

Investigating the attainment of open government data objectives

Is there a mismatch between objectives and results?

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Abstract

The objectives of open government data initiatives range from enhancing transparency and accountability to increasing innovation and participation. However, there is a lack of knowledge of the extent to which the objectives of open government data initiatives are achieved. This article investigates the relationship between the objectives of open government data initiatives and the benefits delivered. A total of 168 survey responses concerning 156 open government data initiatives at different government levels worldwide suggest that operational and technical benefits are the benefits most often delivered, followed by economic benefits and, finally, societal benefits. Surprisingly, our study suggests that whether an open government data initiative delivers a benefit (e.g. increased openness, trust or innovation) is not significantly affected by having an objective related to the delivery of that benefit. The objectives of state- and national-level open government data initiatives are more often achieved than those of local- and regional-level open government data initiatives.

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Points for practitioners

Key implications for professionals working in public management and administration are: attaining open government data objectives is easier said than done; the benefits delivered are most often operational and technical benefits, followed by economic benefits and, finally, societal benefits; the benefits are often in areas other than those of the open government data initiative's objectives, suggesting a mismatch between the objectives and their attainment; state- and national-level open government data initiatives achieve their objectives more often than local- and regional-level open government data initiatives; and initiatives might mimic each other instead of aiming at delivering the benefits.

Keywords

Attainment, benefits, delivery, evaluation, implementation, objectives, open data, open government, open government data, open science

Introduction

Open government data initiatives (OGDIs) are often intended to achieve a variety of objectives, including enhanced transparency, participation and collaboration (Alexopoulos et al., 2013; Attard et al., 2016; Kassen, 2013), as well as the stimulation of innovation and economic value (Zeleti et al., 2016). To realise this, open government data (OGD) are published on the Internet by governments or publicly funded research organisations and can be reused by the public (Alexopoulos et al., 2013; Jetzek, 2015; Linders, 2013; Meijer et al., 2012). These efforts, however, are criticised for a number of reasons, including not taking the user's point of view into account (Zuiderwijk, 2015) and a lack of convincing evidence regarding the impact and value created by OGDIs (Davies, 2013; Jetzek, 2015).

Considerable amounts of effort and money have been devoted to attaining the objectives of OGDIs (e.g. *The Economist*, 2013; The World Bank, 2013). Governments have high expectations regarding the achievement of such objectives (Kroes, 2011). Some OGDIs have successfully achieved their objectives (e.g. Attard et al., 2015; Evans and Campos, 2013), meaning that these initiatives have resulted in benefits that are related to the intended objectives. For example, when a particular OGD aimed to increase governmental transparency, this OGD actually managed to attain the benefit of increased governmental transparency. However, many OGDIs seem to have only partially achieved their objectives, or have not done so at all. An example of the latter is Kenya's national OGD, where the objective of data reuse was not achieved as the number of users remained stagnant and then decreased substantially (Brown, 2013). In addition, for many other OGDIs, it is not clear whether they have resulted in the delivery of the intended benefits.

Furthermore, while OGDIs are sometimes evaluated individually (e.g. Lee, 2014) or through larger projects (e.g. Kim et al., 2009), these evaluations usually evaluate all initiatives against the same criteria without looking at the intended objectives set by the OGDIs (Susha et al., 2015) or without taking the particular context into account (Janowski, 2015). Moreover, evaluations of OGDIs are often carried out at a country or national level, whereas OGDIs may also be organised at the international or local level. It is thus unclear whether OGDIs at different government levels have achieved their objectives and delivered the benefits they intend to deliver.

We used a globally distributed survey to collect data on 156 OGDIs in 61 countries all over the world, and then investigated the relationship between the objectives of OGDIs at different government levels and the benefits delivered. As we could not directly measure the attainment of each objective, we compared the objective of each initiative to one or more related delivered benefits. For instance, when the objective was ‘Increased transparency within the government and/or its legislation’, the achievement of this objective was established by analysing the extent to which the benefit ‘Increased transparency’ had been delivered (see later). Documents like PDFs and initiatives that provide only processed rather than raw data (such as participation, petition and complaint initiatives) were outside the scope of this study.

Research background

The aim of our literature review was not to obtain a complete overview of all possible OGDIs objectives as these might be considerably different. Instead, the aim was to gather background information concerning the main objectives mentioned in prominent and easily accessible OGD policies and in the literature. The following keywords were used in various combinations to find literature relevant to this research: ‘open data’, ‘open government data’, ‘public sector information’, ‘benefit’, ‘objective’, ‘aim’ and ‘goal’. We searched for papers in the Scopus, ACM Digital Library and Google Scholar databases. Scopus includes Elsevier (ScienceDirect), Springer, Taylor & Francis, Wiley Blackwell, Institute of Electrical and Electronics Engineers (IEEE), Sage, Emerald and many other sources. As suggested by Webster and Watson (2002), the citations in the identified articles were also examined to find additional relevant literature and to enrich the literature base. This search resulted in a rich collection of articles, which were categorised into clusters of OGDIs objectives and OGDIs benefits. Policy documents were searched for using Google and the websites of national governments.

Objectives of OGDIs

The US, the UK and many European countries have explicit and easily accessible policies concerning OGD. Together with the literature, these policies show that major objectives of OGDIs include increasing transparency and accountability,

stimulating innovation, improving and supporting decision-making, stimulating data reuse, counteracting corruption, and providing new services and products (see Table 1). These objectives can be broken down further into their various components. For example, innovation can be related only to business developments or to public services (Jetzek et al., 2013; Schillemans et al., 2013). The objective of data reuse can be focused on various fields of government, such as the environmental sector, and can be in various forms, for example, for predictions or validations of policies (Cowan et al., 2015; Jocelyn et al., 2014). There are many objectives and some of them overlap and are interdependent, for instance, creating smarter cities may be done by stimulating innovation.

Benefits delivered by OGDIs

OGD policies and the literature also describe the benefits that OGDIs can deliver. They include increased transparency, increased public engagement, increased collaboration, economic growth and easier discovery of data (see Table 2). Table 2 shows that many benefits may be delivered in different categories, including political and societal benefits, economic benefits, and technical and operational benefits.

Research design

Questionnaire

A questionnaire was created containing the following sections: an introduction; a description of the open government initiative (including its objectives); the technologies and functionalities used in the initiative; the benefits delivered by the initiative; the initiative's development and user barriers; and the demographics of the person completing the questionnaire (see Appendix 1, available online). The literature mentioned earlier was studied to obtain insight into the state of the art in open government research and to ensure that the questionnaire covered the topics mentioned in the literature. The questionnaire was tested by seven master's students in domains related to open government. This resulted in changes to some questions in order to make them clearer and less ambiguous. Moreover, the labels of the five-point Likert scale were made clearer and some questions were made more concise. Then, a second round of testing took place involving eight people, of whom six were working or studying in the field of open government. No more changes were made since the testers did not have any further comments on the survey.

Data collection

Accessing data from all over the world is a challenging task. A free, massive open online course (MOOC) on 'Open Government' followed by participants from all over the world enabled the distribution of a worldwide survey. The five-week MOOC was taught by Delft University of Technology in the spring of 2016 and

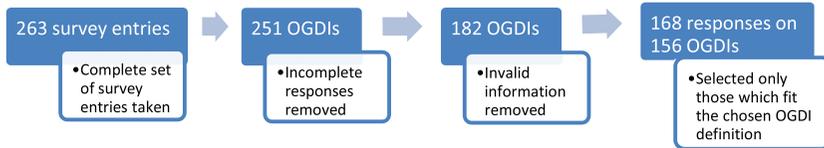
Table 1. Objectives of open government data initiatives as mentioned in the literature and policy documents.

	Objectives of OGDs	Source
Political and social	Increase accountability	Ubaldi (2013), European Commission (2013a), HM Government (2011)
	Increase transparency and/or openness	Jaeger and Bertot (2010), Huijboom and Van den Broek (2011), European Commission (2013a, 2013b), Obama (2009), Dawes and Helbig (2010), HM Government (2011)
	Counteract corruption Promote social engagement	Bertot et al. (2010), Linders (2013) Ubaldi (2013), European Commission (2013a)
	Increase trust	Grimmelikhuisen (2012), Sandoval-Almazán (2013), Ubaldi (2013), Lee and Kwak (2012)
Economic	Stimulate innovation	Jetzek et al. (2013), Schillemans et al. (2013), Tauberer (2012), Obama (2012)
	Stimulate economic growth	Jetzek et al. (2013), Lakomaa and Kallberg (2013), European Commission (2013a), HM Government (2011)
Operational and technical	Stimulate research in data analytics	Cowan et al. (2015), Jocelyn et al. (2014), Chun et al. (2010), Ubaldi (2013)
	Improve the quality of collected information	Lee and Kwak (2012), European Commission (2013a), Bates (2012)
	Create smarter cities	Meijer and Bolívar (2016), Alawadhi et al. (2012), Veeckman and Van der Graaf (2015), Bates (2012)
	Improve services	Jetzek et al. (2013), Lakomaa and Kallberg (2013), Bakıcı et al. (2013), European Commission (2013a, 2013b), Obama (2012), HM Government (2011)
	Provide validation data for research	Kalampokis et al. (2011), Radl et al. (2013), Ubaldi (2013)
	Facilitate participation	Ubaldi (2013), Bates (2012), Evans and Campos (2013), Obama (2009)
	Consult citizens on the development of legislation (e-consultation)	Macintosh (2004), Whyte and Macintosh (2002), Abu-Shanab (2015)
	Share information between multiple governmental agencies	Harrison et al. (2012a), Dawes and Helbig (2010)

(continued)

Table I. Continued

Objectives of OGDIs	Source
Develop freedom of information legislation	Bertot et al. (2010), Worthy (2010)
Increase collaboration	Ubaldi (2013), Lee and Kwak (2012), Lathrop and Ruma (2010), Obama (2009)
Increase the efficiency of public authorities	Huijboom and Van den Broek (2011), Ubaldi (2013), Bates (2012)
Provide access to government data	Jaeger and Bertot (2010), Gurstein (2011), Olalere and Lazar (2011)
Reuse government data	Ubaldi (2013), Huijboom and Van den Broek (2011), Yu and Robinson (2012), European Commission (2013a)
Obtain feedback from reusers and end users	Kassen (2013), Lee and Kwak (2012), European Commission (2013a)

**Figure 1.** The selection of OGDIs for this study.

was provided through the EdX platform. The number of enrolments for the course varied between 3082 (at the start, on 14 March 2016) and 3607 (at the end, on 26 April 2016). Data on the participants' backgrounds are presented later. In total, 153 countries were represented by the course participants.

Data were collected at the level of initiatives. One important assumption was that the data we collected about the OGDIs reflect the actual initiatives rather than the opinions of the people providing the data. In the questionnaire, each respondent provided information concerning the way he or she understood the OGD. The majority of the respondents (57%) were involved in the OGD that they assessed.

A stepwise filtration of the OGDIs was done based on the questionnaire data (see Figure 1). First, the complete data set consisted of 263 survey entries containing cases that qualified as OGDIs according to the respondents. Incomplete responses were removed from our sample, leaving 251 OGDIs. The initiatives that contained incorrect information or were related to non-existent initiatives were then removed, which resulted in 182 initiatives. Incorrect information

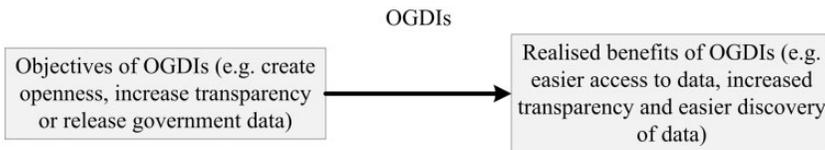
Table 2. Benefits delivered by open government data initiatives as mentioned in the literature and policy documents.

	Benefits delivered by OGDIs	Source
Political and societal	Increased transparency	Welle Donker et al. (2016), Zuiderwijk (2015), Kulk and Van Loenen (2012)
	Increased empowerment of the public	Gurstein (2011), Linders (2013)
	Improved policymaking processes	Chun et al. (2010), Harrison et al. (2012a)
	Increased public engagement	Lee and Kwak (2012), Chun et al. (2010)
	Increased scrutinisation of information and data released by the government	Harrison et al. (2012a), Yu and Robinson (2012)
	Stimulated knowledge development	Chun et al. (2010)
	Increased democratic accountability	Harrison et al. (2012a)
	Increased trust in government	Linders (2013)
	Increased participation	Evans and Campos (2013), Lathrop and Ruma (2010)
	New insights into the public sector	Lee and Kwak (2012), Ubaldi (2013)
	Equal access to information provided by government	Ubaldi (2013), Yu and Robinson (2012)
	Increased collaboration	Lee and Kwak (2012), Harrison et al. (2012a)
	Economic	Stimulated competitiveness
Contribution towards the improvement of products		Lee and Kwak (2012)
Stimulated innovation		Ubaldi (2013), Lee and Kwak (2012)
Reduced government spending		Bertot et al. (2010)
Economic growth		Bertot et al. (2010), Arzberger et al. (2004)
Contribution towards the improvement of services		Lee and Kwak (2012), Harrison et al. (2012a)
Greater efficiency of government		Welle Donker et al. (2016), Kassen (2013), Moon (2002)
Access to external problem-solving capacity and resources	Harrison et al. (2012b)	
Technical and operational	Ability to reuse data	Ubaldi (2013), Yu and Robinson (2012)
	Contribution towards the improvement of administrative processes	Welle Donker et al. (2016), Harrison et al. (2012a), Coglianese (2009)
	Easier access to data	Ubaldi (2013), Gurstein (2011), Lathrop and Ruma (2010)

(continued)

Table 2. Continued

Benefits delivered by OGDIs	Source
Use of the wisdom of crowds: tapping into the intelligence of the collective	
Fair decision-making by enabling comparison of different sources	Harrison et al. (2012a)
Easier discovery of data	Villazón-Terrazas et al. (2011)

**Figure 2.** The way that objectives and benefits of OGDIs are related to each other in this study.

concerned, for instance, PDF files about open data in general, links to initiatives with no relation to OGD or simple visualisation platforms or government web pages. The existence of the initiatives was checked by reviewing every website link of the given initiative. If this website link was a dead link or no link to an OGD was provided, the data entry was rejected. Finally, from the 182 remaining initiatives, 168 responses concerning 156 OGDIs from 61 countries that fitted our definition of OGDIs were selected (for the overview, see Appendix 2, available online). This last step was done as follows. If the respondents indicated that the objective of the initiative was either the release of government data to the public as OGD or the use of OGD by the public (e.g. by citizens or journalists), the initiative was included in our selection. Furthermore, if the respondents referred to OGD later on in the survey and OGD appeared to be an important aspect of the initiative, we also included the initiative in our sample.

Relating OGD objectives to delivered benefits

The achievement of the objectives was measured by investigating the delivered benefits (as indicators) (see Figure 2).

To measure whether the level of delivered benefits was significantly different for the OGDIs with and without a certain objective, a Mann–Whitney test was conducted (Mann and Whitney, 1947). The test was appropriate since the survey

produced one independent categorical variable with two categories (whether a certain OGD had a certain objective: yes or no) and one continuous dependent variable (the extent to which the benefit had been delivered). The Mann–Whitney test is the non-parametric equivalent of the independent t-test (Field, 2009: 540), and it had to be used since the sample did not meet the assumptions for parametric tests (i.e. the data were not normally distributed).

Data preparation

A reliability analysis was conducted to examine whether the independent variables consistently reflected the constructs that they were measuring (Field, 2009). For instance, we measured whether the objective ‘Create openness’ (the construct) had been attained by creating a scale of three benefits, namely, easier access to data, easier discovery of data and the ability to reuse data. The reliability analysis tested whether the three benefits consistently reflected the objective. Table 3 shows the reliability analysis results derived from Cronbach’s alpha test (Cronbach and Meehl, 1955).

Murphy and Davidshofer (1988) state that alpha values below 0.6 are unacceptable, values of 0.7 are low, values between 0.8 and 0.9 are moderate to high, and values around 0.9 are high; however, according to others, a lower acceptance boundary can be adopted (Nunnally, 1967), namely, that alpha values of between 0.5 and 0.6 may still be acceptable. Except for one value, all values were moderate (.781) to high (.886). Cronbach’s alpha value for the construct ‘Use of OGD by the public’ was lower (.606), yet not unacceptable. Thus, the created scales of the objectives could be used for further analysis.

Respondents’ demographics and description of the OGDs

Respondents’ demographics

Information concerning the respondents is presented in Table 4. Table 4 shows that most respondents work in the service sector (62.4%) or in the commerce sector (23.7%). Most have a master’s degree (42.6%) or a bachelor’s degree (28.4%). The majority (39.4%) have more than 10 years of experience in their field. Although most (57.4%) of the respondents are involved in OGDs at least to a certain extent, a large proportion (42.6%) are not involved at all. The majority (94.6%) of all respondents trusted the government at least to a certain extent.

Description of the OGDs

The OGDs that were assessed via the questionnaire were implemented in a total of 61 countries. The countries mentioned most often were the US, Brazil and the Netherlands (implementing 21%, 11% and 8% of the OGDs, respectively). Table 5 presents the global distribution of the OGDs. The table shows that

Table 3. Reliability analysis of benefits for specific objectives (Cronbach's alpha test).

Objective	Benefits	Number of Benefits	Cronbach's alpha
Create openness	Easier access to data Easier discovery of data Ability to reuse data	3	.870
The release of government data to the public as OGD	Easier access to data Easier discovery of data Equal access to information provided by government	3	.820
The use of OGD by the public (e.g. by citizens/journalists)	Ability to reuse data Increased scrutinisation of information and data released by the government	2	.606
Improve the functioning of the government	Improved policymaking process Reduced government spending Greater efficiency of government Contribution towards the improvement of administrative processes	4	.847
Development of services to participate in governmental processes	Contribution towards the improvement of services Increased participation Increased public engagement Access to external problem-solving capacity and resources	4	.878
Consultation of citizens in the development of legislation	Access to external problem-solving capacity and resources Use of the wisdom of crowds: tapping into the intelligence of the collective	2	.781
Stimulate innovation by companies	Stimulation of innovation Stimulation of competitiveness Contribution towards the improvement of products	3	.886

most OGDIs (29%) are in the Anglo cluster, mainly including initiatives from the US; a large percentage (27%) are in the Latin American cluster, particularly consisting of initiatives from Brazil.

The OGDIs in our sample are at national, international, local and regional levels. Table 6 shows the distribution of the levels at which the OGDIs are represented. In terms of percentages of the total number of cases, 35% of the initiatives are at the national level and 25% are at the local administrative level. Only 7% are international OGDIs.

Table 4. Participants' demographics.

Demographic	Descriptive	Percentage
Occupation sector	Services	62.4
	Agriculture	1.1
	Commerce	23.7
	Construction	1.1
	Finance	3.2
	Industry	8.6
Highest education level	Elementary school	4.1
	High school	14.2
	Associate's degree	4.1
	Bachelor's degree	28.4
	Master's degree	42.6
Level of expertise in their field	PhD degree	6.8
	1–3 years	18.3
	3–5 years	16.4
	5–10 years	19.2
Involvement with OGDIs	>10 years	39.4
	No involvement at all	42.6
	Involved to a small extent	20.3
	Involved	18.9
Trust in the government	Involved to a large extent	7.4
	Completely involved	10.8
	No trust in government at all	5.4
	Trust the government to a small extent	20.4
	Trust the government	34.7
	Trust the government to a large extent	32.7
	Trust the government completely	6.8

Public stakeholders are involved in the OGDIs of our sample in four different phases: the start-up phase, the design phase, the implementation phase and the operation and maintenance phase. As shown in Table 6, most are engaged in the operation and maintenance phase (37%), followed by some involvement in the implementation phase (27%) and equally low involvement in the start-up (18%) and design phases (18%). Like the public stakeholders, most of the government's involvement is in the operation phase (21%) and the implementation phase (20%).

Findings and discussion on the attainment of OGDl objectives

Objectives of OGDIs

The second section of the article showed the diversity of OGDl objectives. The comprehensive list of OGDl objectives from the second section has been

Table 5. Global distribution of the OGDIs.

Cluster	OGDIs in this cluster
Africa	5% (9)
Anglo	29% (49)
Confucian	1% (2)
Eastern Europe	8% (13)
Germanic	10% (16)
Latin America	27% (45)
Latin Europe	9% (15)
Middle Eastern	2% (4)
Nordic	1% (2)
South-east Asia	8% (13)

Source: adopted from House et al. (2004).

Table 6. OGDl characteristics (out of total number of 168 OGDl responses studied).

OGDI characteristics	Descriptive of the characteristics	Percentage
Administrative level of the initiative	Local	25%
	Regional	17%
	State	14%
	National	35%
	International	7%
Stage of public involvement	Start-up	18%
	Design	18%
	Implementation	27%
	Operation and maintenance	37%
Role of government	Operating	21%
	Implementing	20%
	Developing	18%
	Regulating	17%
	Funding	16%
	Advertising	7%
	Data supplier	1%
Government stakeholder involved in the initiative	Portal providers	10%
	Policymakers	10%
	Law enforcers	8%
	Defence department	7%
	Health department	9%
	Infrastructure department	8%
	Commercial	8%
Level of the government stakeholder involved in the initiative	Local government	11%
	Regional government	9%
	State government	9%
	National government	11%
	Other	7%

condensed into the objectives shown in Table 7. This table shows the number and percentage of OGDIs in our selection of 156 OGDIs that aimed at achieving a particular objective. The four major objectives were: create openness (62.8%), increase transparency (55.2%), engage government with citizens (50%) and use of OGD by the public (48.3%). Note that one OGDI can have multiple objectives and therefore the percentages do not add up to 100%.

Delivered benefits

After providing information concerning the objectives of the OGDI they selected, respondents were asked to answer questions about the benefits that the OGDI had delivered. The benefits were divided into political and societal benefits, economic benefits, and operational and technical benefits. Table 8 shows all the benefits that were presented to the respondents and the number and percentage of initiatives that delivered the specific benefit out of the total number of OGDIs given.

The results of our survey show that the benefits delivered by the OGDIs are most often operational and technical benefits, followed by economic benefits and, lastly, societal benefits. The societal benefits might be harder to measure objectively and this might be why they were reported least. Moreover, the societal benefits are highly interconnected. Political and societal benefits like increasing transparency (58%) and the scrutinisation of information and data released by the government (51.5%) are almost equally delivered, followed by many others like participation (49.5%), trust (49.7%) and collaboration (44.3%). Economic benefits are mainly delivered in the form of contribution towards the improvement of services (45.5%) and greater efficiency of government due to public input

Table 7. Objectives of OGDIs.

Objectives of OGDIs	OGDIs with this objective (percentage of total OGDIs)
Create openness	108 (62.8%)
Increase transparency within the government and/or its legislation	95 (55.2%)
Engage government with citizens through social media channels	86 (50.0%)
Use of OGD by the public (e.g. by citizens or journalists)	83 (48.3%)
Release government data to the public as OGD	69 (40.1%)
Increase accountability of government	63 (36.6%)
Consult citizens on the development of legislation (e-consultation)	60 (34.9%)
Stimulate innovation by companies	59 (34.3%)
Share information between multiple governmental agencies	52 (30.2%)
Develop services to participate in governmental processes	44 (25.6%)
Improve the functioning of the government	41 (23.8%)
Increase trust in the government	37 (21.5%)
Develop freedom of information legislation	32 (18.6%)
Other	16 (9.3%)

Table 8. Benefits delivered by the OGDIs.

Benefits	Possible OGD benefit	Delivery of this benefit by OGDIs				
		Average value	Median	Weighted number ^a	Score ^b Percentage	
Political and societal	Increased transparency	2.95	4	496	59%	
	Increased empowerment of the public	2.52	3	457	54%	
	Improved policymaking processes	2.54	3	456	54%	
	Increased public engagement	2.68	3	451	54%	
	Increased scrutinisation of information and data released by the government	2.72	3	440	52%	
	Stimulation of knowledge developments	2.62	3	427	51%	
	Increased democratic accountability	2.26	3	426	51%	
	Increased trust in government	2.46	3	425	51%	
	Increased participation	2.53	3	423	50%	
	New insights into the public sector	2.40	3	413	49%	
	Equal access to information provided by government	2.54	3	403	48%	
	Increased collaboration	2.71	3	379	45%	
	Economic	Stimulation of competitiveness	1.93	2	429	51%
		Contribution towards the improvement of products	1.90	2	389	46%
Stimulation of innovation		2.22	3	373	44%	
Reduced government spending		1.90	2	346	41%	
Economic growth		2.06	2	327	39%	
Contribution towards the improvement of services		1.95	2	325	39%	
Greater efficiency of government		2.55	3	320	38%	

(continued)

Table 8. Continued

Benefits	Possible OGD I benefit	Delivery of this benefit by OGDIs			
		Average value	Median	Weighted number ^a	Score ^b Percentage
Technical and operational	Access to external problem-solving capacity and resources	2.32	3	320	38%
	Ability to reuse data	2.43	3	462	55%
	Contribution towards the improvement of administrative processes	2.24	3	379	45%
	Easier access to data	2.75	3	396	47%
	Use of the wisdom of crowds: tapping into the intelligence of the collective	2.71	3	409	49%
	Fair decision-making by enabling comparison of different sources	2.26	3	377	45%
	Easier discovery of data	2.36	3	456	54%

Notes: ^aHere, the weighted number refers to the benefit extent (measured on an ordinal scale from 1 to 5) multiplied by the number of OGDIs in which it is delivered. ^bThis represents a score for the number of cases in which the given benefit was fully delivered. The maximum weighted number for each benefit is 840, namely, a score of 5 on the ordinal scale times 168 OGD I responses if the benefit was delivered fully in each of the OGDIs. The score is calculated by dividing the weighted number by the extent to which the benefit was fully delivered (the ordinal scale times the number of case responses; thus, 5 times 168).

(37.4%). The operational and technical benefits are delivered by easier access and discovery to data and the ability to reuse the data in most of the OGDIs. One should keep in mind that these results are subjective and depend on the viewpoint and opinion of the participants.

The benefits that were most often delivered were 'Increased transparency' (58% of the OGDIs yielded this benefit), 'Ability to reuse data' (54%), 'Increased empowerment of the public' (54%), 'Improved policymaking processes' (53%) and 'Contribution towards the improvement of administrative processes' (53%). None of these most-delivered benefits were economic benefits. Benefits that were delivered least by the OGDIs were 'Greater efficiency of government' (37%) and 'Access to external problem-solving capacity and resources' (37%), although a relatively high percentage of the OGDIs were still found to deliver these benefits and the percentage of the least-delivered benefits do not differ that much from the percentage of the most-delivered benefits.

Delivered benefits in relation to the OGDl objectives

The achievement of objectives was measured by investigating the delivered benefits (as indicators) (see earlier). Some objectives were related to multiple benefits, as can be seen in Table 9, but the relations of every objective with a benefit were checked individually. The median ranged from 1 to 5: 1 = 'not attained at all', 2 = 'attained to a small extent', 3 = 'attained', 4 = 'attained to a large extent' and 5 = 'fully attained'.

Table 9 provides the results of the Mann–Whitney test and the medians of the compared groups (i.e. whether the OGDl had a certain objective or not). Surprisingly, this test shows that the extent to which the benefits of OGDIs are delivered is not statistically different for OGDIs that have a related objective compared to those that do not have this objective. For example, the extent to which the benefit 'Easier access to data' was delivered was not significantly different for OGDIs aiming to create openness ($Mdn = 3$) compared to OGDIs that are not aiming to create openness ($Mdn = 3$), $U = 3211.50$, $z = -0.114$, $p > .05$ ¹. The differences between the means for the OGDIs with and without a certain objective are very similar for almost all of the benefits. Some medians for OGDIs with and without a certain objective differ slightly more than others. For instance, OGDIs with the objective to stimulate innovation by companies ($Mdn = 3$) were reported to have delivered slightly higher levels of the benefit 'Stimulating competitiveness' than OGDIs without this objective ($Mdn = 2$). Moreover, there were small differences in the extent to which the benefit 'Use of OGD by the public' was delivered, depending on whether or not the OGDl had the objective 'Increased scrutinisation of information and data released by the government'. Furthermore, there were small differences in the extent to which the benefit 'Improved policymaking processes' was delivered, depending on whether or not the OGDl had the objective 'Improve functioning of the government'. However, none of these benefits was significantly affected by whether the OGDIs had the related objective. Thus, the Mann–Whitney test results suggest that whether a benefit of OGDIs (e.g. creating openness, increase trust in the government or stimulating innovation by companies) is delivered is not significantly affected by having an objective related to that benefit (see Figure 3). Thus, the benefits are in areas other than ones the OGDIs aim for.

We examined whether we could find any patterns in the attainment of the objectives for different types of OGDIs. After we made a distinction between OGDIs at a state or national level (e.g. the USA's² and Bulgaria's³ open data initiatives) and OGDIs at a local or regional level (e.g. open data from Buenos Aires in Argentina⁴), we found a substantial difference in the results (see Table 10). The general trend was that the benefits delivered by state- and national-level OGDIs are affected more by a related objective compared to local- and regional-level OGDIs. Thus, the relation between the objectives and the benefits is stronger for state and national OGDIs (see Figure 4). For example, the benefit 'Easier discovery of data' appears to be significantly affected by the objective

Table 9. Comparison of the level of benefits delivered by OGDIs with and without a certain related objective.

OGDI objective	Related delivered benefits of the OGD I	Median (mean): whether OGD I achieves objective (yes/no)		Mann–Whitney U
		No	Yes	
Create openness	Easier access to data	3 (3.38)	3 (3.37)	3211.50
	Easier discovery of data	3 (3.38)	3 (3.30)	3077.00
	Ability to reuse data	3 (3.03)	3 (3.02)	3184.50
Increase transparency within the government and/or its legislation	Increased transparency	2 (2.36)	2 (2.34)	3400.500
Release government data to the public as OGD	Easier access to data	3 (3.45)	3 (3.29)	3163.00
	Easier discovery of data	3 (3.44)	3 (3.22)	3069.50
	Equal access to information provided by government	3 (3.19)	3 (3.26)	3010.00
Use of OGD by the public (e.g. by citizens or journalists)	Ability to reuse data	3 (3.22)	3 (3.08)	3172.50
	Increased scrutinisation of information and data released by the government	3 (2.96)	3 (3.31)	2909.00
Increase accountability of government	Increased democratic accountability	3 (3.33)	4 (3.35)	3075.00
Increase trust in government	Increased trust in government	3 (3.2)	3 (3.2)	3005.50
Improve functioning of the government	Improved policymaking process	3 (2.74)	3 (3.08)	2339.50
	Reduced government spending	2 (2.29)	2 (2.38)	2882.50
	Greater efficiency of government	2 (2.69)	3 (2.88)	2823.50
	Contribution towards the improvement of administrative processes	3 (2.78)	3 (2.88)	2948.00
Develop services to participate in governmental processes	Contribution towards the improvement of services	3 (2.98)	3 (3.02)	2883.50
	Increased participation	3 (3.37)	3 (3.17)	2347.00

(continued)

Table 9. Continued

OGDI objective	Related delivered benefits of the OGDI	Median (mean): whether OGDI achieves objective (yes/no)		Mann–Whitney U
		No	Yes	
	Increased public engagement	3.5 (3.4)	3 (3.10)	2389.50
	Access to external problem-solving capacity and resources	2 (2.41)	2 (2.46)	2841.00
		2 (2.32)	2 (2.42)	2570.50
Consult citizens on the development of legislation	Use of the wisdom of crowds: tapping into the intelligence of the collective	2 (2.58)	3 (2.89)	2328.50
Engage government with citizens through social media	Increased public engagement	3 (3.38)	3 (3.11)	2084.50
Stimulate innovation by companies	Stimulation of innovation	3 (2.63)	3 (2.75)	2002.00
	Stimulation of competitiveness	2 (2.26)	3 (2.69)	1771.50
	Contribution towards the improvement of products	2 (2.17)	2 (2.47)	1808.00

Notes: * $p < .05$; ** $p < .001$.

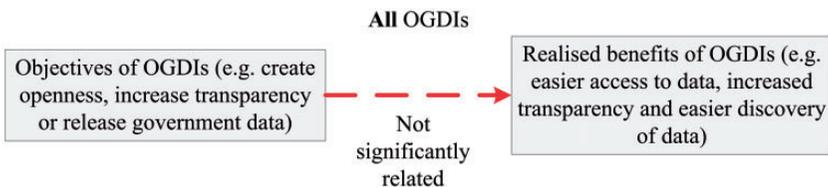


Figure 3. The relation between the objectives and the delivered benefits of OGDIs.

‘Create openness’ for OGDIs at the national and state level ($p = 0.003 < 0.05$), $Z = -.524$ and $U = 52.5$). In contrast, for OGDIs at a local or regional level, this objective and benefit are not significantly related ($p = 0.073 > .05$), $Z = .937$, $U = 55.5$). The same applies to the objective ‘Create openness’ in relation to the benefit ‘Ability to reuse data’.

Table 10. Comparison of the level of benefits delivered by OGDs at local or regional and national or state levels.

		Local or regional OGDs			National or state OGDs		
		<i>p</i>	Z	U	<i>p</i>	Z	U
Create openness	Easier access to data	0.378	0.937	74.5	0.628	-0.524	52.5
	Easier discovery of data	0.073	-1.904	55.5	0.003	-3.01	16.5
	Ability to reuse data	0.185	-1.415	68	0.043	-2.138	29
Increase transparency within the government and/or its legislation	Increased transparency	0.553	-0.593	85.5	0.456	-0.828	48
Release government data to the public as OGD	Easier access to data	0.81	-0.241	93	0.771	-0.315	55
	Easier discovery of data	0.27	-1.103	69	0.111	-1.683	31
	Equal access to information provided by government	0.047	-2.126	53	0.01	-2.65	19
Use of OGD by the public (e.g. by citizens or journalists)	The ability to reuse data	0.201	-1.35	55	0.183	-1.435	28
	Increased scrutinisation of information and data released by the government	1	0	90	0.63	-0.553	45
Increase accountability of government	Increased democratic accountability	0.408	-0.898	72	0.92	-0.108	54.5
Increase trust in government	Increased trust in government	0.977	-0.028	69.5	0.553	-0.632	30.5
Improve functioning of the government	Improvement of policymaking process	0.756	-0.372	67	0.367	-0.96	35.5
	Reduction of government spending	0.64	-0.526	64	0.858	-0.194	45.5
	Greater efficiency of government	0.208	-1.323	49.5	0.261	-1.186	32.5
	Contribution towards the improvement of administrative processes	0.259	-1.192	45.5	0.868	-0.215	53
Develop services to participate in governmental processes	Contribution towards the improvement of services	0.216	-1.331	41	0.831	-0.23	36.5
	Increased participation	0.753	-0.341	47.5	1	0	42
	Increased public engagement	0.46	-0.844	52	0.441	-0.847	44
	Access to external problem-solving capacity and resource	0.259	-1.268	45	0.945	-0.073	51.5
Consult citizens on the development of legislation	Use of the wisdom of crowds: tapping into the intelligence of the collective	0.88	-0.21	32	0.098	-1.72	0.085

(continued)

Table 10. Continued

		Local or regional OGDIs			National or state OGDIs		
		<i>p</i>	Z	U	<i>p</i>	Z	U
Engage government with citizens through social media	Increased public engagement	0.063	-1.926	5	0.094	-1.675	11.5
Stimulate innovation by companies	Stimulation of innovation Stimulation of competitiveness	0.296 0.698	-1.149 -0.466	13.5 21	0.093 0.343	-1.682 -0.949	11.5 19

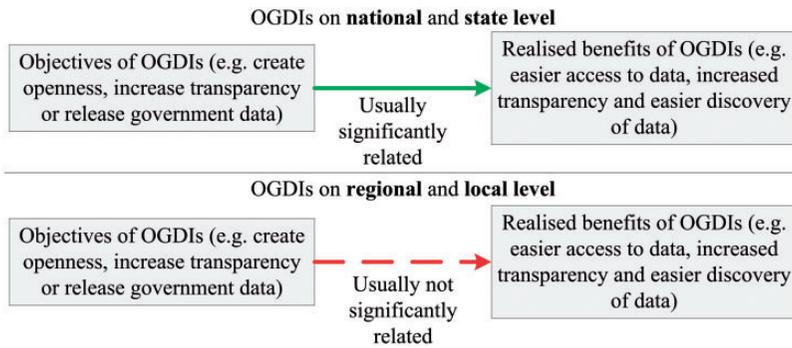


Figure 4. The relationship between the objectives and the benefits delivered by OGDIs at different levels.

However, in some cases, the opposite trend was found, that is, a higher value of *p* was found for OGDIs at a local or regional level compared to OGDIs at a national or state level. For instance, for the local OGDIs called ‘Decide Madrid’, where the citizens of Madrid participate in budget debates, the objective of ‘Increasing transparency of the government and/or its legislation’ was attained through the benefit of ‘increased transparency’ benefits. The benefit ‘Access to external problem-solving capacity’ is delivered more often by OGDIs at a local or regional level that have the objective ‘Develop services to participate in governmental processes’ compared to OGDIs at a state or national level that have this objective.

We found that OGDIs from certain countries more often have benefits that match the objectives. For instance, there are more often matching benefits and objectives for Brazil (13.5%), the US (13.5%), Europe-wide OGDIs (6.13%),

Greece, Spain, the Netherlands and India (5% each). However, this result is probably the effect of a higher number of participants from these countries, increasing the chance of having an OGD I where the objectives and benefits match, in relation to a lower number of OGD I s reported for the other countries. In addition, there is relatively more often a match between objectives and benefits for OGD I s where the public is involved in the implementation and operation phase than for OGD I s where the public is involved in the start-up or design phase, although this finding is not statistically significant. In more developed OGD I s, the stakeholders may have a more realistic view on which objectives can realistically be attained.

Discussion

Causes for the mismatch between objectives and benefits

Our study revealed that an OGD I having a certain objective did not significantly influence whether the benefits related to that objective were delivered. There is a mismatch between the benefits delivered and the objectives set. Examples of OGD I s in which there is a mismatch include the Greek e-Trikala OGD I (which aimed to create openness but instead used the wisdom of crowds) and the Diavgeia Transparency Programme (which aimed to increase democratic accountability but instead increased transparency). An explanation for this mismatch might be that the objectives are not focused on the situation at hand. Politicians and policy-makers might not set objectives that take into account the context and societal problems that can be addressed by opening up the data. OGD I objectives are often generic, focusing on objectives like transparency, participation (Alexopoulos et al., 2013; Attard et al., 2016; Kassen, 2013) and economic value (Zeleti et al., 2016). This makes it difficult for practitioners to know exactly what should be done to achieve the objectives.

Furthermore, there are many assumptions and conditions underlying the benefits. For instance, to reuse data, a certain data user may need to acquire data-analysis skills, which requires specific training programmes (Zuiderwijk et al., 2015). When trying to achieve the OGD I objectives, the background of the data user is often not taken into account. In several cases, there was a narrow view on transparency, where transparency mainly referred to the visualisation or merely the opening of data. For instance, in one of the OGD I s, merely the ability to open up the emails of politicians was considered as transparency, whereas further content analysis of these emails was not considered.

Another possible explanation for the mismatch between the benefits delivered and the objectives set is that OGD I s might not be focused on achieving their objectives and may be based on copying other initiatives. We argue that the context and societal problems that OGD I s address should be better taken into account in OGD I s, and the assumptions and conditions for achieving OGD I objectives should be made explicit in open data policies. The objectives set in the start-up and design phases should be reviewed critically when OGD I s develop further.

Objectives may need to be adjusted in the implementation and operation phases to ensure that there is a better match between set objectives and delivered benefits.

According to the literature, objectives should ideally be formulated according to 'SMART' principles (Doran, 1981). This means that they should be 'Specific' (What should the OGDIs achieve?), 'Measurable' (How will we know that this has been achieved?), 'Assignable' (Who will do what to attain the objective?), 'Realistic' (What can realistically be achieved?) and 'Time-related' (When will this be achieved?) (Doran, 1981). Some of the examined OGDIs seem to be described more according to the SMART principles (e.g. the OGDIs objectives of the Open Government Partnership of the US are specifically presented according to the SMART principles⁵) than others (e.g. for the OGDIs of Punjab government public schools of India, the objectives are not specific⁶). Our research also suggests that OGDIs objectives should be presented according to the SMART principles in order to obtain a more realistic understanding of the potential benefits that can be attained.

Study limitations

When interpreting the results of this study, one should take into account that we could not directly measure the fulfilment of each objective. We therefore compared the objective of each initiative to one or more related benefits delivered by the initiative. It is difficult to measure the attainment of some objectives since they consist of several sub-dimensions. It is therefore possible that the delivered benefits that we examined do not completely measure the objective of the OGDIs.

Moreover, an important assumption in our study was that the data we collected reflect the actual initiatives rather than the opinions of the people providing the data. It is unclear to what extent the respondents have sufficient knowledge of the OGDIs to provide the correct information. However, we had reason to believe that at least most of the respondents were knowledgeable as they were participating in a MOOC on Open Government, the majority of the respondents (57%) were involved in OGDIs in general and 75% of them had at least three years of experience in the field (see earlier).

Furthermore, we do not claim that the 156 OGDIs in our sample are representative of the objectives of all OGDIs worldwide. One should keep in mind the context in which the objectives were collected. Most OGDIs were provided by respondents from the US, Brazil, the Netherlands and Spain. In addition, many of the studied objectives and benefits are influenced by other factors that we did not study. For example, increasing trust is not just influenced by OGDIs; it may also be affected by other developments and events, such as scandals and the corruption of politicians and the culture in a country. One should be aware that the studied factors are interrelated and complex.

Finally, we do not have information concerning when the OGDIs were launched. Some may have been launched only recently, and it may be too soon to establish whether their objectives have been achieved. For instance, it can take

many years to increase trust in the government or increase government accountability. These limitations need to be taken into account in the interpretation of our results, and we recommend their further study in future research.

Conclusions

This study contributes to existing research by providing insight into the desired objectives of OGDIs and the extent to which these objectives are attained. Using data from 168 responses on 156 OGDIs worldwide, we found that certain objectives are more common than others. The most common objective is to ‘create openness’ (63% of the OGDIs), followed by the objective to ‘increase transparency within the government and/or its legislation’ (55%), to ‘engage with citizens through social media channels’ (50%), and the ‘use of OGD by the public (e.g. by citizens or journalists)’ (48%). The objectives in the categories ‘other’ (9%), ‘develop freedom of information legislation’ (19%) and ‘increase trust in the government’ (22%) were less prominent. Our survey showed that the OGDIs we studied mostly delivered operational and technical benefits, followed by economic benefits and, lastly, societal benefits. The main benefits delivered were increased transparency (58% of the OGDIs yielded this benefit) and the ability to reuse data (54%).

Our study shows that the benefits delivered are often in areas other than those in which the OGDIs’ objectives lie. This indicates that whether a benefit (e.g. increased openness, trust in the government or innovation by companies) is delivered is not significantly affected by having an objective related to that benefit, suggesting a mismatch between the two. This finding suggests that OGDIs might not be focused on achieving their objectives, but might be mimicking other initiatives. This has important implications as considerable amounts of money and effort are devoted to achieving these objectives, and this has not clearly resulted in the delivery of the related benefits. However, our study also shows that many OGDIs do deliver various benefits, although they do not seem to be closely related to the objectives of the OGDIs. When we distinguished between OGDIs at different governmental levels (e.g. national and local), the analyses showed that the objectives of state- and national-level OGDIs are more often achieved compared to those of local- and regional-level OGDIs.

Further research should investigate why the objectives of state- and national-level OGDIs are more often achieved and whether the effects of local- and regional-level OGDIs can be improved by learning from other OGDIs. Practitioners should avoid copying each other’s initiatives and take into account the objectives, the context and the societal values that need to be delivered. OGDIs do not always deliver the expected benefits and the benefits may be in areas other than the intended ones. Future research should include an in-depth examination of how OGDIs can more effectively deliver the desired benefits.

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Notes

1. The probability value, p-value or significance of a test are usually denoted by p ; the z-score is 'a data point expressed in standard deviation units' (Field, 2009: xxxii).
2. See: <https://www.data.gov/>
3. See: <https://opendata.government.bg/bg/>
4. See: <https://data.buenosaires.gob.ar/>
5. See: <https://www.opengovpartnership.org/countries/united-states>
6. See: <http://www.open.punjab.gov.pk/schools/>

References

- Abu-Shanab EA (2015) Reengineering the open government concept: An empirical support for a proposed model. *Government Information Quarterly* 32: 453–463.
- Alawadhi S, Aldama-Nalda A, Chourabi H et al. (2012) Building understanding of smart city initiatives. In: Scholl HJ, Janssen M, Wimmer MA, et al. (eds) *International Conference on Electronic Government*. Berlin: Springer, pp. 40–53.
- Alexopoulos C, Spiliotopoulou L and Charalabidis Y (2013) Open data movement in Greece: A case study on open government data sources. In: Panayiotis HK, Kostas M, Ioannis V, et al. (eds) *17th Panhellenic Conference on Informatics*. Thessaloniki, Greece: ACM, pp. 279–286.
- Arzberger P, Schroeder P, Beaulieu A et al. (2004) Promoting access to public research data for scientific, economic, and social development. *Data Science Journal* 3: 135–152.
- Attard J, Orlandi F, Scerri S et al. (2015) A systematic review of open government data initiatives. *Government Information Quarterly* 32: 399–418.
- Attard J, Orlandi F and Auer S (2016) *Data Driven Governments: Creating Value Through Open Government Data*. Berlin Heidelberg: Springer-Verlag.
- Bakıcı T, Almirall E and Wareham J (2013) A smart city initiative: The case of Barcelona. *Journal of the Knowledge Economy* 4: 135–148.
- Bates J. (2012) 'This is what modern deregulation looks like': co-optation and contestation in the shaping of the UK's Open Government Data Initiative. *The Journal of Community Informatics* 8(2).
- Bertot JC, Jaeger PT and Grimes JM (2010) Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government Information Quarterly* 27: 264–271.
- Brown G (2013) Why Kenya's open data portal is failing – and why it can still succeed. Available at: <https://sunlightfoundation.com/blog/2013/09/23/why-kenyas-open-data-portal-is-failing-and-why-it-can-still-succeed/>
- Chun SA, Shulman S, Sandoval R et al. (2010) Government 2.0: Making connections between citizens, data and government. *Information Polity* 15: 1–9.
- Coglianese C (2009) The transparency president? The Obama administration and open government. *Governance* 22: 529–544.

- Cowan D, Alencar P, McGarry F et al. (2015) Adapting to climate change – an open data platform for cumulative environmental analysis and management. In: Gervasi O, Murgante B, Misra S, et al. (eds) *International Conference on Computational Science and Its Applications*. Cham: Springer, pp. 3–15.
- Cronbach LJ and Meehl PE (1955) Construct validity in psychological tests. *Psychological Bulletin* 52: 281.
- Davies T (2013) Open data barometer: 2013 global report. Available at: <http://www.open-data-research.org/dl/odb2013/Open-Data-Barometer-2013-Global-Report.pdf>
- Dawes S and Helbig N (2010) Information strategies for open government: Challenges and prospects for deriving public value from government transparency. In: Wimmer MA, Chappellet JL, Janssen M, et al. (eds) *9th International Conference on e-Government*. Lausanne, Switzerland: Springer LNCS, pp. 50–60.
- Doran GT (1981) There's a S.M.A.R.T. way to write management's goals and objectives. *Management Review* 70: 35–36.
- European Commission (2013a) Directive 2013/37/EU of the European Parliament and of the Council of 26 June 2013 amending Directive 2003/98/EC on the Re-use of Public Sector Information. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:175:0001:0008:EN:PDF>
- European Commission (2013b) EU implementation of the G8 Open Data Charter. Available at: http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=3489
- Evans AM and Campos A (2013) Open government initiatives: Challenges of citizen participation. *Journal of Policy Analysis and Management* 32: 172–185.
- Field A (2009) *Discovering Statistics Using SPSS*. London: SAGE.
- Grimmelikhuisen SG (2012) *Transparency and Trust: An Experimental Study of Online Disclosure and Trust in Government*. Utrecht: Utrecht University.
- Gurstein M (2011) Open data: Empowering the empowered or effective data use for everyone? *First Monday* 16.
- Harrison TM, Guerrero S, Burke GB et al. (2012a) Open government and e-government: Democratic challenges from a public value perspective. *Information Polity* 17: 83–97.
- Harrison TM, Pardo TA and Cook M (2012b) Creating open government ecosystems: A research and development agenda. *Future Internet* 4: 900–928.
- HM Government (2011) Making open data real: A public consultation. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78884/Open-Data-Consultation.pdf
- Hossain MA, Dwivedi YK and Rana NP (2016) State-of-the-art in open data research: Insights from existing literature and a research agenda. *Journal of Organizational Computing and Electronic Commerce* 26(1-2): 14–40.
- House RJ, Hanges PJ, Javidan M et al. (2004) *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. California, CA: Sage publications.
- Huijboom N and Van den Broek T (2011) Open data: An international comparison of strategies. *European Journal of ePractice* 12: 4–16.
- Jaeger PT and Bertot JC (2010) Transparency and technological change: Ensuring equal and sustained public access to government information. *Government Information Quarterly* 27: 371–376.
- Janowski T (2015) Digital government evolution: From transformation to contextualization. *Government Information Quarterly* 32: 221–236.

- Jetzek T (2015) *The Sustainable Value of Open Government Data. Uncovering the Generative Mechanisms of Open Data Through a Mixed Methods Approach*. Copenhagen: Copenhagen Business School.
- Jetzek T, Avital M and Bjorn-Andersen N (2013) The generative mechanisms of open government data. Paper presented at the 21st European Conference on Information Systems, Utrecht, the Netherlands.
- Jocelyn C, Oliver R and Gillian O (2014) Value in the mash: Exploring the benefits, barriers and enablers of open data apps. Paper presented at the 22nd European Conference on Information Systems.
- Kalampokis E, Hausenblas M and Tarabanis K (2011) Combining social and government open data for participatory decision-making. In: Tambouris E, Macintosh A and de Bruijn H (eds) *International Conference on Electronic Participation*. Delft, The Netherlands: Springer, pp. 36–47.
- Kassen M (2013) A promising phenomenon of open data: A case study of the Chicago Open Data Project. *Government Information Quarterly* 30: 508–513.
- Kim S, Kim HJ and Lee H (2009) An institutional analysis of an e-government system for anti-corruption: The case of OPEN. *Government Information Quarterly* 26: 42–50.
- Kroes N (2011) Opening remarks, press conference on open data strategy – SPEECH/11/872. Available at: http://europa.eu/rapid/press-release_SPEECH-11-872_en.htm
- Kulk S and Van Loenen B (2012) Brave new open data world? *International Journal of Spatial Data Infrastructures Research* 7: 196–206.
- Lakomaa E and Kallberg J (2013) Open data as a foundation for innovation: The enabling effect of free public sector information for entrepreneurs. *IEEE* 1: 558–563.
- Lathrop D and Ruma L (2010) Open government: Collaboration, transparency, and participation in practice: ‘O’Reilly Media, Inc.’.
- Lee D (2014) Open Data Ireland: Evaluation framework. Available at: <file:///H:/My%20Documents/Evaluation-Framework.pdf>
- Lee G and Kwak YH (2012) An open government maturity model for social media-based public engagement. *Government Information Quarterly* 29: 492–503.
- Linders D (2013) From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly* 29: 446–454.
- Macintosh A (2004) Characterizing e-participation in policy-making. In: System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on. IEEE, 10 pp.
- Mann HB and Whitney DR (1947) On a test of whether one of two random variables is stochastically larger than the other. *Annals of Mathematical Statistics* 18: 50–60.
- Meijer A and Bolivar MPR (2016) Governing the smart city: A review of the literature on smart urban governance. *International Review of Administrative Sciences* 82: 392–408.
- Meijer AJ, Curtin D and Hillebrandt M (2012) Open government: Connecting vision and voice. *International Review of Administrative Sciences* 78: 10–29.
- Moon MJ (2002) The evolution of e-government among municipalities: Rhetoric or reality? *Public Administration Review* 62: 424–433.
- Murphy KR and Davidshofer CO (1988) *Psychological Testing: Principles and Applications*. Englewood Cliffs, NJ: Prentice-Hall.
- Nunnally JC (1967) *Psychometric Theory*. New York, NY: McGraw-Hill.

- Obama B (2009) Memorandum for the heads of executive departments and agencies: Transparency and open government. Available at: <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2009/m09-12.pdf>
- Obama B (2012) Digital government. Building a 21st century platform to better serve the American people. Available at: <https://obamawhitehouse.archives.gov/sites/default/files/omb/egov/digital-government/digital-government-strategy.pdf>
- Olalere A and Lazar J (2011) Accessibility of US federal government home pages: Section 508 compliance and site accessibility statements. *Government Information Quarterly* 28: 303–309.
- Radl W, Skopek J, Komendera A et al. (2013) And data for all: On the validity and usefulness of open government data. In: Proceedings of the 13th International Conference on Knowledge Management and Knowledge Technologies. ACM, p. 29.
- Sandoval-Almazán R (2015) Open Government Success Factors in Government Websites: The Mexican Experience. In: I. Management Association (ed.) *Open Source Technology: Concepts, Methodologies, Tools, and Applications*. Hershey, PA: IGI Global, pp. 1619–1635.
- Schillemans T, Twist Mv and Vanhommerig I (2013) Innovations in accountability: Learning through interactive, dynamic, and citizen-initiated forms of accountability. *Public Performance & Management Review* 3: 407–435.
- Susha I, Zuiderwijk A, Janssen M et al. (2015) Benchmarks for evaluating the progress of open data adoption: Usage, limitations, and lessons learned. *Social Science Computer Review* 33(5): 613–630.
- Tauberer J (2012) Open government data. Available at: <http://opengovdata.io/>
- The Economist (2013) Show me the money. When transparency is the handmaiden to innovation. Available at: <http://www.economist.com/blogs/graphicdetail/2013/11/open-data-0>
- The World Bank (2013) New partnership seeks to bring benefits of open data to developing countries. Available at: <http://www.worldbank.org/en/news/press-release/2013/09/18/new-partnership-seeks-bring-benefits-open-data-developing-countries>
- Ubaldi B (2013) Open government data: Towards empirical analysis of open government data initiatives. In: *OECD Working Papers on Public Governance*. Paris: OECD.
- Veeckman C and Van der Graaf S (2015) The city as living laboratory: Empowering citizens with the citadel toolkit. *Technology Innovation Management Review* 5(3): 6–17. <http://timreview.ca/article/877>.
- Villazón-Terrazas B, Vilches-Blázquez LM, Corcho O et al. (2011) Methodological guidelines for publishing government linked data. In: Wood D (ed.) *Linking Government Data*. New York: Springer, pp. 27–49.
- Webster J and Watson RT (2002) Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly* 26: xiii–xxiii.
- Welle Donker F, Van Loenen B and Bregt A (2016) Open data and beyond. *International Journal of Geo-Information* 5: 48.
- Whyte A and Macintosh A (2002) Analysis and evaluation of e-consultations. *e-Service Journal* 2: 9–34.
- Worthy B (2010) More open but not more trusted? The effect of the Freedom of Information Act 2000 on the United Kingdom central government. *Governance* 23: 561–582.
- Yu H and Robinson DG (2012) The new ambiguity of ‘open government’. *UCLA Law Review Discourse* 59: 178–208.

Zeleti FA, Ojo A and Curry E (2016) Exploring the economic value of open government data. *Government Information Quarterly* 33: 535–551.

Zuiderwijk A (2015) Open Data Infrastructures: The Design of an Infrastructure to Enhance the Coordination of Open Data Use. 's-Hertogenbosch: Uitgeverij BOXPress.

Zuiderwijk A, Janssen M and Dwivedi YK (2015) Acceptance and use predictors of open data technologies: Drawing upon the unified theory of acceptance and use of technology. *Government Information Quarterly* 32: 429–440.

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Appendix 1: Questionnaire

Open Government Case Description

In this section, you are asked to provide information about the Open Government case that you selected for Assignment 1.

1. What is the title of the case?

2. What is the objective of the case?

- Create openness
- Increasing transparency of the government and/or its legislation
- Increasing transparency of the government and/or its legislation The release of government data to the public as open data Increased accountability by government
- Information sharing between multiple governmental agencies Development of services to participate in governmental processes Development of freedom of information legislation
- Engagement of governments with citizens through social media channels Consultation of citizens in the development of legislation (eConsultation) Increase of trust in government
- The use of open government data by the public (e.g. by citizens or journalists) Stimulate innovation by companies
- Improve the functioning of the government
- Other, namely:

3. Which administrative level does this case concern?

- Local (e.g. Philadelphia city)
- Regional (e.g. Province/ Regions)
- State Level (e.g. State of Pennsylvania)
- National (e.g. United States of America)
- International (e.g. European Union, International Organisation)
- Other, namely:

4. Which international organization is(are) involved in this case?

- European Union open government partnership
- United Nations (UN) organization(s)
- World Bank
- International Monetary Fund
- Other, namely:

5. Which country/continent is primarily involved in this case? (Question 5 Answer choices for the dropdown: List of all countries and List of all continents, In alphabetical order)

If more than one country/continent is involved, please mention other involved countries/continents in the text box below

6. At what stage(s) is the public involved in the case you have examined?

- Start-up phase
- Design phase
- Implementation phase
- Operation and maintenance phase

7. Which of the following public stakeholders are involved in the Open Government case that you selected? Please watch video 1.4 of the MOOC for details of the stakeholders.

	1- Not at all involved	2- To a small extent involved	3- Involved	4- To a large extent involved	5- Completely involved
Infomediaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-profit organizations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Citizens	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entrepreneurs/private companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Journalists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Civil servants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Librarians	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other actors, namely:

8. Which of the following roles does the government have in this open government case?

- Funding agency
- Developing agency
- Operating agency
- Implementing agency
- Regulating agency
- Advertising agency
- Other, namely:

9. Which of the following government stakeholders are involved in the Open Government case that you selected? Please refer to video 1.4. of the MOOC for further information on types of stakeholders.

	1- Not at all involved	2-To a small extent involved	3- Involved	4- To a large extent involved	5- Completely involved
Portal providers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Policy makers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Law enforcement agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defence and security agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health, education and agriculture agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commerce and treasury agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local Government (e.g. municipalities)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regional Government (e.g. Provincial)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
State Government	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
National Government (including government ministries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other actors, namely:

10. Are there any other stakeholders involved in your case?

- No
- Yes, namely:

11. What is the URL Link/ relevant reference of this case?

Technologies and functionalities

In this section, you are asked to answer questions about the use of technologies and functionalities in the case you examined. Please watch video 1.2 of the MOOC for information about technology developments influencing Open Government.

12. How much important are the following technologies and functionalities for attaining the goals of this case?

	1- Not at all important	2- Slightly important	3- Important	4- Highly important	5- Most important	I don't know
Discovery of data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discovery of search engines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Application Programming Interfaces (APIs) to release data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Semantic data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Linking of Data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RDF (Resource Description Framework)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metadata	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visualizations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please mention any other technology or functionality you have found in your case that is used, if any.

14. To which extent do you believe that the Open Government case that you examined has attained the following economic benefits?

	1- Not at all attained	2- To a small extent attained	3- Attained	4- To a large extent attained	5- Completely attained	I don't know
Economic growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stimulation of competitiveness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stimulation of innovation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contribution toward the improvement of products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contribution toward the improvement of services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to external problem-solving capacity and resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduction of government spending	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Higher efficiency of governments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. To which extent do you believe that the Open Government case that you examined has attained the following operational and technical benefits?

	1- Not at all attained	2- To a small extent attained	3- Attained	4- To a large extent attained	5- Completely attained	I don't know
The ability to reuse data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fair decision-making by enabling comparison of different sources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easier access to data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easier discovery of data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of the wisdom of the crowds: tapping into the intelligence of the collective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contribution toward the improvement of administrative processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Are there any other attained benefits of Open Government specific to your case which are not mentioned above? If yes, please describe them here.

Development barriers of the Open Government case

In this section, you are asked to answer questions about the barriers related to the development Open Government case that you selected. The development barriers are divided in a) legal, b) participation and c) institutional barriers.

17. To which extent did the following legal development barriers hinder the Open Government case?

	1- To no extent	2- To a small extent	3- Moderately	4- To a large extent	5- To a large extent	I don't know
The risk of releasing privacy-sensitivity information	<input type="radio"/>					
The threat of liability for data quality	<input type="radio"/>					
Time consumption in gaining permission and access to and reproducing data	<input type="radio"/>					

18. To which extent did the following participation development barriers hinder the Open Government case?

	1- To no extent	2- To a small extent	3- Moderately	4- To a large extent	5- To a large extent	I don't know
Only problems specific to some communities are handled, which demotivates others	<input type="radio"/>					
Data is being misused which discourages developers	<input type="radio"/>					
Citizens' ideas are not taken on board in government administration	<input type="radio"/>					
The open government initiative tends to be a one-time pilot and lacks sustainability	<input type="radio"/>					

19. To which extent did the following institutional development barriers hinder the Open Government case?

	1- To no extent	2- To a small extent	3- Moderately	4- To a large extent	5- To a large extent	I don't know
Risk averse culture avoids risk from new initiatives	<input type="radio"/>					
Invaluable data published leading wasting government resources	<input type="radio"/>					

20. Which of the following development barrier category is the most influencing and hindering the use of the case?

- Legal

26. To which extent did the following institutional user barriers hinder the Open Government case?

	1- To no extent	2- To a small extent	3- Moderately	4- To a large extent	5- To a large extent	I don't know
No uniform policy for publishing government data or information	<input type="radio"/>					
No process for dealing with user input	<input type="radio"/>					

27. Which of the following user barrier category is the most influencing and hindering the use of the case?

- Informational
- Economic
- Participation
- Technical
- Institutional
- All of them are equally hindering
- Don't know

28. Are there any other user barriers that are found in the Open Government case which are not mentioned above? If yes, please describe them here.

Background Information

In this section, you are asked to provide information about your background.

29. Are you currently employed?

- Yes
- No

30. What is the highest level of school you have completed or the highest degree you have received?

- Elementary school degree
- High School (or equivalent) degree
- Associate's degree
- Bachelor's degree
- Master's degree
- Ph.D.
- Other (please specify)

31. Which of the following best describes the field in which you received your highest degree? (The answer contains a dropdown list of different degrees)

32. Which of the following best describes your current occupation? (The answer contains a dropdown list of different occupations)

33. What is your level of expertise of the field you are working in?

- Less than a year
- 1-3 year experience
- 3-5 year experience
- 5-10 year experience
- More than 10 year experience

34. To which extent are you yourself personally involved in the Open Government case that you just assessed?

- 1- No involvement at all
- 2- Involved to a small extent
- 3- Involved
- 4- Involved to a large extent
- 5- Completely involved

35. How would you describe your involvement in the Open Government case that you just mentioned in the above question?

36. How much do you trust the government involved in the case you examined?

- 1- No trust in government at all
- 2- Trust government to small extent
- 3- Neutral
- 4- Trust government to large extent
- 5- Trust government completely

Appendix 2: Overview of the OGDIs

OGDI no.	OGDI description	Country	Link
1	Speed, Accuracy, Organization : Personal Computers (pcs) Add To surveys	Africa	The world bank economic review
2	Open government	Andorra	www.gov.ad
3	Social Media Engagement between the Government of Antigua and Barbuda and its citizens	Antigua and Barbuda	https://www.facebook.com/antigua-barbudagovt
4	Consejo Abierto (Open Council)	Argentina	http://cdcordoba.opendata.junarc.com/home
5	Proyect de Ley Gobierno Abierto	Argentina	
6	Participatory Citizen Budget - rafaella	Argentina	http://www.rafaella.gov.ar/nuevo/seccion.aspx?s=100
7	Open Knowledge foundation	Argentina	http://data.buenosaires.gob.ar/about
8	Open data Catalog City of Buenos Aires	Argentina	
9	Open Data platform in Argentina	Argentina	datos.gob.ar
10	Taiwan 2020 Policy: White paper	Asia	http://www.ndc.gov.tw/en/content_list.aspx?n=a3f7cc2ca1fb0407
11	Trade exchange	Asia	www.tradeexchange.ae
12	Azerbaijan Civil Service recruitment	Azerbaijan	http://www.dqmk.gov.az/
13	Belgium Portal Data and Information sharing	Belgium	http://data.gov.be/en
14	Data and Information sharing	Belgium	
15	Open data portal Belgium	Belgium	http://data.gov.be/en
16	OP Digital - PBH	Brazil	https://opdigital.pbh.gov.br
17	Brazilian Portal Open data	Brazil	http://dados.gov.br/
18	Portal E-Democracia (E-Democracy Portal)	Brazil	
19	E-cidadania	Brazil	http://www12.senado.leg.br/ecidadania
20	E-SIC - Electronic System of Public Information Access”	Brazil	www.acessoinformacao.gov.br
21	Laboratório Hacker da Câmara dos Deputados em Brasília, Brasil	Brazil	https://www.facebook.com/labhackercd/
22	Access to the Federal Government Information Portal	Brazil	http://www.acessoinformacao.gov.br/

23	Participa osasco	Brazil	http://participaosasco.com.br/
24	Open data portal Alagoas em Dados e informações	Brazil	http://dados.al.gov.br
25	Central de Atendimento 1746	Brazil	http://www.1746.rio.gov.br/
26	Digital Cabinet in Rio Grande do Sul state	Brazil	the case finished - no link
27	#datapoa	Brazil	http://www.datapoa.com.br/
28	Central de Informação do Cidadão (Citizens Information Central)	Brazil	http://www.centraldeinformacao.rs.gov.br/inicial
29	Brazilian Transparency portal	Brazil	http://transparencia.gov.br/
30	São Paulo Aberta	Brazil	http://saopauloaberta.prefeitura.sp.gov.br/
31	Municipal Law 16.050/2014, PDE- Plano Diretor Estratégico do Município de São Paulo – Strategic Master plan	Brazil	http://gestaourbana.prefeitura.sp.gov.br/principal-pde/
32	Open Government in the subnational context: the "Open São Paulo Program"	Brazil	http://saopauloaberta.prefeitura.sp.gov.br/
33	“Diario Livre” (Free Daily)	Brazil	http://devcolab.each.usp.br/do/
34	Portal Geosampa- Mapa Digital da Cidade de São paulo	Brazil	http://geosampa.prefeitura.sp.gov.br
35	E-democracy portal of Brazilian's Deputy chamber	Brazil	http://edemocracia.camara.gov.br
36	Marco Civil da Internet, a Brazilian framework for regulation and civil rights on the internet	Brazil	https://www.eff.org/deeplinks/2015/02/marco-civil-devil-detail
37	Open Data Portal in Bulgaria	Bulgaria	https://opendata.government.bg/bg/
38	Government Finance Minister Refuses to Use email	Canada	www.straight.com
39	“Consejos territoriales de desarrollo rural” (Rural development territorial councils)	Costa Rica	http://www.inder.go.cr/territorios_inder/
40	Open Data Portal Parliament of Costa Rica	Costa Rica	http://www.asamblea.go.cr/lists/parlamento_abierto/allitems.aspx
41	The Czech National Open Data portal	Czech Republic	opendata.gov.cz
42	Case of Ecuador: National Plan of Electronic Government	Ecuador	http://www.gobiernoelectronico.gob.ec
43	Santa Ana participates	El Salvador	http://santaana.gob.sv/
44	The European Open Govt. Initiative	Europe	https://en.wikipedia.org/wiki/egovernment_in_europe
45	State Portal eesti.ee	Europe	https://www.ria.ee/en/government-portal.html ; https://www.eesti.ee/eng/services
46	Promoting Innovation Through International collaboration	Europe	http://www.opengovpartnership.org/sites/default/files/usa_0.pdf

47	Travel Advice for Dutch travelers	Europe	https://www.rijksoverheid.nl/onderwerpen/reisadviezen
48	Lobbyplag	Europe	http://lobbyplag.eu/governments , http://europe-v-facebook.org/en/en.html
49	European Commission's Better regulation	Europe	http://ec.europa.eu/smart-regulation/roadmaps/index_en.htm
50	Openspending.org	Europe	openspending.org
51	National action plan for open data	Europe	
52	Assylum Appiclation EU zone	Europe	http://ec.europa.eu/eurostat/tgm/graph.do?tab=graph&plugin=1&pcode=tps00189&language=en&toolbox=data
53	Open Entreprise	France	https://latonas.com/
54	Strategies for Open enterprise	France	
55	Transparent portal Hamburg	Germany	http://transparenz.hamburg.de/
56	Citizen Dialogue on The Climate Protection Plan 2050 (German Federal Government)	Germany	https://buergerdialog.klimaschutzplan2050.de/dito/explore?action=cmsjournalshow&id=89
57	Germany	Germany	http://www.opengovpartnership.org/blog/christian-heise/2013/11/18/german-grand-coalition-might-agree-joining-ogp
58	We build city	Germany	http://we-build.city/
59	Transparency Programme - diavgeia	Greece	https://diavgeia.gov.gr/
60	The Greek Open Government initiative	Greece	http://www.opengov.gr/en/
61	The Greek geo-data portal	Greece	http://geodata.gov.gr
62	Samosdialogos, Τώρα μιλάμε!	Greece	
63	Http://www.e-trikala.gr/e-dialogos	Greece	http://www.e-trikala.gr/e-dialogos
64	Public and confidential information	Guatemala	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=12&cad=rja&uact=8&ved=0ahu kewjhp7f28e3lahwbqr4kHUDcasuqfghkmas&url=http%3a%2f%2fwww.guatemala.gob.gt%2f&usq=afqjcnfjbd5ggz5cxwegb8hylxuahif3ww&sig2=zxasbkgupuhflvaat8xwsg
65	Property Register platform in guatemala	Guatemala	www.rgp.org
66	Open government data for regulation of energy resources in india	India	http://www.opendataresearch.org/project/2013/teri
67	Open Government for Good Governance for citizens	India	https://data.gov.in/
68	Open Government Data in Indian Initiative towards digital India	India	https://data.gov.in/
69	Mandatory Disclosure rules	India	www.ediindia.org
70	Public opinion and participation	India	https://twitter.com/webpecharcha/st

	in union budget of India 2016		atus/697478333295108097?lang=en http://www.dnaindia.com/money/report-budget-2016-finance-ministry-seeks-vote-on-twitter-to-gauge-people-opinion-2176390 http://mygov.nic.in portal
71	Www.myneta.info	India	www.myneta.info
72	Open enterprise	India	http://westbury-it.com/tag/openness
73	Www.dopt.in	India	www.dopt.govt.in
74	Code for Bandung	Indonesia	http://codeforbandung.org/
75	The use of Social Media in Public Policy Process in Jawa Tengah Province, Indonesia	Indonesia	https://twitter.com/ganjarpranowo
76	Lapor	Indonesia	https://id.techinasia.com/aplikasi-lapor-pengaduan-masyarakat
77	Open Data for Poverty Eradication Indonesia (SIMPADU-PK)	Indonesia	http://simpadu-pk.bappenas.go.id/
78	Ireland's Open Data portal	Ireland	data.gov.ie
79	Data.gov.ie	Ireland	https://data.gov.ie/data
80	Fingal County (Ireland) Council's Open Data portal	Ireland	http://data.fingal.ie/
81	The Compass of Transparency	Italy	
82	Data.go.jp – Data Catalog Site of the Japanese Government	Japan	http://www.data.go.jp/?lang=english
83	Transforming Jordan's Badia Deserts into "Ecosystems of Opportunity"	Jordan	http://www.worldbank.org/en/news/feature/2016/03/21/transforming-jordans-badia-deserts-into-ecosystems-of-opportunity
84	Twitter Community Policing in Lanet Umoja, Nakuru County, Kenya by Chief kariuki	Kenya	http://chiefkariuki.com/our-story/
85	Kenya Open Data portal	Kenya	https://opendata.go.ke/
86	The budget transparency portal	Mexico	http://www.opengovpartnership.org/sites/default/files/inspiring%20story%20-%20mexico.pdf
87	The budget transparency portal	Mexico	http://www.opengovpartnership.org/sites/default/files/inspiring%20story%20-%20mexico.pdf
88	Missing People database	Mexico	http://secretariadoejecutivo.gob.mx/rnped/datos-abiertos.php
89	Datos Abiertos cdmx	Mexico	
90	Citizen participation in social media	Mexico	
91	The public information access network	Mexico	http://transparencia.guanajuato.gob.mx/
92	An NGO attempt to open government data in Myanmar	Myanmar	http://www.huffingtonpost.com/hera-hussain/how-open-data-helped-unco_b_8512092.html

93	Political Mashup nl	Netherlands	http://politicalmashup.nl/
94	Open Data Statistics Netherlands	Netherlands	http://opendata.cbs.nl/dataportaal/portaal.html?_la=nl&_catalog=cbs
95	Ikbenwoerden.nl	Netherlands	https://www.woerden.nl/ikbenwoerden
96	Open Data City Dordrecht	Netherlands	http://dordrechtopendata.nl/index.html
97	Local Open Data Dordrecht	Netherlands	
98	Smart report - City of Utrecht	Netherlands	https://www.dataplatform.nl/cases/slim-melden
99	Open Culture Data	Netherlands	http://www.opencultuurdata.nl
100	Earthquakes in Groningen	Netherlands	
101	E-petition	New Zealand	http://wcc.govt.nz
102	Grassroots Access To Information Project (GRATIP)	Nigeria	
103	Digital Library of the Federal Public Administration, Mexico. (Gob.mx/publicaciones).	North America	it's an ongoing project, would be gob.mx/publicaciones by the end of july
104	Challenge.gov	North America	https://www.challenge.gov/about/
105	Electronic Public Record (OEP) of Norway	Norway	http://www.eupan.eu/files/repository/20141215142852_romedg_-_14_-_impact_of_open_government_on_ps_modernization_policies.pdf
106	Smart monitoring of schools under Open Data Strategy of Government of the Punjab , Pakistan	Pakistan	http://www.open.punjab.gov.pk/schools/
107	Normas	Peru	
108	Philippines Promoting Good Local Governance through Performance-Based grants	Philippines	http://www.opengovpartnership.org/sites/default/files/inspiring%20story%20-%20philippines.pdf
109	Free online access to Romanian national legislation	Romania	
110	Free access to governmental data on expenses of tax pairs found	Russian federation	https://www.roi.ru/
111	Budget for the citizens	Russian federation	http://budget.open.gov.ru/budget/
112	Open Data project, St. Lucia	Saint Lucia	http://www.worldbank.org/en/news/press-release/2014/06/05/new-open-data-project-to-support-business-innovation-and-transparency-in-the-caibbean
113	Open Government initiative	Sierra Leone	http://www.ogi.gov.sl/
114	Gauteng online	South Africa	http://www.gautengonline.gov.za/pages/default.aspx
115	Central Supplier Database and e-Tender Publication Portal: South Africa	South Africa	www.etenders.gov.za
116	Study of the OGP National African countries	South Africa	data.gov

117	Madrid citizen participation and social media	Spain	https://decide.madrid.es/
118	Decide Madrid	Spain	https://decide.madrid.es/
119	Bilbao open data	Spain	http://www.bilbao.net/opendata/es/inicio
120	Open Andalusia	Spain	http://www.juntadeandalucia.es/temas/administracion/participacion/transparencia-apertura.html
121	Digital participation platform “Decide Madrid”	Spain	https://decide.madrid.es/
122	Open data ayuntamiento de santander	Spain	http://datos.santander.es/
123	Good government certificate	Spain	http://mapainfoparticipa.com/index/mapa/
124	Iniciativa Aporta (datos.gob.es)	Spain	www.datos.gob.es
125	Aid Management Platform in Togo (West Africa)	Togo	http://www.pgatogo.tg/visualizacion/showdashboard.do?reset=true&type=donor
126	Open government	Togo	www.otr.tg
127	Aid Management Platform: tracking the use of public money	Togo	www.pgatogo.tg
128	Marsad Baladiya » Municipality Observatory project	Tunisia	http://baladia.marsad.tn/
129	UK Government “Open Government Manifesto proposals (OGP)”. 2011 TO 2018	United Kingdom of Great Britain and Northern Ireland	http://www.opengovernment.org.uk/engage/open-government-manifesto/
130	Red tape challenge	United Kingdom of Great Britain and Northern Ireland	http://webarchive.nationalarchives.gov.uk/20150522175321/http://www.redtapechallenge.cabinetoffice.gov.uk/home/index/
131	Open Data Scotland	United Kingdom of Great Britain and Northern Ireland	
132	Tanzania Water point mapping	United Republic of Tanzania	http://wpm.maji.go.tz
133	Centralised Constitution Online Database - Tanzania	United Republic of Tanzania	http://katiba.humanrights.or.tz:8080
134	Partnership	United States of America	http://www.opengovpartnership.org/country/united-states
135	Crown of the valley	United States of America	http://www.coolcalifornia.org/case-study/city-of-pasadena
136	Participating in the legislative process digitally via the Madison Project (USA)	United States of America	https://github.com/opengovfoundation/madison/tree/master/docs
137	Promoting Innovation through International collaboration	United States of America	http://www.opengovpartnership.org/sites/default/files/usa_0.pdf
138	North Carolina Open government	United States of America	http://www.nc.gov/government/open-government
139	Texas Public Information act	United States of America	http://www.statutes.legis.state.tx.us/docs/gv/html/gv.552.htm

140	Participatory budgeting in the 49th ward	United States of America	http://www.ward49.com/participatory-budgeting/
141	ABRE Puerto Rico	United States of America	http://abrepr.org/en
142	Prompting Innovation Through International collaboration	United States of America	
143	Voluntary work	United States of America	http://www.volunteering-hk.org/
144	Making the Government More Transparent and Collaborative with Public participation	United States of America	https://www-935.ibm.com/services/us/en/attachments/pdf/social_media--rn_white_paper.pdf
145	Louisville Metro Open Data portal	United States of America	https://data.louisvilleky.gov/
146	Detroit buildings	United States of America	http://www.buildingdetroit.org/
147	1) Digital Accountability and Transparency Act of 2014	United States of America	6) https://www.congress.gov/bill/113th-congress/senate-bill/994
148	City of San Francisco, California Transit data	United States of America	http://www.dot.ca.gov/dist4/realtime.htm
149	Promoting citizen's awareness of the water crisis in Flint Michigan	United States of America	the official white house press release. united way estimated cost of helping children \$100m
150	By the people, to the people	United States of America	data.gov
151	California Brown Act	United States of America	http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=54001-55000&file=54950-54963
152	DC Open government	United States of America	http://open.dc.gov/
153	Economics	United States of America	www.harvestinstitute.org
154	Challenge.gov	United States of America	https://www.challenge.gov/about/
155	E-portal	Yemen	http://www.unpan.org/publicadministrationnews/tabid/651/mctl/articleview/moduleid/1555/articleid/33753/default.aspx
156	E-portal	Yemen	http://www.unpan.org/publicadministrationnews/tabid/651/mctl/articleview/moduleid/1555/articleid/33753/default.aspx