Table 3. Coding scheme interviews

Category	Code	Text example
Data effectiveness	Measure	"You can measure usage by examining how often the data is accessed, how many people visit daily, what they search for, which topics are most frequently searched, and whether there are questions about these topics. There is interaction and interest. This is essentially the main way to measure effectiveness." (Participant 1)
	No measure	"It is difficult to measure effectiveness without a policy in place. We might be able to track visits, but we currently do not actively monitor the number of users accessing our open data website. Although it is possible, we are not tracking this data at the moment." (Participant 4)
Data quality	Adjustments	"The source owner is responsible for maintaining quality and has the authority to modify the data. Users can report issues or errors, but any adjustments must be implemented by the data owner." (Participant 1)
	Feedback	"Users might point out discrepancies between what they observe in reality and what is recorded in the data. For example, the municipality may label a tree as an oak, but users identify it as an elm. This feedback from users provides insights into the quality of our data." (Participant 1)
	Technical	"During the data processing phase, an initial technical quality control is implemented. We establish guidelines for consistency, such as specifying how dates and numerical values should be formatted with a specific number of decimal places. These are aspects that can be checked. You can also check aspects like accuracy. For example, the coordinate system we use, in which you should not deviate so many centimeters in your coordinator." (Participant 1)
	Accessibility	"We provide an email address on our website for users to ask questions. I communicate with end users through email. Users send emails, which I receive, and as part of my daily routine, I open and process various mailboxes to respond to them." (Participant 2)

Effectiveness factors	Active promotion	"We ensure that we provide technical availability and do things correctly. Then, of course, we announce the data to entrepreneurs and citizens." (Participant 5)
	Availability	"On our open data portal, we feature sections dedicated to demographic statistics, economic indicators, and social domain metrics. These figures are intended for public access, providing both internal colleagues and external audiences with a comprehensive view of our municipality. Additionally, we manage information requests." (Participant 7)
	Findability	"An important factor for effectiveness is findability. How do you ensure that residents or interested parties can find your open data? This means using social media, distributing flyers, and attending local fairs and markets. Create awareness among residents and ensure they stay informed and engaged. There are numerous ways to achieve this. For instance, during major projects, we organize open evenings where people can learn where to find information, access data, and seek answers to their questions. It is essential to utilize all these channels effectively to ensure that the information is easily accessible." (Participant 6)
	Understandability	"It is important that the data is understandable to end users or those interested, so they can effectively utilize it with the available context. Simply placing data on a website and labeling it as 'open data' without ensuring usability is not sufficient. It is essential to make the data usable by ensuring users understand its content, relevance, origin, and provided context, which are all vital for encouraging its reuse." (Participant 1)
	Usability	"You can make data usable by offering it in different formats, making it accessible through a data platform, and ensuring technical accessibility. This means presenting the same data in various ways. Providing documentation, and possibly examples, on how to use that data is also important." (Participant 1)
	Size of the municipality	"We actually look to align our policies with those of the larger municipalities. As a small municipality, it is quite challenging to make significant decisions on our own because our organization is limited in its capacity to gather all the necessary knowledge on the matter." (Participant 6)
General effectiveness	Carrying out	"Effective government policy requires not just putting it on paper but also implementing it with dedicated resources. If policies remain only theoretical, they are ineffective. Taking action and committing to implementation are

		essential to transforming policies into effective practices. Organizations must approach and structure this process systematically." (Participant 1)
	Enforcement	"We must put policy into action. Policy without adequate funding is hopeless, just like policy that requires enforcement without organized measures for enforcement is hopeless policy." (Participant 2)
	Responsiveness	"What determines effective policy is genuine attention to the needs of citizens. What do people want? What expectations do residents have of the government, particularly at the local level? It is important to identify your top priorities—what exactly are the ten most pressing issues residents are asking about? That is where your focus should lie." (Participant 7)
Open data principle	Access	"The policy principle is open, unless.. meaning that all data is open unless there is a valid reason to keep it closed." (Participant 1)
	Machine readability	"There are various standards such as jpg and gif for images, and pdf and csv for text and tables. Data is shared and preserved in these formats." (Participant 3)
	Non-discriminatory	"No distinction is made between individuals requesting data; everyone has equal access to the data on the website. Those who have difficulty using computers can visit the municipality, where staff members are available to assist them." (Participant 3)
	Primary	"We directly publish our internal information from our database, presenting the data on the platform exactly as it is stored in the database. The only adjustment we make is to safeguard any sensitive personal information. Occasionally, we may need to combine data to form a complete dataset." (Participant 6)
	User feedback	"We frequently seek feedback from residents. Surveys via the website are conducted frequently. For example, when a new residential area is under development, residents are informed, meetings are arranged to update them on the progress, and their opinions are solicited." (Participant 3)
Open data standard	Dutch standard	"I have a document from the Ministry of the Interior and Kingdom Relations, which also mentions standards, for example, data that needs to be easily processable by a machine." (Participant 5)
	European standard	"We initially adopted a European profile because the Dutch profile did not match our needs. We found better alignment with European standards, which aim to make data interoperable, allowing us to integrate our data with other regions like Twente or the municipality of Utrecht." (Participant 6)

	Technical standard	"There are various technical standards used to deliver data to users. Currently, one popular option is REST API, which involves web-based data interfaces. Another well-established choice is the reliable CSV file format. These standards facilitate the effective distribution of data to end-users." (Participant 1)
Open data implementation	Open data team structure	"Our team is relatively small at the moment, consisting of just two members: myself as a data analyst and a data engineer. We will soon be advertising a vacancy to expand our team. We also have support from another department that handles privacy aspects." (Participant 7)
	Reason for open data	"European laws require us to actively share open data, not just because it is a legal requirement, but also because we believe open data adds value to economic activities and governmental transparency. I think those are the two major goals behind it." (Participant 2)
	Theory to practice	"I believe we have effectively translated our policy principles into a practical, open data service. Our achievements have exceeded our initial expectations. Initially, our approach was simply to store Word and Excel files accessible via links. However, implementing OGC data services and enabling users to generate downloads in their preferred formats is beyond what I had envisioned." (Participant 2)
Policy	Policy implementation	"We align many of our policies with those of other organizations, such as the VNG. The VNG provides various guidelines for municipalities to follow. We also seek to align our policies with those of larger municipalities." (Participant 6)
	Policy failure	"Sometimes it is challenging or unattainable to take steps towards open data. Reasons can include lack of technical expertise, for example. And how do you maintain it? Because it is not just about starting these data initiatives, but also about sustaining these processes, continuing to develop them, and aligning with various national developments." (Participant 1)
Public values	Inclusive dialogue and deliberation	"We coordinate all the data products with stakeholders, specifically with the clients, and we also explain the sources from which we obtain the data. Sometimes we also say, "Well, we have these data sources or those," so it is always a discussion among everyone involved." (Participant 4)
	Government's role as guarantor of public values	"When it comes to national policies, municipalities often just have to comply. We do the work, and we work for the citizens, you could say, and we are paid by them. So, we also have to show something in return or at least make visible what we are doing, based on what. Everything we do as a municipality is

	Collaborative governance	"We are currently working on a collaboration with an external party, specifically waste management. They actually manage all the waste containers for us, but their data is not accessible to the municipality. Conversely, we need to inform them about what assets we have, what needs to be emptied, and where these items are located. So, I brought these two parties together and said that we need to collaborate and work together in a single dataset. We have started a project, exchanged data, and are now setting it up in a way that creates a useful dataset for both parties." (Participant 6)
	Active citizenship	"For large projects, we also have participation evenings, which are open-house events for citizens. During these, we can guide people on where to find information, where to access data, and where to go if they have questions." (Participant 6)
	Evaluation of public value	"The question of effectiveness is about: what do you want to achieve? That is outlined in every policy document, and then they assess that. So, you could look at whether what we have implemented has been effective or not, and where we might need to adjust the policy. At the local level with municipal policies it is more focused on our own regulations. Then you also consider: what does my population look like? Are there certain diversities? Should I pay attention to specific neighborhoods? How do we handle that? It is always about using data to measure the effectiveness of policies." (Participant 4)

4.5. Quality assessment

The researcher ensures the reliability of the study by maintaining objectivity during interviews. For example, the researcher did not ask closed questions so the participant has the possibility to think carefully about their answer. Furthermore, the interviewer did not ask suggestive questions to avoid influencing the participant and possibly giving socially desirable answers. Moreover, clear interview questions were formulated based on the literature review so that the researcher could ask and explore what they wanted to explore. For example, in the theoretical framework, the principles of open data were examined. Consequently, some of the interview questions centered around those principles. Participants were questioned about the accessibility and timeliness of the data.

After conducting the interviews, the researcher coded the answers of participants in a clear and controllable way. Coding involves the examination of transcripts and includes assigning labels to parts that seem theoretically important to the research (Bryman, 2015, p. 573). Bryman (2015, p. 581-583) offers advice on effective coding in his book. For instance, he suggests that researchers should strive to identify connections between the concepts and categories they are developing, and carefully consider how these relate to the existing literature. He also emphasizes the importance of coding as soon as possible. Delaying analysis until the end of data collection can lead to a sense of being overwhelmed, leading to hasty and incomplete processing of data. The researcher applied these recommendations in their work by immediately transcribing and coding after each interview, enabling a clean slate for the following interviews.

Finally, the researcher thoroughly prepared in advance by studying the topic and carefully reviewing the data platforms of municipalities, enabling them to ask comprehensive questions during the interview. As stated before, the researcher will also conduct a policy document analysis. Using private government documentation can have implications for the reliability. The reliability of the research can be compromised if access to private government documents is restricted for other researchers. Therefore, the study cannot be duplicated if another researcher does not have access to the same documents used in this research.

5. Results

This chapter presents and examines the findings from the data analysis. First, the participants are briefly introduced, and it is discussed how the open data policies are organized within the municipalities. Next, the factors that participants consider important for effective open data policies are explored, along with whether they perceive their policies as effective. Additionally, the chapter examines how they evaluate their policies, whether evaluation occurs at all, and how data quality is managed. A comparison is drawn between policy documents and the practical experiences of the participants. All information in this chapter originates from interviews and policy documents from municipalities.

5.1. Participants and their policies

Each municipality has organized its data team and policies differently. Large and medium municipalities have large data teams, sometimes with over 40 members, each with specific roles. For example, one participant from a large municipality works as a Geographics Information System Specialist (GIS Specialist) and cartographer. In contrast, small municipalities have teams of only one or two people, who have broad roles such as Automation and IT advisors, handling more responsibilities. Despite these differences, all municipalities share the same motivation for creating an open data policy: to ensure transparency and provide residents clarity about municipal decisions. They aim to make data useful and publicly accessible.

All municipalities publish data based on information requests. Participant 2 mentions that otherwise there would be no end to it. Municipalities receive requests for an information product or data that needs further clarification. An intake meeting is then scheduled, after which the municipalities gather the data and information necessary to provide the information product. They look for the source and check if they are allowed to publish it, considering AVG regulations.

Additionally, the information request must have social relevance. All participants indicated that they consider whether the data is relevant to just one person or multiple people. For instance, small municipality 1 often receives requests to publish housing decisions on the open data portal. Residents specifically want housing decisions and all related documents to be digitally

accessible. This has been a focus over the past year and has been successfully implemented, with several hundred housing decisions and attachments now available on their website.

Participants mention that they work with open data due to legislative requirements and the potential benefits of increased government transparency. The Open Data Regulation Act requires them to proactively make data accessible. However, almost all participants note that municipalities face challenges with open data implementation. They question what it means and how to implement it, as it requires a lot of knowledge and skills. Lack of technical expertise and resources is a big hurdle for municipalities. Medium and small municipalities particularly struggle with setting up their open data, often adopting a 'follow the leader' approach. They mention that a few leading municipalities, often the large ones known as the G4, set the trend. As a small municipality, it is challenging to make major decisions independently due to limited resources and knowledge. Therefore, the policy of small municipality 1 is based on those of larger municipalities, and they frequently participate in VNG workgroups to adopt best practices, exemplifying policy learning. Their strategy is to adopt existing, successful policies instead of creating new ones. The data department wants to invest more in this area, but they lack the capacity. Budgets are allocated and earmarked by the Council, but more urgent issues such as immigration policy have priority. Consequently, open data policy is lower on the agenda, according to participants 1, 2, and 6.

Ensuring a platform and processes that make data available in a controlled way is challenging for small and medium municipalities. It is not only about starting with data, but also maintaining processes, continuing development, and aligning with national developments, according to participant 1. These national standards are important as municipalities must adhere to them. Moreover, some municipalities also follow European standards in addition to the national ones. Participant 7 of small municipality 2 states:

> "There has been talk about making data-driven decisions based on numbers, information, forecasts, and predictions. It gets discussed and then said: yes, we are going to start, but along the way, we forget to document everything. Some things are noted down sporadically, but it is all rather disorganized. This process needs structuring, and we need a comprehensive policy document, which we currently lack. Everything is fragmented. We have the vision, and we have established some data values, but they are already somewhat outdated. This issue is partly due to personnel changes. There has been significant turnover and some temporary hires, which

meant it was not always necessary for them to document and formalize everything. So now we are playing catch-up. These are tasks we should have completed already."

In summary, municipalities differ in the size of their data teams. They adhere to the Open Data Regulation Act and strive for transparency by addressing information requests that are socially relevant. However, smaller municipalities struggle with limited resources and frequently rely on open data policies developed by larger municipalities. This chapter addresses sub-question 3 concerning the content of the municipalities' open data policies.

5.2. Open data policy effectiveness

When looking at effectiveness in general, almost all participants give different answers. Participant 1 states that policy is effective when it is actually carried out and resources are allocated for it. He notes that certain policies can be a hype:

> "Five years ago, open data was popular among municipalities, leading many to set up an open data portal and buy a tool. They would get it from the supplier, and then a few enthusiastic civil servants would start filling such a catalog with open data, but over time, you see the decline. There is insufficient drive or commitment. As a result, those products are sometimes five years old. An organization must also address and structure the policy systematically by making decisions at a strategic level and agreeing on performance together."

He also emphasizes the importance of feeling responsible for it and ensuring that an open data tool is maintained. Participant 2 mentions that you need manpower, materials, and resources to carry a policy out. Although participant 2 identifies these four measures for achieving an effective policy, they acknowledge that they have not yet implemented them and still need to establish them.

Participant 1 indicates that merely placing data on a website and labeling it as open data is insufficient for making it usable. It is crucial for consumers of the data to understand what they are looking at, what it is, what it involves, and how it was created. All this context is important for reuse. Additionally, the formats in which the data is made available are important. Simply dumping a file is less effective compared to using various standards or formats that facilitate reuse. For instance, providing APIs makes it easier for developers to integrate and use the data. Participant 6 suggests adding documents in PDF format to facilitate keyword searches for users.

Participant 1 emphasizes that you must also be able to answer questions actively. For example, if people have questions about the data's origin or encounter issues with formats, there needs to be a system in place to handle these inquiries. It is about actively managing, communicating, and making the data accessible. This aligns with the points made by participants 4 and 5 regarding accessibility. They emphasize that data should be easy to find, usable, and consolidated in one place rather than being fragmented. Once accessible, users should be able to find thematic maps and interact with the data. The more accessible the data is, the more people can benefit from it. Moreover, participants 6 states that municipalities need to ensure effective communication with residents. Utilize social media, distribute flyers, attend local fairs and markets, and raise awareness among residents, making sure they stay engaged and informed about open government data.

Participant 6 from a small municipality also states that collaboration between parties is an important factor for the effectiveness of open data policies. He illustrates this with an example of his cooperation with waste management services. They manage all the waste containers and related data for the municipality, yet their data is not accessible to the municipality, even though the waste team manages municipal assets. To address this, he (6) brought the two parties together and initiated a project to exchange data. The goal is to establish a new standard where both the municipality and the waste management team report and work from the same, most recent data. Participant 6 emphasizes the importance of working with the same data and avoiding isolated datasets. Often, different teams or individuals will have slightly different versions of the same data, leading to inconsistencies. This example shows that even if a municipality publishes its data believing it to be accurate, it might not necessarily be the case. Therefore, seeking collaboration—whether with another municipality, organization, chain partner, or colleague—is vital. This ensures that datasets are open within organizations and that everyone works from a single, unified dataset.

A factor highlighted in all the interviews is the size of the municipality. For small municipalities, it is more challenging to adhere to standards and principles to effectively manage data. Unlike larger municipalities where multiple employees have diverse responsibilities and different people ensure data quality, small municipalities lack a built-in principle of dual control. With a small team of 1 or 2 people, it becomes difficult to conduct comprehensive data quality checks because they have multiple responsibilities and are needed in various places. The size of the department does not correspond to the level of service they

are required to provide. In short, failing to adequately follow these principles due to limited capacity and budget affects the utilization of open data and thereby undermines policy effectiveness. Especially small municipalities frequently encounter these challenges.

Lastly, participant 4 from the medium-sized municipality states that policy is effective when it is tested and evaluated. What do you want to achieve, have we achieved it, and where do we need to adjust the policy? Participant 7 from a small municipality indicates that you need to look at the goals that have been set and whether they have been achieved. But it also must be explainable; how are resources and money being spent by the municipality? Participant 5 from the same municipality adds that municipalities exist for the citizens. They must also make their services visible, showing what they are doing for the citizens. Participant 6 from a small municipality adds to this by saying that listening to residents' requests is important, understanding their expectations of the municipality and responding to them accordingly.

In summary, participants have differing views on what makes a policy effective, but many emphasize the importance of resources, size of the municipality, enforcement, and clear communication for successful implementation. The most commonly mentioned factors that contribute to the effectiveness are findability, active promotion, availability, usability, understandability and evaluation in order to achieve an effective open data policy.

5.3. Evaluating policy effectiveness

When asked if participants measured the effectiveness of their open data policy, they all answered that they did not have any measurement tools. They explained that open data is not a high priority on the agenda or that measurement has not been considered. According to participants 1 and 6, this is because their focus has been on organizing and setting up the new data organization, with much less attention given to secondary issues like open data policy and its effectiveness. Additionally, participants noted that evaluating effectiveness is challenging. Participant 2 mentioned that there is little monitoring and steering because it is difficult. It requires careful consideration of the necessary indicators to ultimately reach a judgment.

Only one large and one medium municipality reported attempting to measure effectiveness through research. They occasionally organize projects in collaboration with universities, where students use the data. They organized hackathons around specific data and products, allowing students to explore how they could use the municipality's data to address specific problems or

issues. This approach helps the municipality understand how effective it can be to make open data available, according to participant 1. Furthermore, participants 4 and 5 noted that in their municipality, they conduct a survey three or four times a year, where they send out a digital questionnaire to people. However, the municipality needs to take the initiative to start such efforts and measure its effectiveness; measuring will not happen automatically, participant 3 says.

All municipalities rely on feedback from users but cannot reach out to them directly due to anonymity. While municipalities provide an email address on their websites for questions or feedback, users do not receive prompts, like pop-ups or chatbots that ask, 'Did you find what you were looking for?', asking for their experience with the data. This lack of prompts means users must actively search for the email address to provide feedback. Additionally, not all email addresses are specifically for open data; some inquiries go through a customer contact center before being forwarded to the open data team. Communication and feedback from users are the primary tools for evaluating effectiveness. However, if a user has a negative experience with the open data but does not reach out to the municipality, the municipality remains unaware. As a result, municipalities lack insight into how useful users find the data. Participant 2 states:

> "Assessing effectiveness is difficult because I do not know my consumers. I can detect who is accessing the data, but I am not allowed to collect IP addresses due to privacy laws, so I cannot contact my consumers directly. The only contact information I have is an email, so I communicate via email with end-users. The mere fact that I communicate is a success for me because it means someone is using our open data. My standard response to any inquiry is: first of all, thank you for using open data. Then we address the user's question. The number of communications I handle daily about my channel shows that I am successful in the sense that people use open data and communicate with me or my colleagues, whether it is about functionality, issues, new datasets, or even the website's functionality."

Participant 2 also mentions that they monitor technical downtime, meaning how often their systems are down, and they track usage to gauge the usability of the data. Usage monitoring is done in all municipalities. Small municipality 1 indicates that their open data portal is under Google Analytics. Their websites are also included, so they can see where people click. This is done anonymously, without IP addresses or similar information. They can track where the clicks go and where users spend the most time. Based on this data, they have a clear overview.

In summary, none of the municipalities have tools to evaluate how effective their open data policy is. Instead, they try to gauge its usefulness and effectiveness through other methods, such as research, surveys, user feedback, tracking technical downtime, and observing where users spend most of their time on the website.

5.4. Paper versus practice: principles

The policy papers from three municipalities—big municipality 2, medium municipality 1, and small municipality 1—can be compared to actual practices. However, medium municipality 2 and small municipality 2 only have a vision, without any written policy. During the interviews, the vision of these municipalities were discussed. Therefore, this chapter will also examine their vision about their practices.

The 8 principles of open data are: complete, primary, timely, accessible, machine-processable, non-discriminatory, non-proprietary, and license-free. Although the same standards are maintained in the policy documents of all three municipalities, the implementation of the open data policies varies in each municipality. According to participant 6, open data requires time and money. He sees it as an investment in the municipality's information management, but acknowledges that this varies from one municipality to another. Some municipalities are more cautious about publishing data or have less organized systems compared to others. Participant 6 provides an example of a neighboring municipality where there are frequent requests from politically engaged citizens who are critical and ask numerous questions about what the municipality does, decides, and its policies, leading to many requests for access to information. In contrast, in participant 6's municipality, there is little demand from citizens to access data, and therefore the municipality feels less urgency to share information publicly.

Complete

All municipalities emphasize that data is published deliberately to serve a societal purpose. They do not randomly select which data to make public. Instead, specific data can be requested, and the municipality assesses whether fulfilling such requests serves a meaningful and feasible purpose. This approach, however, raises the question of how they determine when data truly serves a societal purpose.

Data containing personal information is not disclosed. Furthermore, municipalities do not publish data that include financial information. For instance, Participant 1 points out that the Chamber of Commerce charges for business data, and providing this information for free would undermine the municipality's funding model.

Primary

Small municipality 1 indicates that they publish directly from their database, sharing the same data used for internal information exactly as it is stored, with certain fields masked for privacy. Any data not sensitive under AVG is on the website in its original format. Although one of the standards is to present datasets in their source form without aggregation or modification, this often does not happen in practice.

The data that municipalities receive from third parties are not always machine-readable or easily searchable. Participants 6 and 7 note that they occasionally receive data in a specific format from third parties, which must be converted into another format to be useful. Significant changes to the data are always communicated to the public. Minor changes are not, according to participant 7. He explains that there is a consideration of how important the change is and its impact; whether it is something frequently used by the public or an internal adjustment. The information product itself indicates when an adjustment was made.

Participant 6 also points out that it is sometimes necessary to combine data to create a dataset. These datasets are often complicated databases with 10,000 tables. When the municipality publishes this data in its original form, it is difficult for residents to read and understand. Therefore, datasets are sometimes combined to create a simpler, more usable product. According to participant 6, there is a difference between what comes out of the system and what the government shares in a usable way. Participant 1 adds,

> "We do this because some products are made up of combinations of data. If it is a useful combination, we just do it because it is more convenient for the user. A good example is addresses. For everyone, an address is a street name and a house number with a postal code. But in government administration, an address is structured differently. So, to create a usable data product, we combine postal codes and addresses to make it more readable for everyone."

Medium-sized municipalities also combine or modify datasets. For example, medium municipality 2 sometimes links two separate base registries to gain a good overview and compare neighborhood levels. According to participant 3 from medium municipality 1, it can sometimes be challenging to keep data in its original form. Increasingly, applications are hosted externally. In the past, municipalities ran their applications internally, with internal databases, allowing them to directly extract data from these databases. Nowadays, applications are often hosted by a supplier, and access is through an application login, making it difficult to directly access the database to publish data.

Timely

Data is consistently updated across all municipalities to ensure the provision of relevant information. All participants indicated that existing data is refreshed daily through automated processes. However, this applies specifically to existing data, and the process differs for new data. Participants note that new data is not always published quickly enough to maintain its relevance.

Participant 6 highlights that small municipalities, in particular, face challenges in swiftly providing new data due to capacity issues. This means cannot always provide timely and up-to-date data. It also heavily depends on the information request. According to participant 6, sometimes they can respond within a week if it is their own data because they can move fairly quickly. Participant 6 states that it should be different, but that would require additional staffing, which is costly and unlikely. He (6) provides an example where an external agency wanted information on the age composition of certain neighborhoods.

> "It would be a lot of work for me to provide an up-to-date dataset. I said to them, this is the data I have from 2023, and considering that I have done a longitudinal analysis over 20 years, the age composition has remained consistent. People die, children are born, and the age composition stays the same. That is the pattern I observed. For your civic participation question, is this data sufficient? If not, you can submit a request, but it might take months for me to provide an answer. Decide for yourself what is convenient for you."

Machine-processable

All municipalities strictly adhere to this principle and ensure that datasets are available in multiple formats. Big municipality 2 emphasizes they aim to standardize. On their website, citizens can download nearly every dataset in 20 open formats. The participant (2) says they strive to apply and provide all available standards there. Users can choose in which format they prefer to receive the data. Participants from small municipalities also confirm that their open data portal offers datasets in common extensions such as Excel or CSV.

Accessible, non-discriminatory and license-free

Making the data non-discriminatory and accessible is quite simple for all municipalities. The data from all municipalities is freely available for use, distribution, modification, and sharing without being restricted by intellectual property protection. All participants also indicate that everyone has equal access to the data; it is available on the municipal website, where anyone can access it for free. For groups that have difficulty understanding or obtaining the data, such as older adults who are less computer-savvy, there is an option to visit the municipality for assistance. All participants state that there are staff members at the service desk who can help citizens navigate the data.

However, there is a difference in offering data in accessible ways for people with disabilities, such as the visually impaired. Only one municipality, namely small municipality 1, considers this by providing read-aloud functions on their website. Geographic datasets, however, are excluded, as participant 6 mentioned that it is not technically feasible. Other municipalities have not yet developed specific functions for disabled citizens. For example, participant 4 from medium municipality 2 mentioned that disabled individuals are likely not the direct target group for open data.

Regarding language, the municipal websites only offer translations in Dutch and English. For people who want to access certain information or datasets from their municipality but do not understand Dutch or English, it becomes quite difficult to comprehend the information. Nevertheless, all participants indicated that citizens could call or visit the municipality for assistance. Participant 4 also mentioned that the local library provides support in learning computer skills, but the municipality does not involve itself in this. Although the accessibility of municipal open data platforms meets the standard, the application of the non-discriminatory principle varies in practice.

In conclusion, although the municipalities adhere to the same open data standards in their policy documents, the way they implement these policies varies. They all aim to publish data with a societal purpose and avoid personal or financial information. However, in practice, data is often aggregated or modified, and third-party data may not be machine-readable or searchable, requiring adjustments or combinations. New data is not always updated promptly, and although datasets are available in multiple formats, access can be challenging for citizens with disabilities or a language barrier.

5.5. Paper versus practice

5.5.1. Decision tree

Before datasets are published in big municipality 2, the decision tree below is reviewed. According to their policy document, this is the most important part, as it assesses whether the data meets the publication requirements or restrictions. The decision tree was originally in Dutch, but the researcher has recreated it in English. According to participant 2, how it is outlined in the decision tree is also how it is implemented in practice, explaining that they follow these steps when publishing data.

> "I do not read the policy every day, but it is part of our daily routine. We follow the guidelines. For example, when you get your driver's license, you might have taken a theory exam. You do not take the theory exam every week, but you do drive, and occasionally you see a new traffic sign and look it up. Essentially, you try to incorporate what you have learned into your daily behavior. Well, that is what we try to do as well."

Figure 4. Open data decision tree
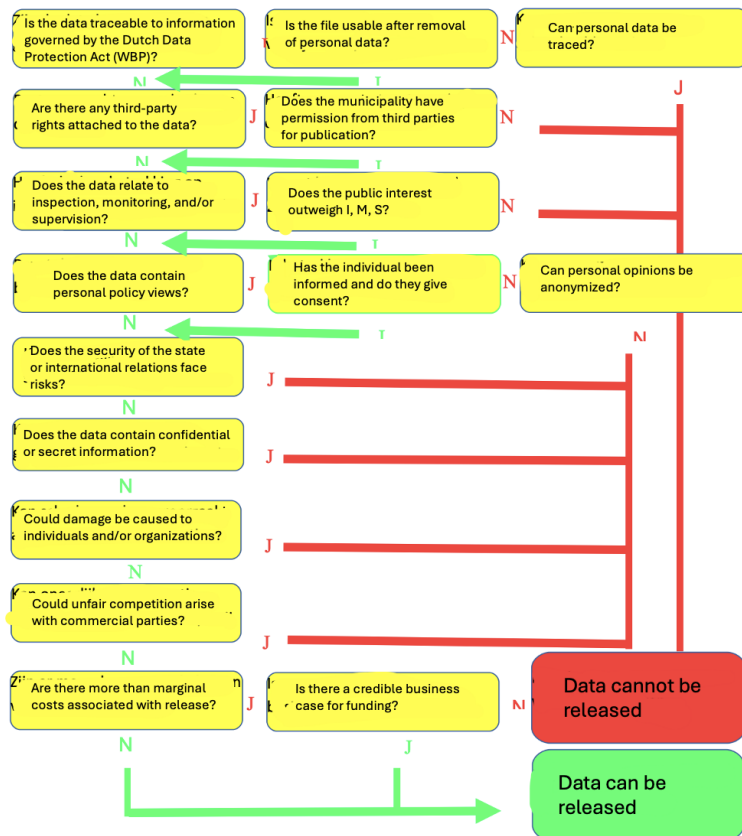
Source: Adapted from the policy document of big municipality 2

The policy document of small municipality 1 mostly aligns with what happens in practice. It has been previously mentioned that this municipality actively seeks collaboration with larger municipalities and the Association of Dutch Municipalities (VNG) because, as a small municipality, they have limited resources. Their document states that they aim to increasingly collaborate with other municipalities regarding service delivery, joint software development, central hosting of processes and data, and increased use of national facilities. The participant (6) mentioned that they are currently working on this.

Moreover, small municipality 1 indicates in their document that the government's information management will increasingly be organized according to these principles, making standardization and data reliability even more critical. However, this contradicts reality. Participant 6 has noted that adhering to standards is more challenging due to capacity shortages and that maintaining data quality is not a priority. They have a privacy officer who checks if personal data has been removed, but there is no built-in four-eyes principle in the process to ensure a high-quality dataset, making the information less reliable. Moreover, medium

municipality 2 has indicated that they published data to keep up with developments and not fall behind. This appears to be a case of publishing data merely for the sake of publication, with less emphasis on usability. Medium municipality 2 is still exploring what works to create a mature platform and what they can make available, by observing how other municipalities approach this. Currently, they primarily use existing sources for analysis and do not generate much data themselves.

Participant 5 from medium municipality 2 also notes that citizens sometimes struggle to find publicly available information, resulting in questions being asked even when the data exists. Consequently, there are not many genuinely new open datasets, and the municipality must actively make them public, according to participant 4. In their vision, medium municipality 2 emphasizes the importance of data accessibility. They believe it entails not only making data available but also ensuring it is done correctly and widely communicated, meaning effectively announcing the data to citizens. However, they express dissatisfaction and acknowledge the need for improvement in this area. As a result, they have created a roadmap for themselves outlining how they plan to manage data and their future goals, particularly because of the rising number of information requests they receive.

In their vision, they also incorporate the previously mentioned principles. They adhere to a document from the Ministry of the Interior and Kingdom Relations. However, it is evident that they are lagging in terms of open data. They lack quality controls and have no means to measure the effectiveness of their platform. This contradicts their vision of providing high-quality, useful data to citizens. This issue is similarly present in small municipality 2. Participant 7 notes that the data currently available on the platform does not meet their desired standards and needs to be improved. Furthermore, there is minimal quality control over the information. While they adopt data from reliable sources such as CBS, internal controls are general and insufficient. Participant 7 states:

> "There is room for improvement in this process. We could enhance it by establishing minimum standards and conducting thorough checks. We want to develop this more comprehensively. Currently, decisions often rely on the insights of the data team. While they possess the knowledge and expertise, it would be logical to implement a step-by-step approach. This way, it is documented that the data has been reviewed, assuring that it has been examined, because at the moment, citizens must take our word for it."

5.5.2. Open government data life-cycle

The literature review discussed the open government data life-cycle established by Attard et al. (2015). The cycle is accurate to what happens in real life: municipalities receive requests, assess the necessary data for producing the requested information product, and anonymize personal information. They adhere to open data standards and publish the data in various machine-readable formats on their websites. In practice, municipalities also engage in data curation to ensure data sustainability by regularly updating datasets to prevent them from becoming outdated, often employing automation for this purpose. However, there are some minor discrepancies between the life-cycle described and current practices.

The data harmonization phase, which involves adhering to standards, is not consistently applied and is occasionally overlooked. This is primarily due to capacity limitations or the absence of clear standards. Although there is usually a basic check to mask sensitive information, municipalities may not always be aware of the appropriate standards to ensure high-quality datasets, or they may lack sufficient time due to other pressing responsibilities.

Furthermore, a phase that is rarely implemented—mentioned only by one participant (6)—is data discovery. This phase involves making consumers aware of the existence of data and information available for access. While it is important for citizens to be aware that they can access such information, submit requests, and view government documents, not everyone is aware of these opportunities or knows how to request information. Municipalities do not actively try to raise awareness, simultaneously restricting the data exploitation. When citizens are informed about these opportunities with open data, there is a higher likelihood of increased use and reuse of open data. This increased engagement not only amplifies the benefits derived from open data but also generates more feedback, thereby enhancing long-term data quality.

Nonetheless, publishing data involves more than just making it available; it also requires ongoing data curation according to the data life-cycle, also referred to as data maintenance. This includes updating and enhancing the data, a practice that, as noted by participants in the open data principles in section 5.5.1, does not always occur consistently.

5.5.3. *Public values*

The public values include inclusive dialogue and deliberation, government's role as guarantor of public values, collaborative governance, active citizenship and evaluation of public value. When reviewing the policy documents, there was no alignment between the information in the documents and the public values. However, this contrasts with what happens in practice.

In practice, municipalities involve citizens when making new decisions, seeking to incorporate their perspectives. Opinions and feedback from citizens are solicited through surveys, hackathons, or research to understand citizens' wants and needs. For example, medium municipality 1 regularly hosts participation evenings. When a new neighborhood is being developed, residents are informed about the decisions and work involved. Once their viewpoints have been heard and considered, the new neighborhood can be registered on the municipality's geographic data map. Municipalities do not only seek input from citizens, but also collaborate with other stakeholders. This is particularly common among smaller municipalities, which often collaborate with larger municipalities or other stakeholders, like VNG or waste management companies, to build a network of open data stakeholders.

Public values also advocate for comprehensive policy evaluation based on their contribution to a wide range of public values. However, this remains a work in progress, as none of the municipalities have tools to measure the effectiveness of their open data policies. Evaluating from the perspective of public values means assessing not only the policy's effectiveness but also considering democratic and efficiency values, which are essential for a truly effective policy according to the public values. This includes factors such as accountability or economic rationality (Bryson et al., 2014 p. 446), which could include assessing how organizations use open data to innovate and introduce new products and services to the market. Although open data policy evaluation is not mentioned in the policy papers, all respondents expressed a desire to create a tool to assess the effectiveness of their open data.

In short, what is described in the policy documents mostly reflects the actual practices. Due to limited resources, it is difficult for municipalities to follow standards and prioritize data quality. There are minor differences between the open data life-cycle and actual practices, particularly in data harmonization, data discovery, and data exploitation. The policy documents do not align with public values, but in practice, inclusive dialogue, collaboration, and citizen input are still emphasized through surveys, hackathons, and partnerships with other open data stakeholders.

6. Discussion, limitations and recommendations

6.1. Discussion

This chapter first addresses the assumptions, followed by the main and sub-research questions. Although these questions have been discussed throughout the study, especially in the literature review and results, this chapter provides a clear and concise summary of the answers. This research investigates the effectiveness of open data policies in Dutch municipalities, focusing on how closely policy aligns with practice. Three significant results stand out: the difference between policy on paper and practice, the impact of resource limitations on policy implementation, and the importance of user feedback mechanisms.

Assumption 1

The first assumption was that municipalities with clearly defined standards and guidelines for publishing open data are more likely to have effective open data policies. The assumption is confirmed by interviews with all municipalities. Those with policy documents explicitly outline the standards and guidelines they adhere to when publishing open data. They have a clear, specific goal, as opposed to a broad vision.

A challenge is that the vision of some municipalities are not documented, but rather exists in the minds of multiple workers, leading to fragmentation. The standards and principles of these municipalities without written policies are unclear. While several participants note that evaluating government policies is essential for effectiveness, it is uncertain how these municipalities assess and review their policies in practice to determine their effectiveness and adherence to standards. Without clear policies and guidelines, a municipality cannot measure effectiveness. The absence of policy documents or the failure to share them also contradicts transparency. Citizens have the right to understand what their municipality is doing and to access its documents. If a policy is not documented, it prevents citizens from examining those documents and understanding the activities, decisions, or the reasoning behind them.

From the interviews, it is evident that municipalities without documents and clear guidelines on how to effectively publish data struggle the most with advancing their platforms. Participants themselves express dissatisfaction with the progress of their open data platforms. For example, when medium municipality 2 was asked if there are standards they follow when publishing data, they acknowledged the need for professionalization and admitted their data currently does

not meet guidelines, making it less reusable. Participant 5 observes that further steps are needed to improve the quality of their datasets, but how they plan to achieve this remains unclear.

Assumption 2

The second assumption was that considering public values when publishing open data is more likely to lead to an effective open data policy. A key aspect of the public values approach is its emphasis on collective preferences and community needs (Bryson et al., 2014, p. 447). Open data allows citizens to request access to existing information and documents, as well as request new information and data. Having access to this information puts citizens in a better information position, according to Attard et al. (2015) and Edmiston et al. (2021). Citizens understand their needs more clearly, take informed actions, and communicate more effectively with the municipality, thereby enhancing the effectiveness of the open data policy according to public values. Focusing on community needs aligns with the concept of citizens as active participants in the governance process to achieve mutually agreed objectives. It also aligns with the aspect of inclusive dialogue and deliberation with stakeholders within the public values framework.

Public values emphasize the importance of networked and collaborative governance, with the government actively fostering deliberative networks. Such cooperative efforts are crucial for policy effectiveness, as smaller municipalities often lack the necessary tools to maximize their policies' impact (Bryson et al., 2014, pp. 446, 449). Interviews reveal that when municipalities prioritize public values in their open data practices—by actively engaging citizens and other stakeholders to build networks, encouraging inclusive dialogue, and regularly evaluating public values like efficiency and effectiveness—it leads to better open data policy outcomes.

Assumption 3

The third assumption was that larger municipalities are more capable of implementing effective open data policies compared to smaller municipalities. For all municipalities, it is challenging to structure data effectively within the organization, maintain it structurally, and make strategic decisions at the policy level. This difficulty arises because open data is often seen as peripheral rather than urgent. The willingness of a municipality's council to allocate resources and tools for managing open data policies plays a crucial role.

This third assumption was based on the article of Hadjimanolis (2000), who notes that many small organizations lack the specialized assets required to fully benefit from their innovations. Small organizations often cannot afford to hire experts or specialized labor, leading to a deficiency in specialized knowledge. His article is relevant to the practical implementation of open data in municipalities, as interviews reveal that smaller municipalities often struggle more with these policies compared to bigger municipalities. Larger municipalities generally allocate larger budgets and more resources compared to smaller ones. Smaller municipalities have limited capacity to gather knowledge about open data principles and conduct research about what works for them due to their constrained capacity. They also have significantly fewer staff members dedicated to managing open data initiatives. For instance, one large municipality has 15 data teams working on the data platform, each specializing in different areas such as safety or education. Each data team comprises about 10 members, totaling approximately 150 employees dedicated to open data efforts. Another large municipality employs 40 staff members focused on open data and data management. This is in stark contrast to small and medium-sized municipalities, where data teams range from 1 to 6 members.

Moreover, small municipalities lack dedicated departments for open data and often rely on the policies and practices established by larger municipalities. However, interview insights indicate that the population size of a municipality does not always correlate with its ability to secure funding and resources. For example, the interview with small municipality 1 revealed that its residents are highly engaged and vocal about municipal affairs, frequently submitting information requests such as housing documents. This aligns with Schnell and Jo's (2019) observation that educated citizens are more likely to engage with government information and demand government transparency. Consequently, more time, money, and resources are allocated to address these urgent issues and meet citizen's demands. The allocation of resources also depends on the urgency of an issue and the engagement of citizens within the municipality.

Assumption 4
The fourth assumption was that the effectiveness of open data policies is influenced by the presence of user feedback mechanisms. None of the interviewed municipalities have a tool to measure the effectiveness of their open data policy. However, all participants mentioned that an effective way to gauge effectiveness is through gathering feedback from users.

All municipalities do this to some extent by providing an email address on the open data platform where users can send questions or report issues. All participants find receiving feedback via email a useful method to measure effectiveness to some degree. According to participants, it is important for municipalities to have a system in place where residents can ask questions and ensure these inquiries reach the appropriate person. This aligns with the principle of data reviewability outlined by Open Government Data (2007). It emphasizes that governments should enable the public to provide feedback on aspects such as data quality, quantity, selection, format, and accessibility. This feedback provides municipalities with insight into residents' expectations—such as which data they prefer to access—and whether they encountered any issues while using the data.

Users may be less inclined to seek out an email address, compose a complete email, and wait for a response from the municipality. In addition to providing an email address on the website, another method to solicit feedback from users could be through pop-ups or chatbots. The method described by Kitchin (2014) can be applied, where users are asked for their opinions after visiting a website or purchasing an item. After viewing a page or downloading a dataset, users can be asked if the information was clear and useful and if it helped them. It is advisable to include a rating scale from 1 to 5, ranging from least useful to most useful, with an option to explain their choice. This approach also provides valuable insights into the data's utility. Offering pop-ups or chatbots makes it easier for users to provide feedback to the municipality, potentially increasing the amount of questions or feedback received.

Feedback significantly influences data quality by identifying errors or inconsistencies in datasets and providing the municipality with insights into public demand. Opening datasets that are in demand contributes to greater governmental transparency and long-term effectiveness. However, a limitation is that some users may neither provide feedback via email nor through pop-ups, yet still be dissatisfied with the data. In such cases, the municipality remains unaware of the issue.

Research questions

Four sub-questions were formulated for this research, with the first being: *"How is effectiveness defined in the context of open data?"* In this context, effectiveness is determined by eight key open data principles: complete, primary, timely, accessible, machine processable, non-discriminatory, non-proprietary, license-free and reviewability. These principles are intended to ensure higher-quality datasets and more effective use and reuse of data. They guide municipalities in their open data practices and are reflected in policy documents as benchmarks for achieving effective data publication.

The second sub-question was: *"What factors contribute to the effectiveness of a policy?"* This question addresses overall policy effectiveness rather than the effectiveness of open data policies. Insights into this were gained from interviews with participants who shared their views on what makes a policy effective in general. The key factors identified were: implementing the policy, enforcing it, and responsiveness. According to the interviews, four crucial elements are needed for successful policy implementation: people, resources, manpower, and time. Effective policy requires more than just documentation; it needs active implementation with committed resources. If policies remain theoretical and are not put into practice, they fall short. Enforcement is also critical, as officers must see the value of the open data policy, actively use it, and stay updated with developments. Finally, a policy is considered effective when it responds to the needs and expectations of citizens.

The third sub-question was: *"What is the content of the municipality's open data policy?"* Each municipality organizes its data team and policies differently. Larger and medium-sized municipalities have bigger data teams, while smaller ones often have just one or two people handling a wide range of responsibilities. Their policy documents reference the eight open data principles. The principles serve as guidelines and are extensively discussed in the policy documents. First, the documents outline which data can and cannot be published, with a particular focus on personal data. The documents also outline when a dataset is suitable for publication, including the timing and method of publication. However, this discussion is more theoretical. The documents primarily focus on the municipality's future goals and the rationale behind publishing open data, but they provide limited details on the specific actions needed to develop a mature open data platform. This also applies to municipalities that have only a vision and lack policy documents.

The fourth sub-question was: *"How does the municipality act upon their open data policy?"* The findings showed minor discrepancies between the policy documents and actual practice. Municipalities often struggle to follow principles like timeliness and primary data due to capacity issues, leading them to combine datasets to create understandable information or publishing data later than intended. While the Open Government Act (Woo) calls for proactive data publication to promote transparency, in practice, municipalities tend to publish data reactively, only releasing information in response to requests rather than on their own initiative.

The policy documents also do not emphasize public values like collaboration, even though municipalities work together and engage citizens in decision-making in practice. Moreover, the policy documents do not include the open data life-cycle shown in figure 2 or any similar detailed steps for handling data before, during, and after publication. While the decision tree in figure 4 comes close, it only considers whether specific data can be published and does not cover the overall process.

The sub-questions were formulated to help answer the main research question. The research question was: *"Which factors determine the effectiveness of open data policies in a municipality?"* To address this, several key factors were identified. *Active promotion* is essential, as municipalities must effectively announce and publicize their data to both citizens and businesses. This includes methods like distributing flyers to ensure that people are aware of the data available for use and reuse. The more actively data is promoted, the more feedback and engagement the municipality will receive, highlighting its usability. This aligns with the principle of findability, which means users need to know where to locate the data and how to contact the municipality for inquiries. *Availability* is another important factor; the formats in which data is provided significantly impact its effectiveness. Simply uploading a file is less effective than using various standards or formats that facilitate easier reuse of the data.

Additionally, *understandability* is an important factor; the data should be presented in a clear and accessible manner, with sufficient context and examples to help users understand and make use of it. This ties into *usability*, ensuring that data is presented in ways that demonstrate its possibilities and practical applications. Furthermore, *size* is an important factor influencing policy effectiveness. Smaller municipalities often face resource constraints and often rely on the practices and policies established by larger municipalities. Interviews reveal that these factors influence the effectiveness of open data policies. Considering these elements when

publishing or maintaining open data can affect how well the policy performs. For instance, actively promoting the data, ensuring it is easy to find on the website, and making it understandable even for those less familiar with technology can lead to a more successful open data policy compared to policies that overlook these aspects.

6.2. Research limitations

This research faces several limitations that should be acknowledged. Firstly, the existing literature on policy effectiveness is limited. This is also the case for existing literature on open data at the local level, especially in Dutch municipalities. This gap made it challenging for the researcher to establish a comprehensive literature review. Additionally, the research might have been influenced by the researcher's personal bias and positionality. The researcher's personal perspectives and experiences may have influenced how the data and findings were interpreted, potentially affecting the objectivity of the results.

Moreover, obtaining policy documents was challenging. Some municipalities lacked policy papers, restricting comprehensive comparisons between policy on paper and policy in practice. To gain proper insight into the effectiveness of open data platforms, the researcher needed more time and access to organizations to observe the process of how data is collected, how information requests are handled, and how quality control is ensured. Lastly, the number of interviews was limited, with only seven participants interviewed. This limitation reduces the generalizability of the research findings.

6.3. Recommendations for further research

Interviews with participants showed that municipalities are deliberate in their data publishing, focusing on data that serves a societal purpose rather than releasing data randomly. They carefully assess whether fulfilling data requests benefits society as a whole rather than only individuals. This raises questions about how municipalities determine what is considered of societal relevance and who makes these decisions. Future research could investigate the criteria and processes behind these decisions, shedding light on when and how data is deemed to serve the public interest.

Similarly, the results chapter noted that major changes to the data are shared with the public, while minor changes are not. This leads to questions about what qualifies as a small versus a significant change, who decides this, and how such information is communicated to the public. Future research could explore these aspects, specifically focusing on who decides when and how information should be shared with the public.

Furthermore, the literature review touched on the European Open Data Maturity Assessment, highlighting that the Netherlands is categorized as a follower with standard open data portal features. Future research could also delve deeper into whether the Netherlands truly fits this category and explore what steps the Dutch government could take to become a fast-tracker or trendsetter.

Lastly, the methods and strategy used in this study could be applied in other contexts to see if the factors influencing effectiveness are consistent across different Dutch municipalities or even in other countries. Such research could provide valuable comparative insights into how open data practices and policies vary across different regions, contributing to a broader understanding of open data effectiveness.

7. Conclusion

This chapter concludes by summarizing the key findings of the research. The thesis explored the factors influencing the effectiveness of open data policies in Dutch municipalities. Factors that contribute to overall policy effectiveness are implementing and carrying out the policy with adequate resources to avoid being merely symbolic, enforcement to ensure policy compliance and responsiveness to citizen needs.

Effectiveness in open data policies depends on adhering to open data principles: completeness, timeliness, accessibility, machine-processability, non-discrimination, non-proprietary formats, license-free availability and reviewability. Participants also highlight additional factors that contribute to open data effectiveness: findability, active promotion, availability, usability, understandability and ongoing evaluation.

Evaluating the effectiveness of open data can be challenging, particularly in understanding user needs. Feedback mechanisms such as direct user communication via email, chatbots or pop-ups on websites are effective but underutilized methods. Metrics like research, surveys, technical downtime and user engagement provide insights into the effectiveness but do not fully capture data usability.

Minor discrepancies between policy and paper are present. This primarily stems from not adhering to the open data principles and inadequate quality control over data. Maintaining timeliness and primary datasets is particularly challenging. Medium and small municipalities face significant challenges in advancing their data platforms because they lack formal policy documents and clear guidelines, which reduces the usability of their data. In contrast, larger municipalities tend to adopt more structured approaches.

The open data life-cycle outlined by Attard et al. (2015) closely mirrors practical implementation, but municipalities often fall short in informing the public about available data and in areas like data harmonization, discovery, and exploitation. While policy documents may not fully align with public values, practical efforts still emphasize these values through surveys, hackathons, and collaborations with other open data stakeholders. Addressing these challenges requires consistently applying principles and open data standards that improve the effectiveness of open data policies, leading to overall improvement.

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Appendices

Appendix I. Interview guide English

The interviews were conducted in Dutch; therefore, the interview guide is prepared in both Dutch and English to accommodate non-Dutch speakers. The interview questions primarily center around the eight open data guidelines as outlined by Attard et al. (2015), which are considered key principles for effective open data publication and utilization. The interviews began with introductory questions to get to know the participant better.

Introductory questions

1. Can you please introduce yourself?
2. Can you briefly describe your role and responsibilities related to open data in the municipality?
3. How long have you been involved with open data initiatives within your municipality?

Interview questions

1. Can you tell me about the open data policy in your municipality?
2. What is the reason behind your municipality creating the open data policy?
3. In your opinion, what makes a governmental policy (in general) successful? Hence effective.
4. Do you think your municipality's open data policy is effective?
   - Why do you think that is effective, or how do you see that it is effective?
5. In your opinion, what are the primary factors contributing to the effectiveness of open data policies in your municipality?
   - Why are these factors contributing to the effectiveness? What makes them impactful?
6. Does your municipality have a method to measure the effectiveness of their open data policy?
   - If yes, how do they measure the effectiveness?
   - If no, why not?
     - In your opinion, what is a good method to measure the effectiveness?
7. In your opinion, what makes open data high quality?
8. What guidelines does your municipality follow to ensure that the data it publishes for citizens and organizations is useful and has good quality?

- o Does your municipality work with other stakeholders to ensure that the data is accurate and complete? Or do you involve experts to ensure that guidelines are met?
- o Or does the municipality do this by itself?
  - If so, why? And how?

9. Can you provide examples of how citizens or organizations used the (open) data?

10. Can you describe the extent to which your municipality shares its data with the public?
   - o Are there any specific kinds of data that are not disclosed to the public? (e.g. due to privacy limitations).

11. How does your municipality ensure that data is published in its original form without aggregation (changing) or modification (combining with other data)?
   - o Have there been any challenges in keeping the data in its original form?

12. How does your municipality make sure that data is published quickly and on time?

13. How does your municipality ensure that everyone has free access to the data?

14. How does your municipality ensure that everyone has equal access to the data?
   - o Do you think certain groups face challenges in accessing or getting the data?
   - o If so, does your municipality have any measures in place to help those groups get access to the data?

15. How does your municipality ensure that open data is presented in a format that allows computers to easily process it?

16. How does your municipality ensure the accuracy of the data it publishes?
   - o Are there any processes in place to check the quality of the data?

17. How does your municipality ensure transparency in the process of data collection and publication?

18. What are the future plans in your municipality in terms of open data?

19. Do you want to share anything else about open data in your municipality?

Appendix II. Interview guide Dutch

Introductie vragen

1. Kunt u uzelf kort voorstellen?
2. Kunt u kort uw functie en taken binnen gemeente beschrijven?
3. Hoelang bent u al betrokken bij open data-initiatieven binnen uw gemeente?

Interview vragen

1. Kunt u iets vertellen over het open data beleid binnen uw gemeente?

2. Wat is de reden voor uw gemeente om een beleid voor open data te ontwikkelen?

3. Wat maakt, volgens u, overheidsbeleid in het algemeen succesvol?

4. Vindt u dat het open data beleid van uw gemeente effectief is?
   ○ Waarom denkt u dat het effectief is? En hoe ziet u dat het effectief is?

5. Wat zijn, volgens u, de belangrijkste factoren die bijdragen aan de effectiviteit van de open data van uw gemeente?
   ○ Waarom dragen deze factoren bij aan de effectiviteit? Wat maakt ze relevant/belangrijk?

6. Heeft uw gemeente een methode om de effectiviteit van het open data beleid te meten?
   ○ Zo ja, hoe wordt de effectiviteit gemeten?
   ○ Zo nee, waarom niet?
      ▪ Wat is, volgens u, een goede methode om de effectiviteit te meten?

7. Wat maakt open data van hoge kwaliteit, volgens u?

8. Welke richtlijnen volgt uw gemeente om ervoor te zorgen dat de gepubliceerde data nuttig en van hoge kwaliteit zijn?
   ○ Werkt uw gemeente samen met andere belanghebbenden om ervoor te zorgen dat de gepubliceerde data nauwkeurig en compleet is? Of worden experts erbij betrokken om ervoor te zorgen dat richtlijnen worden nageleefd?
   ○ Of doet de gemeente dit zelf?
      ▪ Zo ja, waarom? En hoe?

9. Kunt u voorbeelden geven van hoe burgers of organisaties de (open) data hebben gebruikt?

10. Kunt u beschrijven in hoeverre uw gemeente de data deelt met het publiek?
    ○ Zijn er specifieke soorten data die niet worden vrijgegeven aan het publiek?

11. Hoe zorgt uw gemeente ervoor dat de data wordt gepubliceerd in zijn oorspronkelijke vorm zonder aggregatie (gecombineerd met andere data) of modificatie (aanpassingen)?
    ○ Zijn er uitdagingen bij het behouden van de data in hun oorspronkelijke vorm?

12. Hoe zorgt uw gemeente ervoor dat de data snel en op tijd worden gepubliceerd, zodat de data relevant blijft?

13. Hoe zorgt uw gemeente ervoor dat iedereen gratis toegang heeft tot de data?

14. Hoe zorgt uw gemeente ervoor dat iedereen gelijke toegang heeft tot de data?
    ○ Vindt u dat bepaalde groepen moeite ervaren met het verkrijgen van toegang tot de gegevens?

   o Zo ja, heeft uw gemeente maatregelen genomen om deze groepen te helpen toegang te krijgen tot de gegevens?

15. Hoe zorgt uw gemeente ervoor dat de data wordt gepresenteerd in een formaat dat computers makkelijk kunnen verwerken?

16. Hoe zorgt uw gemeente voor de nauwkeurigheid van de gepubliceerde data?

   o Zijn er processen of regels om de kwaliteit van de data te controleren?

17. Hoe zorgt uw gemeente voor transparantie in het proces van gegevensverzameling en publicatie van de data?