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Strategies and instruments for the dissemination and promotion of open government data use in Brazil: case study of Rio de Janeiro city hall

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RESUMO

Governments have been encouraged the use of open government data (OGD) by society for diverse situations. This article aims to identify strategies to guarantee the management of OGD cycle of use and dissemination of open data. The methodology is based on a single case study of Rio de Janeiro City Hall and covers the period between 2013 to 2016. In addition to a literature review of OGD, Rio de Janeiro OGD portals were analyzed using the 15 Principles of Open Data and 5-Star Open Data. An analysis of OGD public policy was also conducted, including the legislation and the strategies of OGD usage promotion in Rio. The main results were the identification of four strategy categories that set the OGD public policy (hackathons; prizes and awards; partnerships; and, data journalism). The potential for stimulating the use of open data was analyzed, although its sustainability faces various challenges such as administrative discontinuity and the patterns of use by society.

PALAVRAS-CHAVE: Open Government Data. Transparency. Dissemination of Public Data. Innovation.

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INTRODUÇÃO

The use of information and communication technologies (ICTs) to promote transparency and access to information in Brazil is not recent and has been following the appropriation of ICT use by society and government in the country (DINIZ et al, 2009). Several strategies have been adopted by governments in order to accommodate diverse demands that guarantee rights such as access to information, government accountability and citizen participation in public decisions (VAZ, 2007). In this sense, the literature presents possibilities for the use of new technologies by governments to promote transparency (PINHO, 2008), to fight against corruption (MATHEUS et al, 2010) and to promote citizen participation (RIBEIRO and ALMEIDA, 2011).

In regard to transparency and access to public information by electronic channels, there was an advance in the possibilities of using public information with more granularity and imbued in context by society (VAZ et al, 2013). This means that the new model of ICT-supported transparency is not only based on the mere provision of information as its main dimension, but also on the dissemination of information in appropriate formats which enables the effective use and dissemination of data by both society (CRANTSCHANINOV et al., 2011) and governments, especially creating policies of transparency and smart cities (JANSSEN and MATHEUS, 2015).

In this sense, the literature also highlighted the emergence of the use of Open Government Data (OGD) as one of these strategies (JANSSEN and ZUIDERWIJK, 2014). In 2018, it is possible to find OGD initiatives at all government spheres in Brazil. For example, the Brazilian Open Data Portal of the Federal Government and some portals in states and municipalities (DINIZ, 2009; AGUNE et al, 2010; VAZ et al, 2010). A priori, OGD can be defined as the supply of raw public databases that can be freely manipulated, filtered or combined with others and the use of such data by society can generate the construction of new applications and knowledge (DINIZ, 2009; AGUNE et al, 2010; VAZ et al, 2010).

However, there is no consensus in the literature related to the extent of which the new applications and knowledge contribute to reinforce OGD policies and a sustainable model for the use of OGD for public policies and public services (CRAVEIRO and ALBANO, 2015, JANSSEN and ZUIDERWIJK, 2014). This scientific gap inspires this paper that aims to identify strategies to ensure the management of a cycle of use and dissemination of OGD. It is included to the justification, the absence of government initiatives that monitor the use of OGD, identifying the creation of public value after the usage by its users (POSSAMAI, 2016).

Thus, the objective of this article is to identify, describe and analyze the strategies adopted by Brazilian governments for the publication, dissemination and promotion of the use of OGD by citizens, companies and civil society organizations. It is expected, as a result of this paper, the identification of factors, from the point of view of data supply by the Brazilian governments, that enhance the use of OGD by Brazilian society. For this, the case of the city of Rio de Janeiro was elected to illustrate the strategies adopted by governments in order to increase usage of data by society. It is a single case study, considering the open data portals of Rio de Janeiro and the municipality strategies of dissemination and incentive of use of OGD. Based on a literature review, the case study was situated on government open data strategies and the usage of data by societal actors. The

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study also included the methods of structured observation of the municipal OGD portals and document analysis.

OPEN GOVERNMENTE DATA LIVE-CYCLE

OGD is the term found in the literature review to describe the online availability of public domain information and government data for free use by society (UBALDI, 2013; YU & ROBINSON, 2012). This concept has as one of its main assumptions the understanding that the data belongs to society, i. e., public institutions must guarantee unrestricted access to all data that it possesses. Only confidential data should be excluded from this situation.

Therefore, citizens are seen not only as a passive user of public data, but also as an actor who can use the data according to their needs, creating content and producing public value from the reuse of OGD (VAZ et al, 2011). According to Albano and Reinhard (2015, p. 216): "It is a basic premise of the concept of open data that third parties can freely access the data, since the data is in compliance with legal requirements, and they can manipulate and generate new products or services." Therefore, society can use public data and produce new applications and usages according to their interests.

In order to measure the adoption of OGD initiatives by government organizations, reflections on the development of open government data portals has been focused on the construction of models and techniques of OGD evaluation. These measurement efforts are influenced by the tradition of classification by stages of available information from the literature of information systems and public administration areas. However, the identification of factors that evaluate beyond the technical design of the OGD were not been explored in detail by the literature, such as aspects that facilitate or impede the use of data by society (MATHEUS and JANSSEN, 2014). Generally, the classifications focus on all initiatives and data-opening possibilities, but do not allow in-depth evaluation of specific OGD initiatives.

For this type of evaluation, the two most available solutions in scientific and technical documents on OGD are:

• The Principles of OGD established by the international organization for Open Government Data. Initially, the organization developed a set of eight principles that characterizes open government data initiatives (VAZ et al, 2011), and later were defined another seven additional principles that government organizations should adopted to comply with OGD requirements (OPENGOVDATA, 2016), consolidating a model of Fifteen Open Data Principles (15OGDP); and

• The Open Data Five Star Implementation Scheme (5SODG) evaluates the maturity of OGD publication in five categories ranging from the availability of data on the Web to the supply of Linked Open Data (LOD) (Berners-Lee, 2012).

These forms of analysis enable the verification of the appropriateness of Open Government Data disclosure related to the established principles or the implementation of the five stars scheme. This means both frameworks analyzed characteristics related to OGD publication. However, these methods do not indicate a maturity model or metrics adopted that take into consideration social

and technical aspects of the use of this data by society (ZUIDERWIJK and JANSSEN, 2014; ZUIDERWIJK et al., 2013).

A third model presented by the literature includes the strategies for dissemination and usage of data by society. Susha et al. (2015) identified categories and critical success factors for OGD initiatives. According to the authors, the following categories define the model:

a) legislation, regulation and licenses;

b) strategy and political support;

c) management and structuring of data publishing processes;

d) training and support for public officials involved;

e) evaluation of OGD initiatives;

f) sustainability of OGD initiatives;

g) collaboration;

h) platforms, tools and services to open data; and,

i) accessibility, interoperability and standards.

Within each of the categories, it is possible to detect a set of attributes that behave as critical factors for the operation of OGD initiatives. Therefore, this third model attributes more characteristics to the initiatives of OGD, including more dimensions than the analyzes that only involve the measurement of the publication formats.

Four government strategies were also mapped to encourage the use of OGD by society: hackathons; prizes and contests; partnerships; and data journalism (MATHEUS et al, 2014a, MATHEUS et al, 2014b).

Hackathons are fast competitions where IT professionals, data analysts and other stakeholders are invited to create innovative solutions for society, industry and government problems, using government data. Awards and contests are also another form of incentive and are characterized by awards to a wider audience, but with a lesser technological appeal. Partnerships are generally created for projects between government and stakeholders (businesses, non-governmental organizations, academics and citizens) interested in using government data to provide services to citizens or improving service delivery based on a sustainable model for those involved (MATHEUS et al., 2014a). Data Journalism consists of facilitating access to data for journalists who produce analysis and infographics that are published in the press (MATHEUS et al, 2014b).

Therefore, the implementation of OGD initiatives is a complex activity, since it requires actions of the governments that involve a large range of actors, both internal and external to the governments. In this sense, the idea of an Open Government Data Life-Cycle has been adopted (VAZ et al, 2014). The literature review pointed out several authors that adopted the OGD Life-Cycle idea. Some of the identified OGD cycles were represented in Figure 1: Hyland and Wood (2011) represented by blue and "I" frames, Attard, Orlandi et al. (2015), represented by red and "II" frames, and Charalabidis et al. (2015), characterized by the tables of green color and "III". These different authors have some similarities in the definition of the stages of the OGD cycle and are identified in the Figure 1,

respectively, in each part of the cycle with the numbering from 1 to 4. Numbering indicates the similarity of the models. In case of no similarities, it was inserted the word "NA", representing "Not Available".

Based on these similarities among the models identified in the literature review, the “Open Government Data Life-Cycle", named OGDLC, was suggested in this article as a theoretical reference. This model was proposed by the Opengovintelligence project. The stages for the OGDLC in this article were established on this project according to the following dimensions (OPENGOVINTELLIGENCE, 2016):

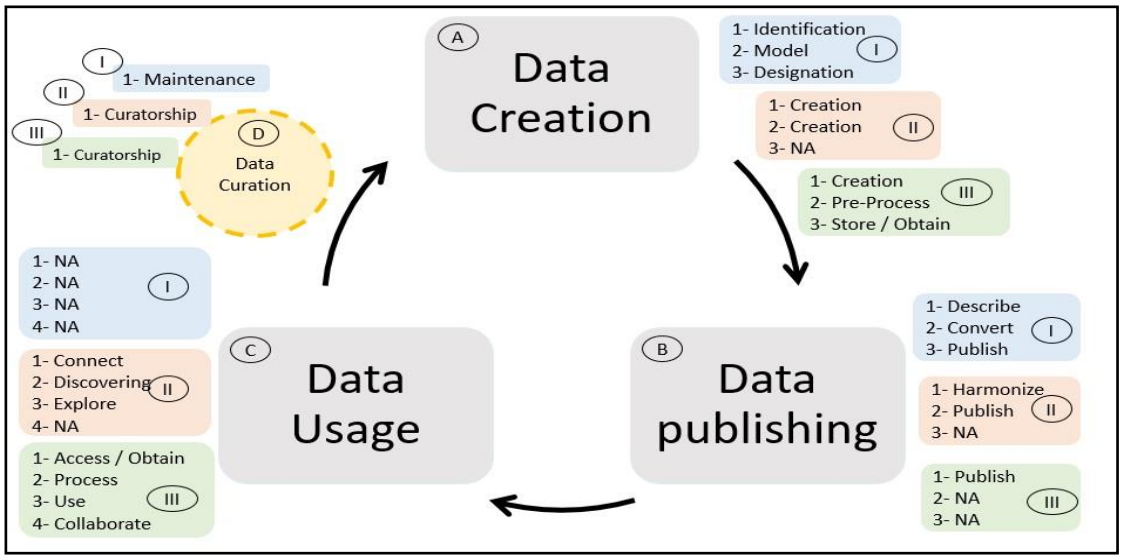
A. Data creation: includes the process steps of data collection, storage and selection of data for publication, according to the characteristics of the OGD.

B. Publication of data: issues related to harmonization of data, data cleansing, creation of metadata (data that explains datasets) and publications of dataset on Open Data Portal.

C. Data Usage: includes the connection, discovery, access, exploitation and usage of data.

D. Data Curation: actions related to maintenance and data governance.

Figure 1 - Open Government Data Life-Cycle



Source: OpenGovIntelligence (2016).

METODOLOGIA

In order to achieve the objective of identifying characteristics of the portals and the strategies adopted by governments that might restrict or expand the possibilities of use of the OGD by society, it was defined to conduct a single case study. The case selected was the OGD policy of the municipality of Rio de Janeiro, through the open data portals as Data.Rio (data.rio.rj.gov.br) and its strategies for dissemination and incentive to use OGD, as well as documents and norms on the theme produced by the city hall.

The case of the city of Rio de Janeiro was chosen due the fact that stands out in terms of pioneering usage of OGD and its articulation with a large number of strategies and management practices in order to increase the use of data by the government and society (MATHEUS et al. to 2015).

The choice of the OGD portals of the municipality of Rio de Janeiro is explained by their unique characteristics. In 2014, the city became the first local government within the Brazilian Executive Branch, to approve a law implementing the OGD guidelines, Municipal Decree n.º 38.474, of March 31, 2014 (RIO DE JANEIRO, 2014). This legislation became the basis for a bill in the Chamber of Deputies (Bill nº 7.804, 2014) and its discussion was open to citizens through an online public consultation on the e-Democracy portal (goo.gl/Yn5eVI).

The content of the OGD initiative in Rio de Janeiro, its implementation and management were investigated. In a first stage, techniques of reconstitution and characterization of experiences were conducted in the case study. Documental analysis of the portals and other documents related to the initiative were also important as well as interviews with those involved in the OGD policy. Data collection occurred between August and September 2016.

The second stage analyzed the Rio de Janeiro initiative from the perspective of the critical factors highlighted by Susha et al. (2015). For each of the nine categories of critical factors provided by the model, corresponding attributes were identified, which allowed a greater understanding of the strategies adopted by the municipality. It was also verified information about individuals and organizations using OGD from Rio de Janeiro portals. Potential strategies for the involvement of developers and users for open data applications were mapped: hackathons; partnerships; prizes and contests; and data journalism.

Interviews on dissemination and incentive strategies for the use of OGD with two data scientists from the Rio Operations Center (ROC) was also made. The ROC is consisted by a building and team that centralizes planning and decision making for major events and emergencies that may occur at the city, such as the 2016 Summer Olympics, soccer matches at the major stadiums and traffic jams.

Technicians from the Technology Company of the Municipality of Rio de Janeiro (IPLANRIO) were also interviewed. These civil servants present knowledge of data management and the ways in which the access to relevant information at the city council takes place. In addition, it must be noted that these actors are the ICT specialists and the intermediaries between potential users of data (programmers, journalists, companies, public servants of other secretariats, citizens, etc.) and the public administration.

Finally, a consolidated analysis was performed based on the OGDLC model presented in the literature review (Figure 1). For each of the stages of the Life-Cycle, it has been analyzed by the occurrence of strategies of publication, dissemination and incentive to the use of OGD in Rio. With this information, it was possible to describe how these strategies can behave along the OGDLC. The results were structured in accordance with the steps of the OGDLC and the strategies of publication, dissemination and incentive to the use of the OGD in the city of Rio de Janeiro.

A CAMPANHA OFICIAL DA VACINA HPV (1A DOSE) E O SURGIMENTO DA CONTROVÉRSIA NA MÍDIA

The application of the model proposed by Susha et al (2015) allowed to identify the critical success factors for OGD publication in Rio de Janeiro. The authors defined this model from the case study of the OGD initiative in the ENGAGE. Chart 1 presents the results obtained from the analysis of documents, legislation, and structured observation of the open data portal and interviews with public managers.

Chart 1 – Attributes and categories of critical factors.

Categories of critical factors	Atributes in the Data.Rio Portal	Observation method
A- Legislation, regulation and licensing	1- Regulation of OGD (Decree 38.474 / 2014); 2- Creative Commons (CC 3.0) license.	1- Documentation of legislation. 2- Observation of the Portal Data.Rio.
B- Strategy and political support	3- Strategy is written on the legislation; 4- High political support. Senior management providing support to OGD policy (mayor and secretary in charge).	3- Documentation of legislation 4- Interviews with civil servants of the city of Rio de Janeiro
C- Management and structuring of Data publishing processes	5 - There was management and structuring of Data publishing processes. However, these activities were interrupted 6 months after the implementation phase. Several resources and features were not updated anymore. Discontinuity of the OGD policy.	5- Observation related to calendar updates on Portal Data.Rio
D- Training and support for civil servants involved	6- No type of internal training. Based on specific skills of human resources from the civil servants at city hall and external people.	6- Interviews with civil servants from the Rio de Janeiro city hall
E- Evaluation of OGD publication initiatives	7- No evaluation was performed.	7- Interviews, analysis of documents and the portal Data.Rio
F- Sustainability of OGD publication initiatives	8- There is no data curation; 9- Public policy was interrupted.	8- Observation of dates on Portal Data.Rio 9- Interviews, analysis of documents and data from Portal Data.Rio
G- Collaboration	10- Collaboration with specialized company to develop the portal; 11- Collaboration with the Technology Company of the City of Rio (IPLANRio) in order to develop the application programming interface for the GPS and data storage;	10, 11 and 12- Interviews with civil servants from the Rio de Janeiro city hall

	12- Collaboration with journalists to use the data.	
H- Platforms, tools and services for opening data	13- CKAN platform with basic search functions, table format, map and graphical visualization.	13- Observation of the Portal Data.Rio.
I- Accessibility, interoperability and standards	14- There was not an accessibility policy. The verification of satisfaction of standards and accessibility criteria using a robot indicated a relevant number of errors (12) and inadequacies (110); 15- Interoperability based on international open data standards (CSV, PDF, XLS, TXT, APIs in REST JSON format).	14- Structured observation from the website tool www.dasilva.org.br applying WCAG 2.0 and e-MAG checks. 15- Observation of the data formats and APIs of the portal Data.Rio

Source: Elaborated by the authors.

Chart 1 demonstrates that the attributes present in Rio's OGD policy are concentrated in the categories related to: a) legislation, regulation and licenses; and b) strategy and political support. Accordingly, the city of Rio de Janeiro already has a political strategy for open government data, guaranteed by legal norms and structures that encourage the publication of OGD in the municipality. On the other hand, other critical factors associated to the policy actions are still incipient or undefined.

Some dimensions - collaboration; platforms, tools and services for opening data; and, accessibility, interoperability and standards - showed a lower incidence of identified attributes. It is possible to find some activities developed by the city hall related to these categories. Although, they are incipient, little structured or sporadic. So, few attributes were already related to these factors, but they did not occur continuously or completely structured such as the existence of accessibility guidelines.

Finally, there are categories in which Rio de Janeiro has not even been any action. In particular, categories such as training and support for civil servants involved, instruments for evaluating the publication of OGDs and sustainability of OGD initiatives. It is also worth mentioning the category management and structuring of data publishing processes. The City of Rio de Janeiro initiated a process of discussion on this topic, but this action faced discontinuation after six months of its implementation.

Such behavior of the critical factors suggests that the OGD policy exists formally in Rio, but it is not effectively implemented. The most structured attributes are those that involve the definition of technical issues and legislation. At least on the drawing board, Rio's OGD strategy is well defined. However, it was not observed the creation of strategies that guarantee the continuity and the sustainability of the OGD policy in the municipality. Therefore, from this analysis, it seems that there is an attempt to institutionalize the publication of the OGDs, but that it is still quite fragile. In relation to the process of dissemination and promotion of data use, the lack of sustainability and evaluation initiatives, as well as the implementation of only sporadic collaboration strategies and rules for the publication of data, affect the possibilities of increasing the use of data by the society.

ANALYSIS OF STRATEGIES FOR DISSEMINATION AND PROMOTION FOR THE USE

The city of Rio de Janeiro implemented several strategies to disseminate and stimulate the use of DGA through hackathons; partnerships; prizes and contests; and, data journalism.

The first strategy (hackathons) took place for the first time in August 2013. The datasets used by the participants were published by the Call Center 1746 (www.1746.rio.gov.br). It is a citizen service provided by telephone, website and applications, in which citizens complain about and request services, ask for information and conditions of municipal public services and equipment.

The hackathon of the Call Center 1746 (www.rio.rj.gov.br/web/hackathon) brought together about 80 computer programmers and other related professionals interested in using the data as administrators, economists, social scientists and journalists. After this, a team, selected among the participants, were hired to elaborate dashboards and assist the team of data scientists of the city hall (PENSA - Hall of Ideas).

The second strategy adopted to encourage the use of DGAs of the Data.Rio portal was the creation of partnerships with universities, companies and civil society stakeholders who contacted the city hall demonstrating such interest. The PENSA team then acted as an intermediary between the data and the application developers or other products and services. With the creation of open data portals and APIs, the process turned highly automated. Waze (www.waze.com/pt-BR) and Moovit (moovitapp.com) mobile applications are examples of apps developed by foreign technology companies that use city data to improve the quality of its services in the city, in areas suchlike private transit and public transportations, offering to citizens an opportunity of use free of charge. In some cases, such as these, the city hall and its team of data scientists became users of the analyzes and data produced by these companies.

The third strategy, developed afterward the portal Datamine Rio, emphasize two contests: Rio Ideias and Rio Apps. The contest Rio Ideias (http://ideias.rioapps.com.br) had the objective of reaching a non-technical public with interests in broader themes. Many of these solutions are used by hackers and IT professionals participating in another contest, cognate from the Rio Datamine, called Rio Apps. One of these concepts, emerged all along Rio Ideias contest, and that became the winner of the competition, was the app BUUS (buus.com.br). BUUS is a mobile application able to calculate which urban bus lines are likely of being used in certain routes, indicating the nearest bus stop and the estimated time of arrival at the destination using real-time GPS data from the municipal buses. The 2015 contest presented an amount of 43 mobile submitted, ranging from areas like health, education and finance.

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The fourth strategy corresponds to the incentive to Data journalism (MATHEUS et al, 2014). After journalists were informed of the potentialities of open data portals, they can also use related data publish in new contents and stories without a request to access government information, in other words, there is no interference from government officials, which increases transparency in the collection and use of data. Mostly, journalists who works on-duty at COR, interviewed those responsible for a particular issue at City Hall, or asked for information by e-mail or other channels of access to information. With the new resources, journalists started to obtain information by searching directly on the open government data portals offered. As an example, were identified places where inappropriate behavior indicated the disrespect of speeds limits allowed to the buses and that vehicles of certain lines had surpassed the period of use allowed by the competent legislations..

OPEN GOVERNMENT DATA LIFE-CYCE AND THE STRATEGIES AND INSTRUMENTS ADOPTED AT THE CUITY HALL OF RIO DE JANEIRO

The challenges of improving Rio de Janeiro's OGD initiative, following the steps detailed in Figure 1, include:

A. Data Creation:

I. Continuity of public policy;

II.Sustainability of the OGD initiative; and

III. Participation of the civil society in the process of open data.

B. Data publishing:

I. Expansion to achieve the implementation of the Five Stars (5SOGD);

II.Involvement of different sectors and standardization of data publication among all sectors; and

III. Updating of public policy, platforms and data, otherwise speaking, policy continuity.

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C. Data Usage:

i. Constanted strategies (permanently) of data use. In this case, might have include the development of laboratories and the empowerment of civil society to use the data;

ii. Sustainability of initiatives; and,

iii. Disclosure of uses made by society.

Despite efforts to open government data in the city of Rio de Janeiro, some improvement challenges persist in the municipality's strategy. For the data creation stage, we observed that there is no continuity of public policy, since the

open data portals of Rio de Janeiro is not being updated, both in the inclusion and in maintenance of the data available. In addition to technical maintenance, for features such as updating CKAN plug-ins (Open Street Map has been discontinued and there was no change of solution).

From the sustainability standpoint, there is no officially ecosystem presented by the City Hall for these data to be used internally and externally, or even the establishment of partnerships, with universities, other governmental entities and private initiative.

Following the observed dimension related to sustainability, social participation also does not have institutionalized patterns in order to increase the citizens, entrepreneurs, academics and other interested parties to engage in the process of choice of data sets to be opened, formats and characteristics of the data to be published. For example, creating a channel to receive files that are useful to users, for instance an e-mail or message box in the open data portal itself.

In addition, the constitution of a committee or council for open data that has a guaranteed presence, preferably with vote, of civil society, academics, businessmen, government and other interested parties. This council would discuss priorities and sensitive issues as for instance approaches to reducing privacy issues for citizens.

For the data publishing stage, three improvement challenges were identified. The first of them is to reach the opening level of 5 stars. This means that some of the data does not yet have SPARQL search functionality directly from connected databases, or are not in connected formats, such as the Resource Description Framework (RDF). For the most part, the data is in formats of three or less stars, suchlike

Text files and spreadsheets. This reduces the possibilities of users for data reuse and potential efficiency gains, especially the use of automated processes by machines.

The second issue is connected to the third one of the data creation stage (participation of the company in the opening of data). As there is no superior advice to all departments and secretariats in government, there is, for example, no consensus as to where and how to publish the data. Apparently, there is no open data plan, with well defined ontology and opening strategies.

The third problem is also connected to issues already identified in the opening stage. There is no continuity of public policy, through updating the legislation, the platform (for example, map features) and especially the updating and curation of data, mostly dating from 2013.

For the third stage, use of the data, three problems were identified. The first is the absence of constant and less perennial strategies for the use and reuse of data. For this, it is recommended that laboratories of data use be created with broad participation of the citizens and institutions concerned. It would be in line with the previously proposed Committee or Board. In this way, it would be possible to empower society through peer learning or playful, low-financial ways suchlike workshops, webinars and Massive Open Online Courses (MOOCs), classes made available through the Internet with certification.

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In addition, present, as a challenge to improve the use of data, is the sustainability of the initiatives. Few developers would be interested in a platform that has both data and outdated functionality. Thus, it is likely that applications and studies that take into account the open data portal of Rio de Janeiro will not be sustainable if the aforementioned characteristics persist.

Finally, it can be appreciated that without registered users on the platforms, participating in committees and councils, or collaborating with innovation labs, it is difficult to identify who, how or when used the data opened in order to develop mobile applications, articles, business innovation, scientific studies, among others.

CONCLUDING REMARKS

The conclusion of the case study allowed the extraction of inferences about the scope of strategies used their potential to produce a cycle of dissemination and use of OGDs, and new theoretical perspectives for further investigation. Nonetheless, it is worth remembering that the research design did not aim to allow a high degree of definitive generalization to other municipalities.

To assess the maturity of the open data, both the 15POGDP model and the 5SOD model were only partially useful. The two are supply-based models and exhibit scarce information about the modalities of effective use of published data or what governments do to encourage its use. New analytical models that incorporate more elements of the use of OGDs, once developed, should complement these models in order to improve the investigation and evaluation of OGD publishing and reuse policies from the perspective of demand and its effectiveness.

The research confirmed that the policy of OGD in Rio was adopted and materialized by a set of strategies as creation of legislation related to open data; implementation of open data portals; and initiatives to stimulate the usage of data by the people through actions such as hackathons, data journalism and partnerships with companies and mobile apps (Waze, Moovit, BUUS).

The analysis of the strategies adopted by the municipal government to promote the dissemination and expansion of the use of open data proved to be fundamental to understand the scope of the case and to identify potential and effective impacts of the data opening initiatives. This analysis showed that the four strategies adopted by the city of Rio de Janeiro (Hackathons, Prizes and Contests, External Partnerships, Data Journalism) can be considered valid, having an impact in the promotion of the use of the open data made available by the municipal government. They have brought the possibility of using the data in applications aimed at the provision of innovative public services and the dissemination of information and analysis on services and public policies. However, there were no significant applications aimed directly at promoting economic development.

The articulation of these initiatives to the Data.rio portal points to the importance given to the search for ways to reuse published data, surpassing the simple valuation of publication as a sufficient result. With this, the open data gained visibility and it was possible to obtain a certain justification of the investments made. This use of the data has created the conditions to stimulate its opening and to strengthen the initiatives, pointing towards a cycle of availability

and use, as well as increasing demand. The adoption of the strategy to stimulate the practice of data journalism evidences this strategy.

Notwithstanding, the problem of sustainability and continuity of the initiatives attracts attention. The present research did not have resources of measurement of the sustainability and continuity. Despite this limitation, it permitted to perceive that there is strong dependence on the interest of the municipal government so that the initiatives can happen and have continuity, observing few mechanisms of institutionalization.

In the period included in the scope of this research (2013 to 2016), the policy of open data and the initiatives of dissemination and stimulation to its use had not yet passed the sieve of administrative discontinuity, and nothing guarantees that they cannot be discontinued in some degree, in subsequent municipal management. However, the use of applications produced from OGDs and the existence of partnerships with companies and journalists can play a positive role in promoting their continuity.

The move from the supply side (government) to the demand side (society) should be the framework for consolidating a cycle of OGD use, but during the period under study, there is insufficient evidence that this change has occurred. The development of methodologies to evaluate these phenomena from the demand is once again timely.

It should also be noted that this article has limitations. The first one is the methodological choice for a single case study of the open data initiative of the city of Rio de Janeiro, which obviously restricts the possibilities of generalization. In addition, the scope of this work contemplates only from the viewpoint of the offer of the open data but does not present analyzes from the approach of the users. From this, it demonstrates the strategies adopted by the observed case. Finally, this case only illustrates a part of the possible strategies that governments can adopt when opening public data, not having built a typology that wants to understand all possibilities.

These problems and limitations mentioned above may be the object of future new studies. Case studies that have an analytical focus will be appropriate, seeking to identify the elements of continuity and discontinuity of public policies for the opening of government data. It will also be convenient to study strategies and instruments to ensure the continuity of these policies, both from the point of view of supply and demand and effective use, adding a new layer of analysis tools to those used here.

The four categories of strategies employed (Hackathons, Awards and Contests, External Partnerships, Data based Journalism) emerged from the literature review and can be used in new analytical and evaluative efforts, comparatives or not, complementary to different experiences. Other possibilities should be taken into consideration and new categories of analysis of strategies and tools for dissemination and encouragement of the use of OGD are interesting points of research. Attending the construction of sturdy models, from the theoretical point of view, and densely reasoned from the empirical perspective. This is a possible development of the present research, which can collaborate with the reduction of the gaps detected in the national and international literature.

Estratégias e instrumentos de disseminação e incentivo ao uso de dados governamentais abertos no Brasil: estudo de caso da cidade do Rio de Janeiro

ABSTRACT

Governos tem incentivado o uso de dados governamentais abertos (DGA) pela sociedade para os mais diversos propósitos. Este artigo tem como objetivo identificar estratégias para garantir a gestão de um ciclo de uso e disseminação de DGA. A metodologia partiu em um estudo de caso único sobre o município do Rio de Janeiro, durante o período de 2013-2016, com revisão de literatura sobre DGA, seguido de uma análise dos portais de DGA do município, utilizando-se os modelos 15PDA e 5EDA. Foi realizada uma análise da política de DGA, incluindo a legislação de suporte e as estratégias de incentivo ao uso de DGA. Os principais resultados foram a identificação de quatro categorias de estratégias que compuseram a política (hackatons; prêmios e concursos; parcerias; e jornalismo de dados). Também foi analisado o seu relativo potencial de estímulo do uso dos dados abertos, ainda que a sua sustentabilidade enfrente desafios como a descontinuidade administrativa e os padrões de uso pela sociedade.

KEYWORDS: Dados abertos do governo. Transparência. Divulgação de dados públicos. Inovação.

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