

Open data policies, their implementation and impact: a framework for comparison

Zuiderwijk, AMG; Janssen, MFWHA

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Open Data Policies, their Implementation and Impact: A framework for comparison

ABSTRACT

In developing open data policies, governments aim to stimulate and guide the publication of government data and to gain advantages from its use. Currently there is a multiplicity of open data policies at various levels of government, whereas very little systematic and structured research has been done on the issues that are covered by open data policies, their intent and actual impact. Furthermore, no suitable framework for comparing open data policies is available, as open data is a recent phenomenon and is thus in an early stage of development. In order to help bring about a better understanding of the common and differentiating elements in the policies and to identify the factors affecting the variation in policies, this paper develops a framework for comparing open data policies. The framework includes the factors of environment and context, policy content, performance indicators and public values. Using this framework, seven Dutch governmental policies at different government levels are compared. The comparison shows both similarities and differences among open data policies, providing opportunities to learn from each other's policies. The findings suggest that current policies are rather inward looking, open data policies can be improved by collaborating with other organizations, focusing on the impact of the policy, stimulating the use of open data and looking at the need to create a culture in which publicizing data is incorporated in daily working processes. The findings could contribute to the development of new open data policies and the improvement of existing open data policies.

Keywords

Open data policies; open data framework; open data; open government; comparative research; policies; principles; guidelines.

1. INTRODUCTION

Open data, also referred to as open Public Sector Information (PSI), has received considerable attention in recent years (see for example Bertot, Jaeger, & Grimes, 2010; McDermott, 2010). In addition, a wide variety of open data policies have been developed (Civic_commons, 2012; Huijboom & Broek, 2011; Open_Government_Initiative, 2012), for instance by the United States (Obama, 2009, 2012), Europe (European_Commission, 2003, 2011a) and individual countries (for instance, Cameron, 2010; Tweede_Kamer, 2011).

Open data policies are important, as their purpose is to ensure the long-term transparency of government information (Jaeger & Bertot, 2010) and thereby to contribute to citizens' rights to public access to government information, which is considered a fundamental tenet of democracy (Allen, 1992). Moreover, open data policies have the potential to increase the participation, interaction, self-empowerment and social inclusion of open data users (e.g. citizens) and providers (Bertot, et al., 2010; K. Janssen, 2011) alike, stimulating economic growth (Borzacchiello & Craglia, 2012) and realizing many other advantages.

In spite of the considerable attention that has been given to open data and open data policies, no overview of existing open data policies is available at the moment. Moreover, despite their many similarities, open data policies emphasize different objectives. For instance, the European Commission (EC) emphasizes the direct and indirect economic gains from the use of open government data (European_Commission, 2011b), whereas the Obama Administration focuses on increasing transparency, participation and collaboration, which it assumes will

improve the quality of services to the American people (McDermott, 2010; The_White_House, 2012). These differences may indicate that open data policies stimulate the provision and use of open data in different ways, and this could provide opportunities for learning from each other.

Little attention has been paid to building systematic and structured research that compares the variety of existing open data policies and provides guidelines for developing open data policies. Although some studies have been performed that compare open data policies (e.g. Huijboom & Van den Broek (2011) and Rothenberg (2012)), there is not yet any suitable framework for comparing open data policies. Although federal United States and European Union open data policies have gained considerable attention, the policies at lower levels have largely been neglected, whereas the lower level policies are needed if the higher level policies are to be set in motion. Furthermore, there is no overview available that compares open data policies on a broad range of aspects. Yet comparing open data policies on different aspects and different levels of government is useful and necessary in order to obtain a better understanding of the common and differing elements in the policies and to identify the factors that affect the variation in policies and which influence their impact. This understanding could contribute to the development of new open data policies and the improvement of existing open data policies. This research contributes to the existing literature by 1) developing a framework for comparing open data policies and 2) using the framework for comparing the open data policies of seven Dutch governmental organizations. Based on the similarities and differences found, recommendations for improving open data policies are presented.

A preliminary version of this paper was published in the proceedings of the 13th Annual International Conference on Digital Government Research (Zuiderwijk & Janssen, 2012) and has here been significantly extended and refined.

2. RESEARCH APPROACH

Our research goal was to develop a framework for comparing open data policies and to be able to use this framework in comparing the open data policies of seven Dutch governmental organizations. Our comparison of open data policies was qualitative and focused on open data policies at various government levels and on the factors that affect the variation of open data policies at these levels. Following Bergmann's (1957) approach of observation, induction and deduction, elements for an initial framework were deduced by investigating the literature and by analyzing (government) reports, documents and websites about open data policies. This analysis resulted in a list of elements, which was used to create a framework for comparing open data policies. The initial framework was further refined through observations gained from four semi-structured interviews as well as e-mail and telephone contact with seven key persons involved in policy-making at the examined government organizations. Transcripts were made of the interviews, and all interviewees were given the opportunity to comment on the transcripts. The information provided in the interviews, e-mails and telephone calls was analyzed to obtain more information about the characteristics and the context of the open data policies and to refine the initial constructs of the framework. This process led to a number of changes to the framework. Subsequently, the information provided by transcripts, e-mails and telephone calls was used toward inductive reasoning. The characteristics of the government organizations were analyzed and compared to identify the similarities and differences between them and the factors that affect the variation of open data policies. Finally, general patterns and regularities were induced from the comparison, which resulted in recommendations for improving open data policies.

3. A FRAMEWORK FOR COMPARING AND EVALUATING OPEN DATA POLICIES

Our aim is to better understand how open data policies can be developed and improved. This chapter presents a comparative framework for open data policies that has been derived from the literature. First, we describe policies and policy-making basics (Section 3.1). Subsequently, a comparative framework for open data policies is derived from the literature, in which open data policies are compared at a national level and at an even higher, strategic level (Section 3.2). Finally, the framework for comparing and evaluating open data policies is presented (Section 3.3).

3.1 Policies and policy-making

James Anderson (1990) defines policy as “a purposive course of action followed by an actor or set of actors in dealing with a problem or matter of concern” (p. 5). Policy deals with processes, activities and/or decisions that tackle societal problems (Stewart_Jr, Hedge, & Lester, 2008). Because policies aim to achieve a certain impact in society, we adopt the view that policies should include the factors that contribute to and influence this impact. In line with this broad perspective on policies, we adopt the point of view that policies are more than written documents in which intentions, choices and actions are described, as they define the broad open data regime of organizations and how they are realized and create their actual impact. Policies are developed using policy-making cycles which can consist of stages including agenda setting, policy formulation, policy implementation, policy evaluation, and policy change or termination (Stewart_Jr, et al., 2008). In the following sections, the elements for an open data policy comparison framework are identified by referring to these policy-making cycles.

3.2 Elements for comparing open data policies

In this section, we derive elements of open data policies as found in the literature. The findings from the literature review are divided into four parts, which are related to the policy-making cycles, namely policy environment and context (related to agenda setting, see Section 3.2.1), policy (related to policy formulations and implementation, see Section 3.2.2), performance indicators (related to policy evaluation, see Section 3.2.3) and realizing public values (related to policy change or termination, see Section 3.2.4).

3.2.1 Policy environment and context (input)

The first stage of a policy-making cycle is agenda setting, which is influenced by environment and context. Huijboom & Van den Broek (2011) point to several relevant policy environment and context elements (see Table 1). Moreover, Gibbs et al. (2003) and Eskelinen et al. (2008) identified elements that are relevant for policy environment and context comparisons. Even though these elements are not described as general elements that apply to each policy comparison, but are more focused on e-commerce diffusion policies (Gibbs, Kraemer, & Dedrick, 2003) and broadband policies (Eskelinen, et al., 2008) (see Table 1), we included these elements in our framework, because they seem to be relevant for open data policies as well.

Table 1: Environment and context elements for an open data policy comparison framework, derived from the literature.

Framework element	Literature
Country, country demographics and responsible authority	Huijboom & Van den Broek (2011), Gibbs et al. (2003)
Key motivations, date of program launch	Huijboom & Van den Broek (2011)
Financing of open data portals, economic and financial resources, funding	Huijboom & Van den Broek (2011), Gibbs et al. (2003), Eskelinen et al. (2008)
Organizational environment, social and cultural factors (e.g. consumer preferences), market environment, information infrastructure	Gibbs et al. (2003), Eskelinen et al. (2008)

Legislation and regulation	Gibbs et al. (2003), De Bruijn et al. (2002), Eskelinen et al. (2008)
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3.2.2 Policy content

Based on the policy-making cycles of Stewart, Jr. et al. (2008), agenda-setting can lead to policy formulation and implementation. A number of researchers have described policy formulation and implementation elements (see Table 2). Huijboom & Van den Broek (2011) and Rothenberg (2012) compared open data policies at a national level, primarily examining countries that already have a well-defined open data policy. Although not specifically focused on open data, Dawes, Pardo & Cresswell (2004) developed a model that can be used to design programs about access to information. Dawes (2010) points to two main principles which can help guide and evaluate efforts to achieve information-based transparency, namely stewardship and usefulness. A good balance of stewardship and usefulness is presumed to assure quality, engender trust, reduce risks, increase public value, promote innovation and reinforce transparency (Dawes, 2010). Harrison et al. (2011) emphasize that in order to realize public value from open data, such as transparency, participation and collaboration, datasets must be valuable and important to citizen users. Jaeger et al. (2012) show the importance of access issues. Moreover, the literature illustrates the importance of metadata in understanding and giving meaning to the publicized data (Jeffery, 2000; Zuiderwijk, Jeffery, & Janssen, 2012) and the ease of access to technology (Gibbs, et al., 2003; Ono & Zavodny, 2007). Finally, it is important to note that policies sometimes emerge without any explicit decision but simply by failure to act (Dunn, 1981; Lindblom, 1995; Lindblom & Woodhouse, 1993). Therefore, examining the types of data that are not publicized is important when comparing open data policies (Jaeger, 2007). Table 2 shows the policy input elements that were mentioned in the literature and that were therefore considered in our open data policy comparison framework.

Table 2: Policy content elements for an open data policy comparison framework, derived from the literature.

Framework element	Literature
Overall strategies and programs, guidelines, general recommendations, relationship of the access program to overall organizational mission, policy target (objectives), key policy measures	Huijboom & Van den Broek (2011), Dawes et al. (2004), Eskelinen et al. (2008)
Growth towards interoperability, development and use of (open) standards, data in a reusable, machine-readable form including linked data forms	Rothenberg (2012), Public Sector Transparency Board (2012), Huijboom & Van den Broek (2011), Rothenberg (2012)
Confidentiality and sensitivity of content, risk of misinterpretation, misrepresentation and misuse, security and privacy	Rothenberg (2012), Dawes, Pardo & Cresswell (2004), Open Government Directive (Obama, 2012), Jaeger et al. (2012)
Quality, reliability and validity of data, timely, recent and highly detailed data	Harrison et al. (2011), Rothenberg (2012), Public Sector Transparency Board (2012)
Licensing and intellectual property	Rothenberg (2012), Jaeger, Bertot & Shilton (2012)
Extent of data analysis or other manipulation conducted by the access provider	Dawes et al. (2004)
Suitability of existing technology	Dawes et al. (2004)
Frame of reference needed to interpret and use content, provision and status of metadata (data about the data, supporting descriptions of the format provenance and meaning of the data)	Dawes, Pardo & Cresswell (2004), Jeffery (2000), Zuiderwijk et al. (2012), Public Sector Transparency Board (2012), Dawes, Pardo & Cresswell (2004)
Successful usage and discussion of open data, characteristics of users, predictability of uses, discussion between data suppliers and users	Rothenberg (2012), Dawes, Pardo & Cresswell (2004), Dawes et al. (2004)
Ease of access to technology (e.g., the technical support for the use of publicized data)	Gibbs et al. (2003), Ono & Zavodny (2007)
Non-accessible data	Jaeger (2007)
Information-centricity; the presentation of open data in a way that is most useful for the consumer of that information, easy to find through a single, easy-to use online access point	Open Government Directive (Obama, 2012), Public Sector Transparency Board (2012), Huijboom & Van den Broek (2011)
Standard formats with the same definitions, uniformity of information sources, degree of integration among information sources, consistency within and across agencies in how we create and deliver open data	Open Government Directive (Obama, 2012), Public Sector Transparency Board (2012), Dawes, Pardo & Cresswell (2004)
Customer/user-centricity; allowing customers to shape, share and consume information, whenever and however they want it	Open Government Directive (Obama, 2012), Public Sector Transparency Board (2012)
An open license which enables free reuse, including commercial reuse, freely available to use data in any lawful way, available without application or registration and without requiring user details	Public Sector Transparency Board (2012)
Policy measures and instruments (communicative policy)	De Bruijn et al. (2002)

instruments, incentives, multilateral instruments that are agreed upon)	
Dissemination (e.g. conferences, workshops, competitions, app contests), government promotion initiatives, active encouragement of data reuse, succesful promotion of open data	Huijboom & Van den Broek (2011), Gibbs et al. (2003), Public Sector Transparency Board (2012), Rothenberg (2012)

In addition to the literature about open data policies, high-level strategic open data frameworks provided elements for our open data policy comparison. Two relevant initiatives are the Open Government Directive and the Public Data Principles. The Open Government Directive presents four principles on which the strategy of the Obama administration is founded (Obama, 2012). The Public Sector Transparency Board (2012), which was set up by the Prime Minister of the United Kingdom, developed a list of Public Data Principles that can be useful in comparing open data policies. Finally, De Bruijn, In 't Veld & Ten Heuvelhof (2002) stated that each policy analysis should pay attention to five types of policy measures (see Table 2).

3.2.3 Policy evaluation: Performance indicators

Policies focus on contributions to society, and these can be evaluated using performance indicators. At the moment, suitable evaluative indicators for the assessment of the successfulness of open data policies are lacking. Performance indicators often concentrate on the input of policies, such as the number of datasets that are publicly available (Bertot, McDermott, & Smith, 2012). Less attention has been given to the underlying original intent, or goals, of open data policies, such as the implementation and impact of a policy, the reaction to a policy (Relyea, 2008) and consumer needs (Gibbs, et al., 2003). Furthermore, little attention has been given to the way that the effects of an open data policy can create public value to solve societal problems (see Section 3.2.4).

A number of framework elements can be used to indicate the performance of an open data policy. With regard to performance indicators for open data policies, Huijboom & Van den Broek (2011) point to the importance of drivers of and barriers to open data policies. Important drivers are the benefits of publicizing data, and significant barriers are its risks. In addition, many studies show the importance of user centricity and the usefulness (Dawes, 2010; Dawes, et al., 2004; T. Harrison, et al., 2011; Public_Sector_Transparency_Board, 2012). Therefore, we believe it is important that open data policies pay attention to insight into the usefulness and value of the data. This can be done, for instance, by examining the intended effects of open data policies, the needs of open data users and the ways that data are reused.

3.2.4 Policy evaluation: Realizing public values

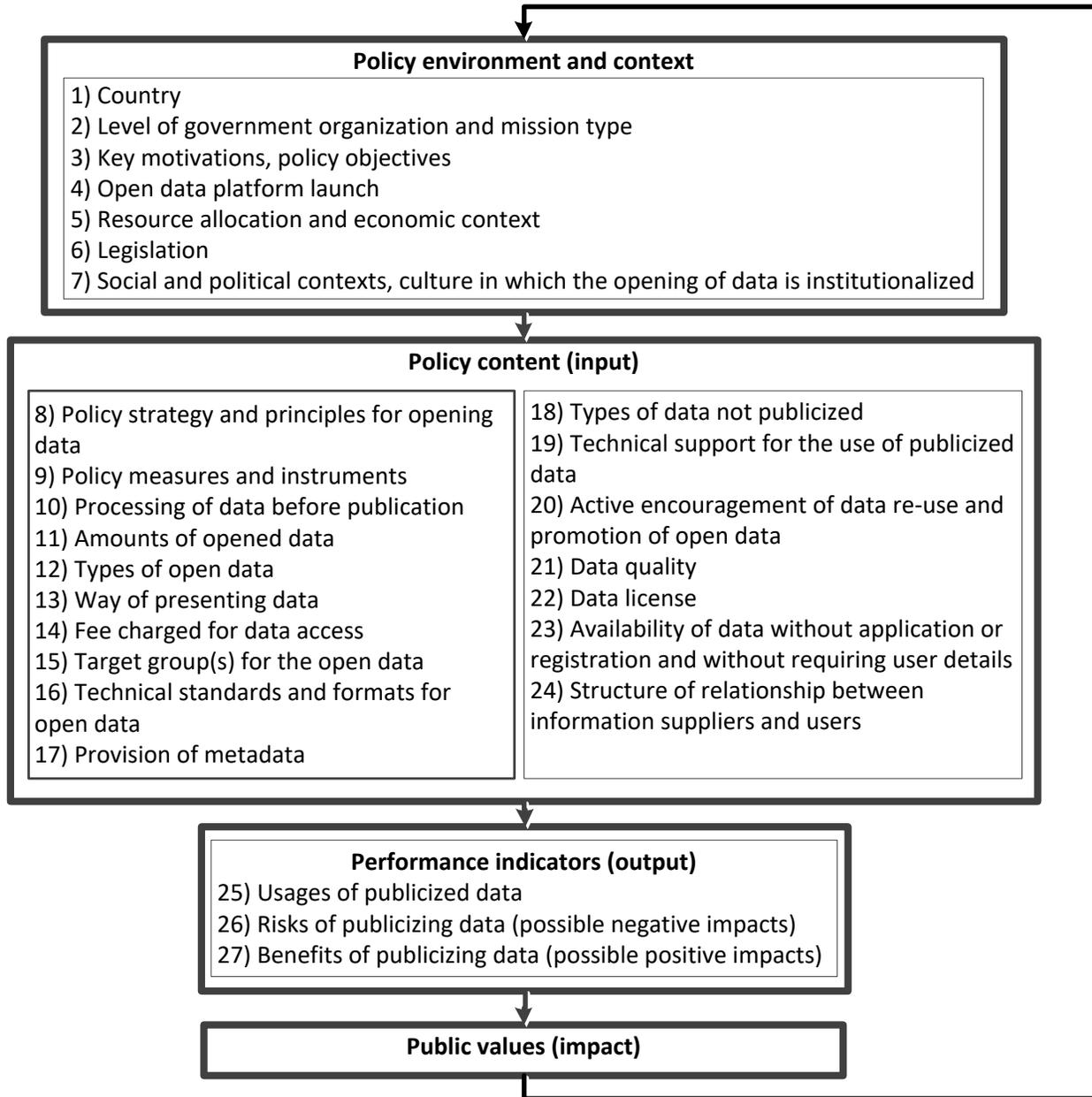
Policies should contribute to the realization of public values. According to Harrison et al. (2012), “public value [...] is the product of governmentally-produced benefits” (p. 90) and is derived from the direct usefulness of such benefits and the fairness and equitability of their production and distribution. Harrison et al. (2012) identify seven types of impacts, namely financial, political, social, strategic, quality of life, ideological and stewardship. Nevertheless, the measurement of policy impact is very complicated, and it is only possible to measure policy impact over time. As the field of open data is relatively new and many open data policies have been developed only recently, they likely have not yet generated any impact. In light of this, it was decided to focus mainly on the other parts of the open data comparison framework and less on the created public value. In future research we recommend to tackle this aspect.

3.3 Comparative framework

The literature that was described in the previous sections suggests the use of a number of elements for the initial framework for comparing open data policies. In our comparison framework, we only use those identified elements that are relevant for an open data policy comparison at different government levels. Some elements were summarized as one category, such as the category “policy strategy and principles for opening data”, which includes guidelines, programs and strategies. The interviews were used to extend the initial framework and showed the relevance of adding three more policy content elements to the initial framework, namely the amount of open data, the types of open data and the fee charged for data access.

The final framework for the open data policy comparison is shown in Figure 2. The goal of the framework is to be able to evaluate open data policies. At the top of Figure 2, environmental and contextual elements of the policy are shown. The contextual elements influence the policy elements, including the policy type and the policy content. Policy (input for realizing societal values) can be defined as the issues covered by the current open data policies. The combination of aspects that are part of the input of the open data process is expected to aim for a certain output. The policy output can be measured by performance indicators. Performance indicators could show which public value is created and the impact on society, such as the creation of transparency and economic benefits. As policies are in a constant flux, the framework can be viewed as a kind of policy-making cycle in which the created public values will influence the environment, context and policies. Therefore, an arrow is drawn from the bottom to the top of the figure.

Figure 1: A framework for comparing open data policies at different government levels.



4. COMPARING THE POLICIES: RESULTS AND DISCUSSION

In the following section, the results of the open data policy comparison are discussed. First, contextual information is provided to help explain why open data policies might or might not work in a certain context (Section 4.1). Second, the environment and context of open data

policies are compared (Section 4.2). Third, Section 4.3 compares the types of open data policies and their content.

4.1 Contextual information

To be able to interpret the results in an appropriate way, this section gives contextual information with regard to the Dutch government structure (Section 4.1.1), culture (Section 4.1.2), the development of the Dutch national open data policy (Section 4.1.3) and the organizations that are investigated to compare their open data policies (Section 4.1.4).

4.1.1 Dutch government structure

The Netherlands is a decentralized unitary constitutional state based on a parliamentary democracy (Pollitt & Bouckaert, 2004). Policy-making is consensus-based and is informed by many advisory councils representing a variety of stakeholders, such as career civil servants, external consultants and scientists. According to Pollitt and Bouckaert (2004), “Dutch ministries are relatively open organizations” (p. 271), influenced by the Dutch system that allows for consultative and advisory councils. The government is elected and, in addition, there is a head of state (the king or queen). There are three tiers of government: central, provincial and municipal. The current Dutch central government consists of eleven ministries (Overheid.nl, 2013). With regard to policy making at the central government level, “the ministers and civil servants formulate policy, prepare legislation and regulations, and are also responsible for coordination, supervision and policy implementation” (Government_of_the_Netherlands, 2013d, <http://www.government.nl/ministries/bzk>). The ministers are jointly responsible for the government policy.

4.1.2 Dutch culture

The Dutch culture is characterized by decentralized power, people being independent, hierarchy being used only for convenience, people having equal rights and superiors being easily accessible (Hofstede, 2001). Dutch society is individualistic, which means that there is a strong preference for a loosely-knit social framework in which individuals are only expected to take care of themselves and their immediate families. The Netherlands is viewed as a ‘feminine’ society, meaning that it places importance on maintaining a good balance between life and work and that it finds that managers should support their employees and/or teammates and make decisions by involving them and striving for consensus and negotiation. Equality, solidarity and quality in working lives are valued. The Netherlands exhibits a preference for avoiding uncertainty by defining rules. Finally, the Dutch culture is oriented towards the short term, which is apparent for instance in the desire to achieve quick results. These national characteristics should be taken into account when comparing our findings on Dutch open data policies with open data policies in other countries (Hofstede, 2001).

4.1.3 Development of Dutch national open data policy

In 1980, the Dutch Freedom of Information Act (Wet Openbaarheid van Bestuur; WOB) was implemented. This act regulates the openness of public administration and states that requests for information related to administrative matters and held in documents by public organizations or companies carrying out work for public organizations must be honored for any citizen. Open government data is viewed as a type of government information and, therefore, the WOB forms the framework for the reuse of open government data (Tweede_Kamer, 2011). In 2003 the

Directive of the European Parliament and the Council of the European Union on the reuse of public sector information was released. This directive provides guidelines for ways in which member states of the European Union need to arrange the reuse of government information. The European directive was implemented in the WOB in 2006.

Subsequently, a number of letters were sent to the Dutch Lower Chamber in which several ministers emphasized the importance of an open government and open governmental data (Tweede_Kamer_1998-1999, 1998; Tweede_Kamer_1999-2000, 2000; Tweede_Kamer_2010-2011, 2011; Verhagen, 2011). For instance, in a letter that was sent to the Dutch lower chamber in 2011 it was written that in addition to this basis for opening up governmental data from WOB-requests, each public body should open up as much data about the preparation and execution of policy-making as possible, in an accessible and understandable way (Tweede_Kamer, 2011). Thus, whereas the initial WOB mainly referred to passive information provision, the current open data policy refers to the active publication of government information.

4.1.4 Investigated organizations

Table 3 shows an overview of the organizations that were investigated for this research, the level of government at which they operate, their phase of development and their distinguishing characteristics. The table shows that the policies of seven organizations were chosen for the comparison, namely the Dutch national, four ministerial and two lower level policies. We wish to emphasize that when we refer to a lower level of government, we mean a lower level within the national bureaucracy rather than a more local level of government such as the municipal level.

Table 3: Overview of investigated organizations included in the open data policy comparison.

Government level	Investigated organization	Main responsibilities	Phase of development of open data policy	Distinguishing characteristics
National	Not applicable	Not applicable	Under development	Defined within the framework of the European Commission, expected to provide guidance for policies at ministerial and lower governmental levels
Ministerial	Ministry of Education, Culture and Science (ECS)	Ensuring that all citizens receive a good education, are prepared for personal independence and responsibility, and have the opportunity to experience and enjoy culture. Ensuring that teachers, artists and scientists are able to carry out their work. (Government_of_the_Netherlands, 2013a)	Policies were defined and implemented	Active in publicizing public education data
	Ministry of Security and Justice (SJ)	Maintaining the rule of law in the Netherlands, so that people can live together in freedom, regardless of their lifestyle or views; working towards a safer, more just society by giving people legal protection and, where necessary, intervening in their lives (Government_of_the_Netherlands, 2013c)	Under development	Expected that data of this Ministry is difficult to publicize for security and privacy reasons
	Ministry of the Interior and Kingdom Relations (IKR)	Democracy and the rule of law; public administration; the quality of personnel and management within central government; the Dutch constitution and the system of constitutional government; the partnership with Curacao, St. Maarten and Aruba; public housing and government buildings; integration policy (Government_of_the_Netherlands, 2013d)	Under development	Largely responsible for developing a national open data policy, in charge of the development of the national Dutch open data portal (Rijksoverheid, 2011, http://data.overheid.nl)
	Ministry of Infrastructure and the Environment (IE)	Improving quality of life, access and mobility in a clean, safe and sustainable environment; creating an efficient network of roads, railways, waterways and airways; providing effective water management to protect against flooding, and realizing improved air and water quality (Government_of_the_Netherlands, 2013b)	Policies were defined and implemented, active in publicizing public data	Radical example, as it was announced that all data of this Ministry will be made public by January 2015, unless there are significant barriers. Some of its open data is already used, resulting in innovative services
Lower level of bureaucracy	Dienst Uitvoering Onderwijs [education implementation]	Executing education laws and regulations under the authority of the Ministry of ECS; supporting municipalities in the execution of the law for integration under the authority of the Ministry of IKR (Dienst_Uitvoering_Onderwijs, 2013)	Policies were defined and implemented, active in publicizing public	Administrative implementation, organization of the Ministry of ECS in the area of education

	organization] (DUO)		education data	
	Research and Documenta- tion Center (WODC)	Making a professional contribution to the development and evaluation of justice policy set by the Dutch Ministry of SJ (Research_and_Documentation_Centre, 2013)	Policies were defined and implemented	Strategic criminal justice knowledge center of the Ministry of SJ, one of the largest data collection organizations belonging to this Ministry

The decision to examine these seven organizations was based on several factors. First, as we wanted to compare different policies within the government as a whole, open data policies were examined at several levels of the Dutch government. When possible, we selected organizations at different levels and operating in similar governmental pillars, the intention being to gain insight into the factors that affect the variation of open data policies. However, we did not always have access to the data of these organizations. For this reason, no lower-level organizations of the Ministry of the Interior and Kingdom Relations (IKR) and the Ministry of Infrastructure and the Environment (IE) were examined. Second, by investigating multiple cases we expected that insight into the factors affecting the variation in open data policies could be gained. Third, the decision to examine these seven organizations was based on their willingness to participate in this research.

We acknowledge that the comparative analysis of organizations operating in the same government pillar has certain implications. The organizations that operate at a lower level of a bureaucracy must typically comply with the policies that are set at a higher level. All policies investigated in this paper are derived from the European directive on the reuse of public sector information (European_Commission, 2003). The European directive provides guidelines for the development of national open data policies, which in turn influence open data policies on a lower level of bureaucracy. For instance, the policy of the DUO is required to function in line with and comply with the policy of the Ministry of ECS, because the DUO is an implementation

organization of the Ministry of ECS. The ministerial open data policies need to be aligned with and comply with the national open data policy, which needs to comply with the European open data policy. For this reason, it is expected that similarities between organizations operating in the same government pillar will be found.

Yet organizations operating at a lower level in the same government pillar can still be different. Policies relate to the intended outcomes and try to refrain from including *how* these outcomes are realized (Gong & Janssen, 2012), although in practice this subject is often addressed to some degree in order to provide an idea about the resources and budget necessary for implementation. Policies are usually relatively broad and leave leeway for implementation. The latter enables organizations to implement the policies in an efficient and effective manner given their situation and path dependencies. As the operating context of lower-level organizations differs, their tasks, processes and systems typically differ as well. Hence, differences and similarities between the open data policies can be expected at the various levels of government and within the different government pillars.

4.2 Comparing the policy environments and contexts

The previous section showed the importance of taking into account the open data policy environment and context while comparing open data policies. Table 4 provides an overview of the most important environmental and contextual variables for the seven examined government organizations.

Table 4: Overview of characteristics of open data policy environments and context (in March 2013).

Aspects of open data policies	National	ECS	IKR	SJ	IE	DUO	WODC
1. Country	The Netherlands	The Netherlands	The Netherlands	The Netherlands	The Netherlands	The Netherlands	The Netherlands
2. Level of organization and mission type	National (regulatory)	Ministerial (administration department, regulatory)	Ministerial (administration department, regulatory)	Ministerial (administration department, regulatory)	Ministerial (administration department, regulatory)	Lower (implementation, social services)	Lower (strategy, research)
3. Key motivations, policy objectives	Filling a need for data (including efficiency), economic gain, participation and control by citizens	Innovation by linking data, users can base choices on data, improvement of data quality, decrease in workload	Transparency, participation of citizens, economical value, efficient and effective working processes, filling a need	Transparency, participation of citizens, in the future: decrease of workload (less costs, faster provision of information)	Economic growth, innovation, transparency, citizens and organizations can base choices on data	Innovation by linking data, users can base choices on data, improvement of data quality, decrease in workload	Possibility for users to perform new research with the same data (reuse), transfer of knowledge, transparency
4. Open data platform launch	2011	2011 (with DUO)	No own platform	No own platform	No own platform	2011 (with ECS)	No own platform
5. Legislation	Generic policy and data protection law (WOB and WBP), letters to Lower Chamber	Generic policy and data protection law (WOB and WBP)	Generic policy and data protection law (WOB and WBP)	Generic policy and data protection law (WOB and WBP)	Generic policy and data protection law (WOB and WBP)	Generic policy and data protection law (WOB and WBP)	Generic policy and data protection law (WOB and WBP)
6. Resource allocation and economic context	Policy financed by general IKR budget	Policy financed by general ECS budget	Policy financed by general IKR budget	<i>Information not provided</i>	Policy financed by IE budget	Policy financed by contracts, tasks and orders from ESC (official client)	Policy financed by general WODC budget
7. Social and political context & culture	EU strategy forces development and implementation of national open data policy, letters to Second Chamber	Need for policy confirmed by ministerial management team and secretary	Need for policy determined by minister, letter to Second Chamber	<i>Information not provided</i>	Need for policy determined by minister	Need for policy confirmed by ministerial management team and secretary, might solve capacity problems	Knowledge dissemination is a main task, need for policy confirmed by management team

From Table 4 it becomes clear that mission types, key motivations, the date of that platform's launch, and the social and political context and culture vary to a large extent, which influences the organization's attitude towards the development of an open data policy. The only similarity between the open data policies concerns the legislation. Some organizations are truly motivated to become more open by creating an open data policy, whereas others seem to view the creation of an open data policy more as an obligation and are mainly focused on the risks of publicizing their data. Although open data policies often do not incorporate the culture as an important factor in achieving public value, some organizations already seem to have a culture in which the publication of data is institutionalized as part of the daily procedures and routines, such as the Ministry of ECS and DUO.

In interpreting the results from this table, it is important to note that the compared organizations operate at different government levels. The organizations operating at a ministerial level usually delegate many of their executive tasks to organizations that operate at a lower level of bureaucracy and focus their open data policy on the data of these executive organizations. This is done because these organizations have most data and these data appear to be most interesting. On a ministerial level, data is often consumed but not produced. Therefore, it might appear as if the ministerial organizations do not have an advanced open data policy, but in fact they are simply more focused on the open data policies of their executive organizations.

Moreover, the attitude towards openness influences the open data policy, as organizations that develop an open data policy but mainly focus on the risks of becoming open remain more closed in their open data policy than the organizations that develop an open data policy because they *aim* to become more open. This attitude towards openness is influenced by multiple pressures

that government organizations have to deal with, such as those coming from data protection legislation, legal liability laws, politicians, other governmental organizations, public sector information policies and the need for ensuring compliance to these sometimes conflicting demands.

The interviews confirmed that government organizations have to deal with multiple pressures when publicizing their data. One type of pressure that was found stems from the risks of publicizing data. For example, one risk stemming from legislation is privacy violation. Users of open data should not be able to identify persons by using a dataset. Therefore, government organizations are not allowed to publicize privacy-violating data. In addition, some of the examined organizations identified the risk of misuse or wrongful interpretation of their data, which can lead to damage to the reputation of the organization that publicized the data and to decreased trust in the data publisher. Another example of an identified risk is market disturbance, as some organizations are currently selling data and would need to change their funding models if they were to publicize data for free (M. Janssen, Charalabidis, & Zuiderwijk, 2012). The risks of publicizing data are different among organizations, which could partly explain why there are differences in open data policies.

Additionally, much emphasis is currently placed on the enforcement of European and national directives and legislation and on the publication of data. Less emphasis is placed on *how* this publication should create impact and public values. As there are no clear guidelines for how to implement the open data policies, this may lead to less attention for becoming truly open and more of a focus on the risks and the obligation to create an open data policy. An example which serves to illustrate the emphasis on directives and legislation is provided by one of the interviews, in which the interviewee focused mainly on the development of European directives

and the way that this influenced the open data policy of the organization for which this interviewee worked. The interviewee was less focused on the content of the open data policy, the way that it should be implemented and the impact that it is intended to create.

Furthermore, social and political pressure can influence an organization's willingness to become truly open. For instance, political power in the form of a minister who embraces and stimulates open data places more pressure on the organization to develop an appropriate open data policy and to implement it. This political pressure also makes it easier to emphasize an open data policy within an organization and make all actors participate. In some policies, attention is paid to the organizational context, which is an important requirement for achieving a change in culture. For example, during one of the interviews it was stated that the minister who was responsible for the organization held speeches and made promises about the future open data policy, which put pressure on the government organization to make sure that these promises would be able to be fulfilled in the future.

Finally, another important contextual and cultural aspect is the existence of entrepreneurs (Guldbrandsson & Fossum, 2009; Perritt, 1997): “advocates who are willing to invest their resources – time, energy, reputation, money – to promote a position in return for anticipated future gain in the form of material, purposive, or solitary benefits” (Kingdon, 1995, p. 179). All examined organizations that have developed a more comprehensive open data policy seem to have at least one person who could be called an entrepreneur. The entrepreneur tries to convince colleagues within the organization to collaborate in the development of the organization's open data policy.

4.3 Comparing the open data policies

Table 5 provides an overview of the characteristics of the examined open data policies.

Table 5: Overview of characteristics of open data policies (input) (in March 2013).

Aspects of open data policies	National	ECS	IKR	SJ	IE	DUO	WODC
8. Policy strategy, principles for opening data	Principles under development	Data is made public unless there are significant barriers	Principles under development	Principles under development	Principles under development (to be completed by 2015)	Data is made public unless there are significant barriers	Data is open for certain users unless there are significant barriers
9a. Communicative instruments about policy	Website, letters to Lower Chamber, ministerial speeches, Open Data network	Website, Twitter, Facebook, newsletter under development	Website, Open Data network	Collaboration platform, presentations, discussion	Website, press reports, ministerial speeches, Open Data network	Website, Twitter, Facebook, newsletter under development	Website, communication via archiving organization
9b. Metrics, e.g. indicators for output steering	None	No indicators, too complicated to define them	None	None	None	No indicators, too complicated to define them	Internal performance indicators
9c. Fines and rewards	None	None	None	None	'Comply or explain' policy	None	None
9d. Multilateral instruments (e.g. contracts)	Regulation (policy proposed by minister)	Regulation (policy agreed on by management team)	None	None	Regulation (policy agreed on by management team)	Regulation (policy agreed on by management team)	Regulation (policy agreed on by management team), contract
10. Processing of data before publication	Data is stripped of personal details	Data is stripped of personal details, aggregated to organization level, quality is controlled	Data is stripped of personal details	Data is stripped of personal details	Data is stripped of personal details, some metadata is added (more for geo-data)	Data are stripped of personal details, aggregated to organization level, quality is controlled	Data is often stripped of personal details, checked in terms of quality, validity, anonymity, reliability, completeness, representativeness and documentation
11. Amounts of opened data	5193 datasets	20 datasets on national open data portal, 153 on	Few datasets opened by ministry, some	None, more opened by organizations that	2 datasets in the national geo data portal, more	20 datasets on national open data portal, 153 on	21 datasets via DANS portal

		data.duo.nl (together with DUO)	opened by organizations that work for ministry	work for ministry	opened by organizations that work for ministry	data.duo.nl (together with ECS)	
12. Types of open data	Very diverse	Mainly education management and related aspects (usually not education content)	Mainly laws, permits, regulations, public administration and related aspects	Mainly justice, crime, crime victims, safety, security, lawsuits and wills	Mainly geographic data, vehicle and land registrations, (public) transport, traffic, weather, environment	Mainly education management and related aspects (usually not education content)	Mainly crime, crime victims, deviant behavior, safety and the maintenance of law and order
13. Way of presenting data	Barely user need driven	Barely user need driven	Barely user need driven	Not applicable	Little user need driven	Barely user need driven	Barely user need driven
14. Fee charged for data access	Free (or marginal costs at most)	Free	Free	Free	Free, payment for extra services	Free	Free
15. Target group(s) for the open data	Everyone	Everyone, focus on citizens, governments, companies	Everyone	Everyone, focus on citizens, researchers, partners	Everyone	Everyone, focus on citizens, governments, companies	Everyone, focus on scientists
16. Technical standards and formats for open data	Mainly standard formats, open and closed formats	Mainly standard formats, open and closed, usually CSV and XLS	Mainly standard formats	No formats defined, but in practice mainly PDF and XML	Mainly standard formats, preferably open (other formats to be explained)	Mainly standard formats, open and closed, usually CSV and XLS	Mainly standard formats (e.g. CSV, XLS, PDF, DOC, SPSS, SAS)
17. Provision of metadata	Limited descriptive, contextual and detailed metadata	Descriptive, contextual and detailed metadata	Some descriptive metadata	Unknown	Some descriptive, contextual and detailed metadata (more for geo-data)	Descriptive, contextual and detailed metadata	Some descriptive, contextual and detailed metadata
18. Types of data not publicized	Unknown	Privacy-violating, sensitive to misuse, problematic regarding the ICT-infrastructure, cultural and scientific data	Privacy-sensitive, or that which does not fit in the framework of the generic policy law (WOB)	Privacy-violating and many other data types	Data that violates privacy, data concerning internal operations (e.g. finance) and non-structured data (e.g. memos)	Privacy-violating, sensitive to misuse, problematic regarding the ICT-infrastructure, cultural and scientific data	Privacy-violating, incomplete, policy confidential, lacking metadata, unclear, invalid, unreliable, owned by another party, sensitive to misuse
19. Technical	Some technical	Some technical	Little support	Unknown	Little support	Some technical	Some technical

support for the use of publicized data	support (e.g. via e-mail)	support (e.g. website, e-mail, social media)				support (e.g. website, e-mail, social media)	support (e.g. via e-mail)
20. Encouragement of data use, promotion	Some encouragement (e.g. social media and app contests)	Used to encourage data use actively, now less encouraging	Some encouragement (e.g. social media and app contests)	<i>Information not provided</i>	Some encouragement	Used to encourage data use actively (with ESC), now less encouraging	Little encouragement
21. Data quality	Unclear (not measured)	Unclear (not measured)	Unclear (not measured)	<i>Information not provided</i>	Unclear (not measured)	Unclear (not measured)	According to scientific standards (but not measured)
22. Data license	7 different types (mainly “public domain”)	1 type (mention source, metadata, status, definitions, reference date)	None	Not applicable	Unclear	1 type (refer to source, metadata, status, definitions, reference date)	1 type (refer to source, name, title, date, persistent identifier, archiving organizations)
23. Data available without registration	Yes	Yes	Yes	Not applicable	Yes	Yes	In part
24. Relationship data provider - user	Limited feedback loop	Limited feedback loop	Limited feedback loop	Limited feedback loop	Limited feedback loop	Limited feedback loop	Limited feedback loop

In the following sections we elaborate on the main findings of the policy comparison.

4.3.1 Lack of systematic collaboration

During the interviews, most interviewees showed that they knew which other civil servants were working on open data policies in the other government organizations, especially at the ministerial level. In addition, the Ministry of ECS and its implementation organization DUO appeared to collaborate intensively, as they have a relationship of client and executor. In addition, there was overlap between the policy of the Ministry of IKR and the national open data policy, which may also be caused by administrative relations, as the Ministry of IKR is partly responsible for developing a national open data policy. Furthermore, handling similar types of data makes it easier to collaborate in developing policies. For example, the Ministry of ECS and DUO are both mainly concerned with education data, which enables them to focus their policies specifically on this data. Another example of collaboration between government organizations with regard to open data policies is the Ministry of IE, which stated that it tries to use as much information as possible about other ministerial open data policies as input for its own open data policy. Finally, some other initiatives for collaboration between ministries have been developed, such as the foundation of the Open Data Innovation Network.

Except for these initiatives, the collaboration in the development of open data policies between government organizations does not seem to be systematically organized. Perhaps as a consequence, the compared open data policies differ greatly. With regard to the various aspects of the comparison framework, differences between the compared policies were found for almost every aspect, whereas few similarities were found. In general, the comparison showed that differences exist not only between open data policies on different government levels, but also

between the open data policies of organizations operating at the same governmental level. For instance, surprisingly, very little collaboration was found in the development of open data policies between the Ministry of SJ and the WODC. We expected to find more collaboration between these two organizations, as they are both part of the Ministry of SJ.

A reason for this lack of collaboration might be that organizations operating at different governmental levels have different responsibilities and own different types of data. For instance, interviewees at the WODC stated that their organization has a very specific focus and as such its policy is likely to deviate from the policy of the ministry, which is responsible for a broader set of data. Other reasons could be the differences between organizations with regard to mission types, motivations behind developing policies, and policy objectives. For example, the WODC is a governmental research center and one of its main tasks is to disseminate knowledge, whereas the Ministry of SJ is a regulatory administration department, focused mainly on transparency, participation of citizens and a decrease in workload. But although there may be reasons for differences between open data policies, we believe that some aspects of the open data policy are generic (e.g. policy measures and instruments, technical standards and formats for open data and a fee charged for data access) and could even be similar for organizations working with different types of data.

4.3.2 Jumping on the bandwagon

DiMaggio and Powell (1983) state that less powerful, dependent organizations can face pressure from powerful organizations such as those that report directly to legal and political bodies. They refer to this pressure as ‘coercive isomorphism’. In addition, they state that other types of isomorphism may take place, namely the tendency of an organization to mimic other

organizations (mimetic isomorphism) and the pressures arising from the professionalism attached to formal education and professional networks and associations (normative isomorphism) (DiMaggio & Powell, 1983). These forces shape, but do not direct or determine, what an organization might do. The danger of indiscriminately mimicking the open data policies of other organizations is that this might result in neglecting to take into account the differences in environment in which the organizations are operating. For this reason, it is important to consider the broader contexts of open data policies, as these may differ. For instance, one organization might produce a type of non-privacy violating data that can easily be opened, whereas the data of another organization cannot easily be opened.

Although the investigated organizations do not collaborate much, the mimetic isomorphism that DiMaggio and Powell (1983) refer to was seen to some extent during the interviews. Mimetic isomorphism was found, as public organizations have a tendency to open their data on similar types of websites in similar ways. Moreover, many organizations made similar plans for updating their open data policies. For instance, the Ministry of IE stated that it plans to work on indicators to evaluate its policy and that it wants to open a certain number of datasets in January 2015, and the Ministry of IKR stated that principles for its open data policy are being developed. All organizations have made plans for extending their policies.

According to DiMaggio and Powell (1983) organizations in uncertain environments are especially prone to mimicking those organizations that they see as successful. For example, the national open data website (data.overheid.nl) is designed in a way that is similar to that of the open data website of some other government organizations, such as the DUO (see data.duo.nl). The open data platform of the DUO is considered to be successful. Mimicking the behavior of other, more successful organizations is stimulated by the pressure to have an open data policy

implemented within a short time frame. Mimetic behavior was stimulated due to the knowledge sharing of experiences and best practices, for instance by presenting the same examples during training activities, workshops and conferences. This was reinforced by the few people of the organization in charge of stimulating the development of open data policies, as their primary focus was on filling the portals with open data and not on stimulating its use. This is mainly apparent through the fact that the national open data portal was designed without much consideration for user needs (Zuiderwijk et al., 2012). According to Dawes and Helbig (2010), open data policies and practices need to be aligned with the needs of secondary users if they are to generate value for society. In general, Table 5 shows that the examined open data policies are hardly driven by user needs. In addition, very little effort has been made to stimulate citizen use of open data.

4.4 Comparing the performance indicators of open data policies

Table 6 provides an overview of the performance indicators of the examined open data policies.

Table 6: Overview of the performance indicators of open data policies (in March 2013).

Aspects of open data policies	National	ECS	IKR	SJ	IE	DUO	WODC
26. Usages of publicized data	Some insight is gained	Many examples of use by different users; mainly linking statistical data to other data	Little insight is gained	Some insight is gained through the logging of applications	Little insight is gained	Many examples of use by different users; mainly linking statistical data to other data	Some insight is gained (e.g. number of datasets downloaded)
27. Risks of publicizing data (possible negative impacts)	Less use because of license impediments, less income and market disturbance for companies currently buying data, not enough data opened for successful reuse	Direct or indirect identification of research subjects, less confidence in data producer, lack of knowledge about validity of reused data	Uncertainty about the civil liability	Misuse or wrong interpretation of data	Less income, market disturbance for companies currently buying data, misuse of data, damage of reputation, uncertainty about civil liability (trials going on)	Direct or indirect identification of research subjects (privacy violation), less confidence in data producer, lack of knowledge about validity of reused data	Direct or indirect identification of research subjects, misuse or wrong interpretation of data, damage of reputation, uncertainty about the civil liability, less confidence in data producer
28. Benefits of publicizing data (possible positive impacts)	Some research on effects has been conducted	Some research on effects has been conducted	Some research on effects has been conducted on business models	None	No research on effects, plans to perform research in the future	Some research on effects has been conducted	None

Table 5 already showed that the ambitions of the examined organizations with regard to their open data policies are high. An example of these ambitions is that they aim to create public values, such as transparency, economic growth and innovation. Yet there seems to be a large gap between the key objectives of the open data policies which reflect the ambitions of politicians, on the one hand, and, on the other hand, the realities of public servants working for the government organizations. An interview revealed that the work of public servants seems to be largely dominated by the focus on the publicizing process and the associated challenges, such as privacy protection, confidentiality, data misuse and misinterpretation, embargo periods, data quality, data completeness and many other concerns. Public servants are content when the challenges are dealt with and the data is actually publicized. Table 6 shows that they are less concerned with the way in which this data will or can actually be used, the impact that it may have or the public value that it might create. In the interviews, we did not find any advanced mechanisms for monitoring data use or mechanisms for discovering whether this can result in improvements of policies and decision-making processes.

None of the examined governmental organizations have performed thorough effect research. It is striking that most policies are internally focused, dealing with internal challenges and paying very little attention to the possible users who are needed to generate the intended impact. Most of the policies examined focus on the organizations themselves, answering the question of how they should change in order to be able to publicize their data. The open data policies contain hardly any information about the organizations' performance. Some governmental organizations have worked out many aspects related to the content of open data policies, but they have not performed any research on the positive and negative effects resulting

from their policies. A cause could be that open data policies is a relatively new field in which a shift from inward to outward looking needs to be accomplished during the coming years.

In contrast, the objectives of the open data policies and of politicians are the stimulation of transparency, economic growth, citizen participation and other benefits, and they aim to move public value to the foreground of the public discourse (European_Commission, 2010). Politicians are focused on publicizing data indiscriminately, but they are hardly involved in looking for ways to improve open data policy-making and how to deal with the risks of open data, such as direct or indirect privacy violation, legal liability, and the misuse and misinterpretation of data. A large gap exists between the key objectives of the open data policies which reflect the ambitions of politicians on the one hand, and, on the other hand, the realities of public servants working for government organizations. The high-level policies give limited guidelines for public servants, whereas guidelines are needed to support their decision-making processes on whether or not to release data. This gap is not surprising, as politicians are the ones promoting open data whereas public servants are in charge of the actual publication process and experience first-hand that publication might be more difficult than initially advocated to be.

5. RECOMMENDATIONS FOR IMPROVING OPEN DATA POLICIES

The differences and similarities that were found between the open data policies offer opportunities for learning from each other's policies. In the following sections we provide a number of recommendations by discussing several elements of the open data policies that affect the differences and similarities in open data policies and that provide possibilities for learning.

5.1 Collaboration: use the collective knowledge and resources

Even though government organizations should not indiscriminately copy each other's policies and features, as their operating context, tasks, processes and systems typically differ, there are huge opportunities for learning from each other. First, we believe that more systematic collaboration is helpful, as the organizations can learn from each other about the effectiveness of open data policies in certain environments and contexts. Government organizations have limited resources, and collaboration could help them to use their resources in a more effective way. Some elements of the examined open data policies that are very appropriate for collaboration are as follows:

- Principles. At least some of the principles could be similar. For example, each organization has to decide how it defines open data and where it publishes its data. Therefore, collaboration could be useful in the development of overlapping principles.
- Communicative instruments. Many differences were found in the use of communicative instruments. Some of them may be more useful and effective than others.
- Performance metrics. Several examined government organizations have worked or are still working on the development of performance indicators and mention that this is a very complicated activity. By collaborating they might be able to develop metrics which would be comparable among government organizations.
- Fines, rewards and multilateral instruments. Different organizations can learn about the effectiveness of fines, rewards and multilateral instruments in certain contexts and examine whether they might also be useful in the context of their open data policies.

- Processing data. The examined organizations process data in different ways before they publish them. The reasons for these differences should be discussed by the government organizations, as they may influence the impact of the open data policy.
- How to open data. Some government organizations are experienced and could teach less experienced organizations about how to open their data.
- The type of open data. Although different organizations own different types of data, there might be similarities in the ways that they determine which data is most relevant to make available to the public.
- Target groups. Different organizations aim to reach similar target groups. They could collaborate to see which strategies to reach target groups are most effective.
- Formats and metadata. Data-publishing organizations could provide data in different formats and with different types of metadata. Collaboration could help in identifying the most appropriate and effective formats and metadata.
- Policy- or privacy-sensitive data. Organizations could learn from each other about how to handle policy- and/or privacy- sensitive data and under what conditions they should publicize this data.
- The way that data can be reused and the type of support that is needed. All data-publishing organizations are interested in the reuse of their data and in what kind of support is needed for that.
- Promotion of open data use. Governmental organizations can collaborate in encouraging the use of data they publicized.
- Data quality. Because only little attention is paid to the complex task of measuring the quality of the data, organizations can try to develop measures together. Information about

the data quality is very important for potential users of open data to decide whether they will use the data.

- Data license. As different licenses are used by different organizations and even within organizations, the examined organizations can discuss the licenses and try to align them as much as possible or choose to use one specific license.
- Effects and performance indicators of open data policies. Organizations could collaborate to find out which effects their policies have and how they can be measured by using certain performance indicators. If research on effects shows that certain policy aspects in a certain context have a positive effect, other organizations could make use of this information.

This list shows that open data policies have many opportunities for collaboration while still fostering the diversity in context, goals, types of data and other aspects. By collaborating, less effort and lower fees are necessary to develop and improve open data policies. Collaboration should result in learning from each other so that government organizations can develop better policies and improve current policies.

5.2 Focus on impact and public values rather than input

According to the framework that we presented, the open data environment, context and policy should result in a policy impact and the realizations of public values. The investigated open data policies aim to achieve a large number of objectives, such as economic growth, innovation and the reuse of data. In the current situation the relationship between the policy elements and the contribution to the desired impact and public value is often unclear. However, it was found that

the developed open data policies have resulted in limited transformation of the government. Current open data efforts are driven largely by technology. Some examples that are often cited as anecdotal evidence of open data success are exceptions to this statement. Data-publishing organizations could learn by developing their open data policies from the viewpoint of what the impact and resulting public values should be and how the government should be transformed in order to be able to achieve this. From this viewpoint, they can argue what resources (e.g. money, persons, effort) are needed and how their organizations should be adapted to achieve these effects. For instance, changes in the publishing culture, working processes and technical systems might be necessary. This also requires the development of capabilities for securing privacy and the development of standards for publicizing data. Embracing open data implicates that systematically publicizing government data might be much more complicated than politicians assume it to be. Although effects of open data policies cannot always be predicted, concentrating on the desired effects of policies could help to develop and improve open data policies and to avoid the squandering of scarce resources.

5.3 Stimulate the use of open data and communicate successes

Many policies focus primarily on making data available. Stimulating the use of open data should be part of open data policies, as this is an important factor in creating the intended effects. Policies can include the principle that open data usage practices are shared and disseminated to show the policies' relevance and possible impacts. These practices should be used as motivational examples by distributing them within as well as outside the government. Distributing examples within an organization can help to overcome resistance against publicizing data and shows the possible positive impacts. Distributing examples outside the organization helps to stimulate the development of new practices. Additionally, the reuse of data could be

stimulated by organizing so-called ‘hackatons’ and other types of competitions. These can be organized by multiple agencies that combine forces. In this way, more data becomes available, more innovation becomes possible (combining data from multiple agencies), and costs and other scarce resources are shared. In the long run these competitions might not be necessary, but in the short term this could stimulate the public to make use of open data.

5.4 Create a culture in which opening data is incorporated in daily working processes

Policy-making should be studied as a complex interactive process without beginning or end, influenced by the diverse nature of socio-political and other environmental forces (Birkland, 2011; Osman, 2002). One should pay equal attention to broader influences on policy-making. There may be culture and context related variables which have an influence on the development and effects of the open data policy. To implement open data policies and to achieve goals such as economic growth, innovation and transparency, the culture of open data policies has to change from a culture in which opening data to the public is an exception, towards a culture in which the opening of data is standardly considered. Ideally, a culture of openness exists in which the open data policy is part of all working processes and, if there are no barriers, data is automatically publicized without the need for lengthy discussions. We recommend paying more attention to culture and context in the development of open data policies.

6. CONCLUSIONS

A variety of open data policies exists and public organizations have to deal with multiple pressures when publicizing their data. This paper developed a framework for comparing open data policies and used it to compare the open data policies of seven Dutch governmental

organizations. This helped to identify the common and differing elements in the policies and to identify the factors affecting the variation in policies and influencing their impacts. The developed framework consisted of elements related to the policy environment and context, policy content (input), performance indicators (output) and the creation of public value (impact). These elements of the framework can be used in the development of new open data policies and the improvement of existing open data policies.

The comparison of the environments and contexts surrounding existing open data policies showed that key motivations to develop open data policies are diverse. Some organizations are truly motivated to become more open by creating an open data policy, whereas others seem to view the creation of an open data policy more as an obligation and are wary of its risks, such as legal liability, the possible misuse and misinterpretation of data, and possible reputation damage. The context in which the organizations operate influences what data can be opened and at what risk. An organization's willingness to become truly open, based on an estimation of the risks of becoming open, is positively influenced by a culture in which the publicizing of data is institutionalized, by a focus on all the aspects of the open data policy (not just a focus on publication and legislation), by social and political pressure and by there being a number of entrepreneurs within the organization.

The policy comparison revealed that although some government organizations do collaborate in the development of open data policies, there is much room for learning from each other by looking at the differences between open data policies. Differences were found especially with regard to policy objectives, policy instruments, principles for opening data, the amounts and types of publicized and unpublicized data, the metadata that is provided with the open data, support for the use of the open data, the types of usage of publicized data, and expectations

surrounding the positive effects and the risks. Mimetic isomorphism was found, as public organizations have a tendency to publicize their data on similar types of websites and in similar ways. There is a risk that public organizations will copy each other's policies without considering the contextual differences in which they operate. Finally, the comparison of performance indicators showed that there is a gap between the key objectives of the open data policies which reflect the ambitions of politicians, on the one hand, and, on the other hand, the realities of public servants working for the government organizations. Public servants face the complexities and risks of making data open to the public, whereas politicians point to the public values that can be created by opening data to the public but without considering these complexities or finding ways to deal with the risks.

Our analysis showed opportunities for public organizations to learn from each other. First, collaboration can be improved by sharing facilities. This would also make fewer resources, less effort and lower costs necessary to develop and improve open data policies. Second, data-publishing organizations could learn by developing their open data policies from the viewpoint of what their effects should be and by adapting to the changing production, distribution, and use of open data. Third, stimulating the use of open data should be part of open data policies, as this is a crucial factor for achieving the positive effects of open data. Fourth, data-providing organizations should take into account that variables related to culture and context may influence the development and effects of open data policies. To implement open data policies and to achieve goals such as economic growth, innovation and transparency, a culture has to be developed in which publicizing data is considered the de facto standard. Ideally, a culture of openness should exist in which open data policies are a standard part of all working processes and data.

Policy comparison often remains highly abstract, whereas our findings indicate that policy comparison should also capture details, such as policy content. Much can be learned from comparing these details, yet there is a lack of a comparative framework for doing this. The framework we developed for this research appeared to be useful toward obtaining a better understanding of the general differences and similarities of open data policies. For ensuing research we recommend further refining the framework by including more aspects that are related to the organizations and their cultures and contexts. Moreover, the presented framework can be evaluated for other open data policies, for instance in other countries. Because the field of open data is relatively new, and because many open data policies have only recently been developed and are still evolving considerably, evaluation of the impacts of open data policies and the extent to which they result in public value is complicated and does not yet provide many concrete results. As the impact of open data policies becomes visible over time, we recommend developing measures for evaluating the impacts of open data and using these measures to evaluate the effects of open data policies.

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