

Increasing Awareness and Usefulness of Open Government Data: An Empirical Analysis of Communication Methods

Abiola Paterne Chokki¹[0000-0003-4500-2141], Anthony Simonofski¹[0000-0002-1816-5685],
Benoît Frénay¹[0000-0002-7859-2750] and Benoît Vanderose¹[0000-0001-9752-0085]

¹ University of Namur, Namur, Belgium

{abiola-paterne.chokki, anthony.simonofski}@unamur.be

Abstract. Over the past decade, governments around the world have implemented Open Government Data (OGD) policies to make their data publicly available, with collaboration and citizen engagement being one of the main goals. However, even though a lot of data is published, only a few citizens are aware of its existence and usefulness, which hinders fulfilling the purpose of OGD initiatives. The objective of this paper is to fill this gap by identifying the appropriate communication methods for raising awareness and usefulness of OGD to citizens. To achieve this goal, we first conducted a literature review to identify methods used to raise citizen awareness of OGD. Then, these identified methods were confronted with the results obtained from an online survey completed by 30 participants on their preferred methods to provide recommendations to governments. The contribution of this paper is twofold. First, it provides an inventory of communication methods identified in the literature. Second, it analyzes the gap between the use of these methods in practice and citizens' preference and uses this analysis to propose a list of methods that governments can use to promote OGD.

Keywords: Open Government Data, Citizens, Awareness, Communication Methods.

1 Introduction

Across the globe, many governments have implemented Open Government Data (OGD) policies to make their data more accessible and usable by the public. In its most common definition, OGD refers to data published by governments that can be freely used and redistributed by anyone [1]. The release of such data is most often motivated by values such as improving government transparency [2], stimulating innovation [3, 4], encouraging citizen collaboration and participation [4]. For these goals to be achieved, OGD must be used in some way, which requires that citizens know that such data exists (awareness) and know their added value (usefulness) [5]. Yet, even though a lot of data are published, only a few citizens are aware of its existence and usefulness [6, 7], which hinders achieving the goal of OGD initiatives. In this study, the term “citizens” refers to people with modest technical and data literacy.

There have been several attempts to examine whether a specific method was suitable or reports to suggest methods to increase awareness and usefulness of OGD to citizens. For instance, in [8], the author studied the contribution of the use of social media applications (Facebook, Twitter and YouTube) by Thailand's public sector to improve transparency and use of OGD. In [9], the authors proposed the use of training to promote OGD use. In [10–13], other methods in addition to the previous ones, such as OGD portals, hackathons, and newspapers, have been proposed to raise citizen awareness. However, none of these previous studies have effectively evaluated multiple methods with citizens in order to recommend to governments the appropriate methods to increase awareness and usefulness of OGD to citizens. Therefore, there is a need to conduct such a study to evaluate methods with citizens and based on this, propose appropriate methods to governments.

This paper seeks to address this gap by identifying the appropriate methods for raising awareness and usefulness of OGD to citizens. Therefore, our research question is as follows: “What are the appropriate communication methods for raising citizen awareness of the existence and usefulness of OGD?” To answer this research question, we first conducted a literature review to identify the methods used to promote OGD in previous studies. Next, these identified methods were confronted with the results obtained from an online survey completed by 30 participants on their preferred methods. The results of this survey will then be used to recommend to governments the most appropriate methods to promote OGD to citizens.

The remainder of this paper is divided into five main sections. In Section 2, we explain the research methodology. Section 3 explores existing methods for raising citizen awareness of the existence and usefulness of OGD and provides an overview of the survey results. In Section 4, we present the discussion and limitations of this study and then propose some avenues for future work. Finally, Section 5 provides a conclusion that summarizes the contributions of this paper.

2 Methodology

To address the research question of this study, we combined two methods: literature review and questionnaires. First, we conducted a literature review on methods used to raise citizen awareness of the existence and usefulness of OGD. The literature review was conducted using the databases “Scopus” and “Science Direct” with the keywords “open government data” or “open data”, + “citizen”, + “promote” or “raise awareness” + “usefulness” or “existence”. We also extended our search to the grey literature and policy reports. Most of the publications found dated from 2011-2021. From these publications, an additional selection was made based on their relevance to our research, leaving altogether 15 academic articles, web pages and policy reports which were looked at more thoroughly. The retained articles were then used to collect appropriate methods for raising citizen awareness of the existence and usefulness of OGD. Second, we created an online survey¹ to collect citizens' preferred methods. The survey was pretested with two users and later shared via the following communication channels:

¹ <https://forms.gle/JEnhmEKV94J3612m7>

UNAMUR mailbox, Facebook and Twitter to recruit citizens. In total, 30 participants completed the survey. The literature review along with the user feedback will be used to improve the current knowledge base and provide recommendations to governments.

3 Results

In this section, we first describe previous work on methods used to raise citizen awareness of the existence and usefulness of OGD. Then, we present the survey results.

3.1 Communication Methods Identified

By performing a literature review described above, we were able to identify a set of eight methods that could be used to raise citizen awareness of the existence and usefulness of OGD [10–13]. The following paragraphs explain each of these methods in more detail.

Social Media. According to [14], social media applications are new types of information and sharing tools, used in digital environments. They have been adopted by a few governments with different purposes: sharing information, interacting with citizens, promoting citizen participation in public issues or improving transparency [8, 10]. The most commonly used social media in the public sector are: **blogs, collaborative projects** (e.g., wikis, online forums), **social networking sites** (e.g., Facebook, Twitter) and **content communities** (e.g., YouTube) [8, 14]. Although social media applications offer many benefits, they can only reach specific citizens. For example, in the case of social networking sites, only the citizens who have an account and who fall within the criteria used for campaigns can be reached.

Public outreach campaigns. Apart from social media, a few governments have used methods such as **radio, television, newspapers, newsletters** and **poster campaigns** to inform citizens, especially of some applications built on the basis of OGD [12, 13]. The problem with these methods is that the content of the advertisement focuses on the implemented application without telling citizens that the application was implemented using open data. Therefore, citizens may use the service without knowing that it was built using open data.

Workshops and Conferences. These types of events aim to bring together various open data stakeholders to discuss the adoption and use of open data [10, 12, 15]. Two well-known examples of these types of events are the Open Government Data Camp and Open Data Day. The main advantage of these types of communication is that they help governments to have a direct discussion with citizens and also gather their feedback (e.g., needs, barriers) for improvement [16]. However, there are some drawbacks to these types of communication, such as the mandatory physical presence and limited number of participants.

Hackathons. Like the previous method, this method is an event that allows developers to design, implement and present services for a specific issue [4, 10, 12, 17]. This method allows for the promotion OGD to participants and the development of some services that can be published later to help a wider range of citizens. However, this method faces the following problems. It focuses mainly on developers and most of the results of hackathons are often not implemented or published online after the events, which does not impact the awareness of citizens, but only on the developers [11, 18].

Training and Education. This method consists of bringing together different stakeholders to inform or instruct them on a certain task with the aim of improving their performance or knowledge [10]. In [10, 12], they suggested enabling the creation of a “culture for Open Data” to students by integrating the use of open data (e.g. building apps) into academic programs. This method has been experimented in [9] and by Thessaloniki’s Digital Strategy [10] but like the hackathons, this method only attracts a specific and limited part of digitally literate citizens.

Public Displays. These are mainly outdoor displays, as well as indoor displays in public spaces, which offer different benefits to users (refer to “passersby”): collecting feedback such as voting system, displaying information or accessing services [19]. The main advantage of public displays is that they help citizens to interact directly with services in real life and can be easily accessible (visible) to “passersby”. However, public displays face the following problems: difficulty of interaction by a certain range of users and limited access (only available to a specific location) [20].

Applications. These include platforms developed to help users to easily access government data and also tangible examples of what can be done with published data [10, 12]. For example, **OGD portals** have offered visualizations, dashboards and success stories built from the data in addition to raw data, raising awareness of the benefits of Open Data and showing what can be done with particular datasets [10]. Apart from these features, some OGD portals have also proposed News and Events sections in their portals, which helps to increase traffic to the portal [10]. Another way to raise awareness among citizens is the development of **practical applications and services** accessible mainly on the web or mobile that use the data provided by governments and facilitate the daily life of citizens (e.g., the mobility application which helps Namur citizens to see the location of available parking in a specific area²). These practical applications are mainly developed either for a specific purpose or as federative applications to promote existing applications developed from open data (e.g., Datafruit³ which summarizes in a mobile application the reuses of open datasets on the French portal). The problem with this method is that without awareness campaigns like the ones presented above, these applications cannot be acknowledged by citizens. Another problem is that each government or developer promotes their applications separately, which increases

² <https://sti.namur.be/>

³ <http://opendatatales.com/%f0%9f%a5-datafruit-un-argumentaire-de-poche-de-lopen-data/>

the funds used to promote the different applications and the need for citizens to go through (or install) different applications in order to use them.

Word of mouth. This method involves citizens talking to their friends, family and other people with whom they have close relationships about a topic of open data [21, 22]. This method was less discussed in the literature of open data awareness but was proven to be one of the most powerful forms of awareness in general (e.g., e-commerce) as 92% of citizens trust their friends over traditional media [21].

3.2 Survey Results

Through questionnaires that participants completed during the rigor cycle, we were able to gather their opinions related to the research question “What are the appropriate communication methods for raising citizen awareness of the existence and usefulness of OGD?” In total, 30 participants (22 are aware of OGD and 8 are not) responded to the survey. All participants are between the ages of 18 and 50 and have at least a high school degree.

After collecting the citizens’ responses on the channels through which they have been informed or wish to be informed of the existence and usefulness of OGD, we associated each citizen response with one of the methods presented in Section 3.1, where possible. Some citizens’ responses were ambiguous (e.g., Google search or from municipality) and therefore were not considered. Figure 1 summarizes the percentage of citizens’ responses on the channels through which they have been informed (A1) or wish to be informed of the existence and usefulness of OGD (A2).

Regarding the methods used in practice to raise awareness and usefulness of OGD, Figure 1 (ref. A1) shows that the “word of mouth” channel (mainly through friends or colleagues), is the channel through which most citizens have been informed about OGD. This channel is followed by “training and education”, especially “education”, as many citizens indicate that they have heard about OGD in their classes. After this method comes public outreach campaigns, and after applications, workshops and conferences and hackathons. The methods “social media” and “public displays” were not mentioned by citizens. Regarding citizens’ preferred methods, Figure 1 (ref. A2) shows that citizens’ preferred channel is “public outreach campaigns,” followed by applications (suggested by citizens: OGD portals and OGD-based applications), training and education, and social media.

4 Discussion

This research contributes to the knowledge base in the following aspects. First, this research provides an inventory of communication methods that have been used in the literature to promote OGD to citizens. Second, unlike these previous studies that examine whether a specific method was appropriate [8] or suggest methods to increase awareness and usefulness of OGD to citizens [10–13] without providing an evaluation, this research presents the benefits and challenges of each of the methods used in the

literature and evaluates each through an online survey completed by citizens. Fourth, based on the survey results, this research highlights the discrepancies between the methods used in practice and those preferred by citizens to raise citizen awareness of OGD (See Figure 1). Fifth, based on Figure 1, we recommend for governments to use public outreach campaigns and applications to inform citizens about the existence and the usefulness of OGD.

However, the main limitation of this research concerns the representativeness of the participants for the questionnaires. To increase this representativeness, we suggest using other communication channels or collecting data on-site in universities or public places. In this study, this was not feasible due to the COVID-19 situation.

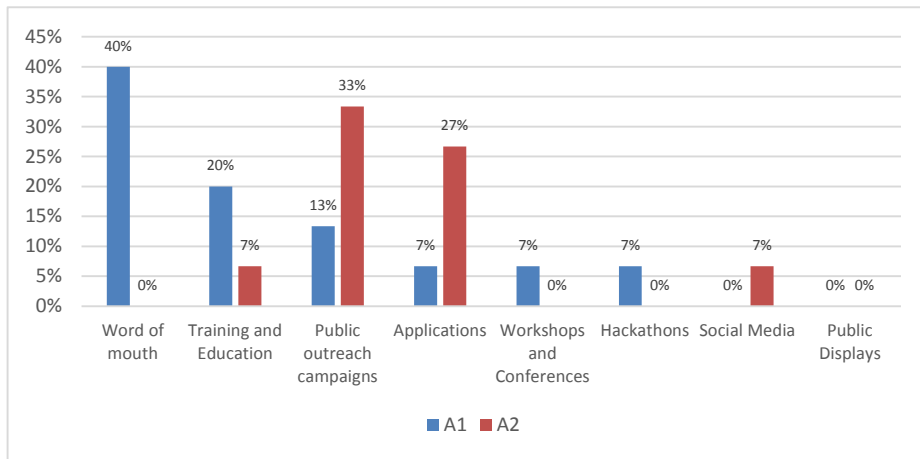


Fig. 1. Percent of respondents for each method of awareness and usefulness of OGD applied in the practice (A1) and preference by citizens (A2).

5 Conclusion and Future Work

The purpose of this paper was to identify the appropriate methods for raising awareness and usefulness of OGD to citizens. To achieve this objective, we first conducted a literature review to identify methods used to raise citizen awareness of OGD. Then, we used an online survey completed by 30 citizens to compare the results of the literature review with the citizens' perception.

The survey results, along with the literature review, allow us to make the following recommendations for governments: use public outreach campaigns and applications to inform citizens about the existence and the usefulness of OGD. The "word of mouth" method appears to be the most effective method used in practice for spreading awareness of OGD. Governments should therefore use the methods suggested above and encourage citizens to disseminate them to those around them. Since applications have proven to be one of the preferred methods and few studies have been proposed in the

literature to investigate the requirements needed by a usable tool to promote OGD, the upcoming work is to fill this gap, implement them into a usable tool and evaluate the tool to see its impact on citizen awareness.

References

1. Attard, J., Orlandi, F., Scerri, S., Auer, S.: A systematic review of open government data initiatives. *Gov. Inf. Q.* 32, 399–418 (2015).
2. Bertot, J.C., Jaeger, P.T., Grimes, J.M.: Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Gov. Inf. Q.* 27, 264–271 (2010).
3. Davies, T.: Open data, democracy and public sector reform: A look at open government data use from data. gov. uk. (2010).
4. Johnson, P., Robinson, P.: Civic Hackathons: Innovation, Procurement, or Civic Engagement? *Rev. Policy Res.* 31, 349–357 (2014).
5. Zuiderwijk, A., Janssen, M., Dwivedi, Y.K.: Acceptance and use predictors of open data technologies: Drawing upon the unified theory of acceptance and use of technology. *Gov. Inf. Q.* 32, 429–440 (2015).
6. Toots, M., McBride, K., Kalvet, T., Krimmer, R.: Open data as enabler of public service co-creation: Exploring the drivers and barriers. *Int. Conf. E-Democracy Open Gov.* 102–112 (2017).
7. Abdelrahman, O.H.: Open Government Data: Development, Practice, and Challenges. In: *Open Data*. IntechOpen (2021).
8. Gunawong, P.: Open Government and Social Media: A Focus on Transparency. *Soc. Sci. Comput. Rev.* 33, 587–598 (2015).
9. Gascó-Hernández, M., Martín, E.G., Reggi, L., Pyo, S., Luna-Reyes, L.F.: Promoting the use of open government data: Cases of training and engagement. *Gov. Inf. Q.* 35, 233–242 (2018).
10. Berends, J., Carrara, W., Vollers, H.: Analytical Report 6: Open Data in Cities 2. (2020).
11. Simperl, E., Walker, J.: Analytical Report 8: The Future of Open Data Portals. (2020).
12. European Environment Agency: Open data and e-government good practices for fostering environmental information sharing and dissemination. (2019).
13. Michael, C., Diana, F., Kate, J.: How government can promote open data and help unleash over \$3 trillion in economic value. (2014).
14. Mergel, I.: “A mandate for change”: Diffusion of social media applications among federal departments and agencies. *Public Manag. Res. Conf.* 1–27 (2011).
15. Ojo, A., Janssen, M.: Workshop about the understanding and improving the uptake and utilization open data. 15th Annu. Int. Conf. Digit. Gov. Res. 350–351 (2014).
16. Cook, M., Jurkat, A.: An Open Government Research and Development Agenda Setting Workshop. , Albany, NY (2011).

17. Simonofski, A., Amaral de Sousa, V., Clarinval, A., Vanderose, B.: Participation in Hackathons: A Multi-methods View on Motivators, Demotivators and Citizen Participation. 14th Int. Conf. Res. Challenges Inf. Sci. 385 LNBIP, 229–246 (2020).
18. Gebka, E., Clarinval, A., Crusoe, J., Simonofski, A.: Generating value with open government data: Beyond the programmer. 13th Int. Conf. Res. Challenges Inf. Sci. 1–2 (2019).
19. Clarinval, A., Simonofski, A., Vanderose, B., Dumas, B.: Public displays and citizen participation: a systematic literature review and research agenda. *Transform. Gov. People, Process Policy*. 15, 1–35 (2021).
20. Coenen, J., Nofal, E., Vande Moere, A.: How the arrangement of content and location impact the use of multiple distributed public displays. *Des. Interact. Syst. Conf.* 1415–1426 (2019).
21. HAYES, A.: Word-of-Mouth Marketing, <https://www.investopedia.com/terms/w/word-of-mouth-marketing.asp>, last accessed 2022/01/06.
22. Chen, Z., Yuan, M.: Psychology of word of mouth marketing. *Curr. Opin. Psychol.* 31, 7–10 (2020).