

Open Government Data in an e-service Context - Managerial and Conceptual Challenges

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Abstract

Open government data (OGD) includes different data sets that are launched by government organizations in order to stimulate third-party development of e.g. apps for mobile devices. At the same time a government organization is expected to provide useful public e-services. Government organizations of today tend to treat OGD and e-services separately, so is the e-government community. The aim of this paper is to address challenges related to the work with OGD within an e-service context from: (1) a managerial, and (2) a conceptual perspective. A qualitative case study of the Swedish Transport Administration and their work with OGD and e-services as an empirical base in this paper. This paper illustrates, using a set of analytic categories generated from previous studies, that there are several challenges related to the managerial and conceptual work and perspectives concerning OGD. There are also different patterns present when managing e-services and OGD (bottom-up vs. top-down).

Keywords

Open government data, open data, open data management, e-government, e-service, service

Introduction

Open government data (OGD) include different data sets that are made available by government organizations in order to stimulate third-party development of new e-services for a wider audience (e.g. apps for mobile devices) (e.g. Zuiderwijk et al. 2014). This is done for multiple purposes, e.g. to stimulate an open government and to increase democracy. Third parties can be scientists, journalists, and active citizens who want to take part in and understand public problems or challenges and policies, using data processing and data analytics (Zuiderwijk et al. 2014; Charalabidis et al., 2016). The value that OGD is expected deliver are highlighted in digital agendas and policies, including the U.S., the European Union (EU), and Sweden; the latter being the national context for this study. From a EU perspective, releasing open data from the public administration is expected to result in 40 billion EUR each year. This means that there are many expectations related to OGD applications (e.g. Dawes et al., 2016), and that there is a pressure on government agencies to launch OGD and to innovate services in general (e.g. Bertot et al., 2016). At the same time, government organizations are expected to provide useful public e-services. Such services are becoming more mature and more carefully managed over time, while OGD is gradually diffusing as a newer phenomenon, not managed or conceptualized as thoroughly or maturely thus far.

Government organizations of today tend to treat OGD and e-services separately, and so is the e-government research community (cf. Charalabidis et al., 2016). The separation in practice can be illustrated in terms of viewing e.g. OGD in terms of innovation, focusing enthusiasts or OGD champions, while e-services are illustrated in terms of being part of government organizations' daily operations and strategic work. Based on Davies et al. (2013), Charalabidis et al. (2016, p. 41) claim that: "The concept of

open data is strongly associated with innovative capacity and transformative power” and is a part of organizational invention. On the one hand, a separation of OGD and e-service development can lead to a non-efficient use of development resources and inattention from a managerial point of view. On the other hand, a separation may be needed since OGD and e-services are potentially different, when we e.g. focus on the level of internal development and maintenance, and how they are initiated and managed. Knowing how to view this phenomenon from a managerial point of view and a conceptual ditto, is a challenge.

The aim of this paper is to address challenges related to the work with OGD within an e-service context from: (1) a managerial perspective, and (2) a conceptual perspective, in terms of if and how we can view OGD as an e-service. This paper contributes to two levels following Charalabidis et al. (2016, p. 47); (1) the understanding of the management and policies for OGD (focusing on publishing) and (2) the usage and value of OGD (focusing the management and needs). The paper builds on previous studies on general challenges related to e-government (Gil-García and Pardo, 2005) and on OGD (Janssen et al., 2012). We do not, however, contribute to normative solutions to the problems and challenges in this paper. Instead we elaborate on the challenges and try to understand them using a reflexive research approach. Addressing channel management literature (e.g. Pieterse and Ebbens, 2008) is one possible road to follow when studying OGD and e-services from the perspectives above, but we will focus this study on more general management issues, and only touch upon channels and their management.

The case focused in this paper, the Swedish Transport Administration (STA), works with public e-services and OGD. They tend to treat e-service and OGD separately, but there are some advocates that argue for an e-service perspective on OGD. This work can be used as a source to learn from and to develop knowledge concerning both the managerial and the conceptual challenges involved in handling OGD and e-services consciously in a government organization. The conceptual dimensions and knowledge can benefit the emerging research on OGD and the more mature, but still not fully refined conceptual work, in the research on public e-services conceptualizations (e.g. Lindgren and Jansson, 2013; Jansen and Ølnes, 2016). We start this paper by reviewing previous literature and research on conceptual and managerial challenges of e-government in general, e-services and OGD. Thereafter, the research approach and the case study are presented, followed by the analysis. We conclude this article by elaborating on OGD within an e-service context from a managerial and a conceptual perspective.

Previous research

Challenges linked to the management of e-government initiatives are many, and challenges can be considered to be one side of a coin where the other side can be discussed in terms of success (e.g. Gil-García and Pardo (2005); Melin and Axelsson, 2009). Gil-García and Pardo (2005), for example, report that such challenges are linked to the cross-disciplinary nature of the phenomena, and that these challenges can be grouped into five categories: (1) information and data, (2) information technology (IT), (3) organizational and managerial, (4) legal and regulatory, and (5) institutional and environmental. These categories are based on a review of the literature in the area, but do not aim at creating a “single” list on challenges for e-government initiatives. In their extensive literature study, Gil-García and Pardo (2005) link the different categories to short descriptions of the challenges in terms of keywords. The keywords are summarized here. For in depth insight related to these keywords, we refer to the original source. (1) Information and data contains e.g. focus on data quality and accuracy, and needs, (2) IT contains aspects of usability, security, technological incompatibility and legacy, complexity, technology skills and experience, and technology newness. If we look at (3) organizational and managerial aspects, project size, managers’ attitudes and behavior, organizational and user diversity, lack of alignment of organizational goals and project goals, multiple and/or conflicting goals (reported also in e.g. Dawes and Pardo, 2002), resistance to change, and turf and conflicts. Category (4) contains restrictive laws and regulations, a budget focus, and intergovernmental relationships, followed by the last category (5) focusing institutional and environmental aspects, such as privacy, autonomy of agencies, policy and political pressures, environmental context (social, economic and demographic). The latter category is related to a wider institutional perspective on organizations and is also taking organizational and individual norms into account, their actions and behaviors that we accept or take for granted (cf. Meyer and Rowan, 1977). The categories from Gil-García and Pardo (2005) are used to guide the analysis below.

The previous research above focus mainly on e-government research in general, with public e-services as one area of interest. Challenges related to OGD are also many in research and in practice, but the research

on OGD is more recent and emergent. However, systematic and more in-depth studies are emerging also in the OGD area after year 2010. For example, we can identify studies on OGD resting on institutional theory (cf. Meyer and Rowan, 1977), in parallel with some of the foundations referred to by Gil-García and Pardo (2005) in more general e-government studies. One example is by Janssen et al. (2012) focusing (1) institutional aspects (e.g. trade-offs between public values (such as transparency vs. privacy values), a non-entrepreneurial culture, disparate policies for publicizing of OGD, lack of resources, lack of established processes for dealing with user input) and (2) task complexity (e.g. e.g. lack of ability to discover appropriate OGD, no explanation of the meaning of data, users not be aware of potentials in OGD, no support or helpdesk). Furthermore, they highlight (3) use and participation (e.g. user incentive structures, low reactions on user input, fees related to OGD, lack of knowledge to make sense of data, threat of lawsuits etc.); and, (4) legislation (e.g. violation of privacy and security, unclear terms and conditions etc.). Finally, Janssen et al. (2012) present two categories related to information and technical aspects; (5) information quality (e.g. lack of [accurate] information, incomplete information, obsolete data, essential information missing etc.) and (6) technical aspects (e.g. non-defined data formats, lack of standards and meta standards, no central portal or architecture, fragmented systems and a complicated system legacy). The categories focusing OGD presented by Janssen et al. (2012) are similar to the ones presented by Gil-García and Pardo (2005) on a more general e-government level. Some of the institutional dimensions explored by Janssen et al. (2012) focus on barriers from a data provider's point of view (the supply side), focus on task complexity, use and risks associated with the publication of OGD, and also the users' perspective (the demand side). The article (ibid.) also discusses benefits of open data in the setting of myths of open data and open government. Challenges are also studied by Zuiderwijk and Janssen (2014), and they identify several aspects from a user perspective, e.g. fragmentation of data, lack of (easy) access to data, lack of interoperability, and difficulties in processing data to create value.

In order to advance conceptual work and to address conceptual challenges, this paper is built on the assumption that in order to explain social phenomena, we as researchers, but also reflective practitioners, need concepts to think and talk about them (Pollitt, 2011). The e-government literature on public services mediated online, here referred to as public e-services, is growing and includes a large number of various concepts used more or less synonymously; such as public e-service (Jansen and Ølnes, 2016; Karlsson et al., 2012), e-service (Kaisaris and Pather, 2011), e-government service (Jansen, de Vries and van Schaik, 2010), and channels (Ebberts et al., 2007). The conceptual vagueness of the e-service concept and phenomenon has been highlighted as a contributing factor to the slow advancements in this field (Jansen and Ølnes, 2016; Lindgren and Jansson, 2013). To add to the conceptual confusion, we now see an increasing overlap between public e-services and OGD. Here, we believe that there are significant winnings in conceptual clarification to be made by relating the public e-service concept to OGD and refine their meaning. The aim in this paper is not to revisit the vast number of definitions of open data in general or OGD in particular provided by practitioners or scholars in the area, instead we focus on the relation between OGD and e-services.

Based on the review above, of the literature on managerial and conceptual challenges related to OGD and e-services within a general e-government frame, we can conclude that there are advancements made to address, understand, and clarify managerial and conceptual challenges; but, there is more work to be done. In this paper, we explore OGD vs. e-service and try to add some clarity. This is done from a two-fold need, a research based need to clarify the relationship between OGD and e-services, and a practical need to deal with both OGD and e-services more consciously within organizations. Categories that will guide our analysis below are derived mainly from the study by Gil-García and Pardo (2005), and complemented with the categories by Janssen et al. (2012). An institutional theory perspective, as described above, is important in the analysis, and is also embedded in the two studies used as a point of departure.

Research Approach

The empirical part of this paper is based on a single qualitative and interpretative case study (cf. Walsham, 1995; Myers, 2009) focusing on how a Swedish governmental agency works with OGD and e-services. This paper is written in the context of a research project investigating the development and use of e-services in that particular agency. The aim is to better understand how public sector organizations can work with e-service development in order to ensure that these services add value for both internal and external stakeholders. Our focus includes investigating how e-service development is governed and on

conceptual refinement of “e-service” as a general concept. Several e-services are studied within the project, and focused in this paper. One of the services studied is their OGD. The initiatives described in this paper can be categorized as an act of engaged scholarship (cf. Van de Ven, 2007) in terms of the authors trying to combine theory development and conceptual efforts with an aim to contribute to the government agency’s problem solving concerning e-services (even if this is not highlighted in this paper, it is an important feature of the wider research project). However, the work cannot be categorized as action research since it is not covering important phases in a full action research cycle (Susan and Evered, 1978; Baskerville, 1999). We, as researchers are inspired by, and follow early phases of the cycle, and the general aim of action research; but we are not e.g. taking part of actions, evaluations and learning based on the identified challenges and perspectives related to the development of e-services and OGD in this case study. In sum, the general label engaged scholarship is more appropriate for this particular project.

Qualitative data generation and analysis was conducted in an iterative manner in three stages, starting with (1) document studies to get an overview of the agency’s work with OGD and e-services, followed by (2) 25 semi-structured interviews (Myers and Newman, 2007) that were conducted over a period of 21 months (March 2015-Dec 2016) with representatives from several business areas and hierarchical levels at the headquarters and different organizational divisions (e.g. strategic planning, communications, IT department, controlling, customer service, business development). 17 of the interviews were conducted face-to-face, and eight were conducted using telephone. The semi-structured interviews were held in Swedish and quotes used in this paper are translated to English by the authors. The interviews were guided by open ended questions and focused on e.g. how the respondent defines e-services, OGD, interpret strategies, management and needs linked to these, and their present challenges and possibilities associated to these topics. Alongside this process, we conducted (3) a hermeneutic literature review (Boell and Cecez-Kecmanovic, 2014) to increase our understanding of concepts and the managerial challenges of OGD and e-services, their integration or separation, and to explore themes that surfaced continuously during the emerging analysis of the empirical case study data. The analysis was performed during the research period, during which interviews were transcribed (partially when deeper knowledge was needed) and the responses were categorized inductively, as a part of a content analysis approach (cf. Krippendorff, 2004). As a second step in this paper the empirical data was analyzed using theory as a lens (analytic categories from previous studies) (merged categories summarized in Table 1). This way of working with the analysis is an example of a reflexive research process (Alvesson and Sköldbberg, 2009) working with the generation of categories based on the empirical data while using theory as a guide (e.g. previous research on conceptualizations of OGD and e-services) when analyzing data (cf. Walsham, 1995).

Case Study – The Swedish Transport Administration

The STA is a government agency in Sweden responsible for long-term planning of the transport system for all types of traffic, as well as for building, operating and maintaining public roads and railways. The organization has approximately 6.500 employees and is organized in different divisions and geographic regions in Sweden. The organization was formed in 2010, when two previously separate agencies working with roads and railways were merged. The agency is also responsible for administering the theoretical and practical tests needed to receive a driving license and a taxi driver badge, as well as the theoretical test for the professional know-how needed for a transport license (The Swedish Transport Administration, 2017).

The organization has a large number of e-services in different parts of the business directed towards citizens and professional users (e.g. special road transport permits, road and railway traffic information, driving licenses, railway traffic planning and capacity); some respondents claim that they provide around 80 different e-services, but the exact number of e-services remains unknown. The government agency is also active in launching OGD and have several data sets published covering maps, traffic data (e.g. for public roads, railways, and some ferries), and basic facts of the organization. As many organizations, they have different challenges related to the work with OGD and e-services that are both managerial and conceptual. From a managerial perspective challenges for both OGD and e-services involve e.g. how to initiate, coordinate and control them in use, to know the target groups’ needs, the value and the long-term allocation of resources etc. At the moment, the agency’s e-services practice is more mature and structured, compared with their work concerning OGD. Their work with OGD is characterized as more recent, local, entrepreneurial, and disparate (bottom-up) initiatives within the organization. In comparison, their ways of handling e-services are more mature, controlled, and coordinated, but still rather decentralized. In

short, different models for managing OGD and e-services are present, making the case interesting to learn from when investigating OGD and e-services from a conceptual and managerial perspective. Conceptual challenges present are e.g. how e-services and services in general should be defined and socially constructed within the organization, categorized, and communicated externally. This conceptual ambiguity is also relevant for the development and maturity of OGD; if OGD should be defined as a service among others, a kind of e-service, and in which formats etc.

Analysis and Discussion

The analysis and discussion below is based on a reflexive research approach, as stated above. The analysis is structured based on the categories in Table 1 and content analysis as a parallel approach. This means that we have had some support and attention given by the analytic categories, but that we have also tried to have an open mind for more inductive and emergent analytic themes. Based on the different categories describing challenges for e-government initiatives and OGD reviewed in the section on previous studies, a merged set of categories is generated for the purpose of this paper and the analysis of the case (Table 1).

Merged category	E-government categories (Gil-García and Pardo, 2005) [e#]	Open data categories (Janssen et al., 2012) [o#]
(1) Information and data	(e1) information and data	(o5) information quality
(2) Information technology	(e2) information technology	(o6) technical aspects
(3) Organizational and managerial	(e3) Organizational and managerial	(o1) institutional aspects, and (o2) task complexity
(4) Legal and regulatory	(e4) Legal and regulatory	(o4) Legislation
(5) Institutional and environmental	(e5) Institutional and environmental	(o1) Institutional aspects
(6) Use	-	(o3) Focus on use

Table 1. Analytic categories (a merge of Gil-García and Pardo [2005] and Janssen et al. [2012])

In Table 1 above the “Use” category is generated based on Janssen et al. (2012) “Focus on use” (o3) as a vehicle to focus the use of e-services and OGD. Users (internal) are mentioned only in category (e2) by Gil-García and Pardo (2005), and the usage and users are implicit in category (e5), by the same authors, regarding e.g. privacy.

Managerial and Conceptual Challenges – inductive analysis

In the case study, several aspects on *managing* OGD, in a context of governmental e-services, are identified from an inductive perspective. Interpreting the case study data generated allowed us to identify the following challenges related to the management of OGD expressed in terms of a need to:

- identify *demands* from a user perspective
- *prioritize* which open data sets to launch from a holistic perspective – to coordinate different OGD initiatives within the organization
- *choose* between publishing OGD and/or developing e-services
- *outsource* development of e.g. services based on OGD and to focus on internal e-services
- assure the *quality* of the OGD

- *predefine* and *standardize* data sets for potential use and to still have a *flexibility* to launch new data sets “on demand” (spontaneous requests)
- *integrate* the management of OGD within the overall organizational processes for data and service management
- manage the OGD *longitudinally/strategically* – not only by one initiative at a time
- *balance* openness, integrity and security threats

To be aware of the potential security threats when launching open data is a clear emerging topic among actors within the organization. This is related to the awareness of possible terrorist attacks. To try to foresee different ways of combing datasets and avoid launching sensitive data, taking such security threats into account, is considered to be important. An increased awareness of the integrity and the security issues are extremely important, according to the information management strategist at the STA. Personal integrity must be guaranteed, and the agency needs to follow the laws and regulations on the national and EU level. There is also a question of trying to balance the role of being a government agency on the one hand, and being service-minded on the other hand. This is considered as a paradox. Another challenge mentioned above is also being able to ask oneself within the organization; what kind of data do we have that can be of interest for external actors to develop third-party services? A strategist working with information management identified a need to be more systematic in this kind of work:

“[...] we can do more, we need to set up a method on how to assess what kind of data that is effective to launch.” (Strategist, Information Management, April 25, 2016)

A step-by-step approach characterizes the emergent launch of open data from the agency; to launch different data sets, and to make quality assurances, instead of “launching too much data.”

The work with OGD within the organization started with early, partly reactive, actions based on e.g. train traffic data that was accessed by third-parties from the present website in order to create mobile apps for travelers. This generated IT system performance problems, and one reaction from the agency was to launch open data separately in a dedicated channel. This is referred to as one example of when the agency started to work more actively with open data and to manage the demands for open data more efficiently.

Open data and the emergent development of services based on such data is also discussed in terms of comparative advantages using competence (and also resources) as a point of departure:

“We like to share [data]. There are many other actors that are more qualified developing services. It is not our core business to develop apps.” (Service manager, April 25, 2016)

“To launch open data is a part of supplying any service.” (IT strategist, April 25, 2016)

“Data sets begin to become products that we need to manage.” (IT strategist, April 25, 2016)

Actors within the organization make a difference between “prepacked” (and standardized) services vs. spontaneous requests for open data. The latter group of services are managed as requests within the organizations and may be put on hold when prioritizations are made. Another recurrent theme, expressed in the following citation, concerns the quality of OGD:

“Quality in the open data sets is important. Almost instantly when we publish [open data] externally, someone is contacting us. [if the quality is not assured] you become instantly questioned.” (External open data consultant, May 26, 2016).

Handling of requests and to be accountable (to answer to the questioning from external users and to guarantee data quality) also requires resources and attention from the organization, in terms of support and knowledgeable staff (technical and business expertise).

Apart from being reactive towards external needs, the agency has worked proactively with OGD with financial support from the Swedish Innovation Agency. One ambition in this initiative was to lower the barriers, from a third-party point of view, when using API's. Another ambition was to know the users more in depth, in order to generate knowledge on e.g. how to access OGD, to register for open data access or not, agreements needed, etc. The users are e.g. active in different forums and interact around the different data sets launched by the agency and the use of them. The dialogue between the users of open data are quite frequent, and the agency has promised not to monitor this activity. All in all, this has

created an entrepreneurial aura surrounding OGD that sometimes clashes with the more mature, institutional, and stable management of e-services, and services in general within the agency. As an illustration of this, one of the managers of services within the division handling roads describes that there are still some “guerilla activities” present when it comes to OGD within the agency. This can generate a lot of good ideas and create an atmosphere of entrepreneurship within the organization as stated above. But, according to the same respondent, there is also a need to deal with open data in a more strategic and aligned way. OGD has been launched in and from different divisions within the organization, without knowing anything about the other initiatives. Taking the recent security threats in the environment into account, and a risk to be diversified, the respondent concludes that there is a distinct need to take a more strategic and comprehensive approach when managing the open data within the organization. Important questions to answer are e.g. how to know what kind of data that is published and by whom?

”There are no target groups for open data, but knowing that it is very costly to publish open data, you need to have a quite good idea of what kind of data that you should publish and who may think that this data is important and interesting.” (Service manager, Roads, November 07, 2016)

There is also a financial cost related to open data, when it comes to the handling of support, but it is not possible to have comprehensive support for third-parties using the open data sets launched by the agency due to scarce resources and budgeting. Some support is possible, but the majority of the support, according to the service manager within the road division, must be automated and provided through an open data portal. There is also a need to get the overall management of data in place, as stated in the beginning of this section, to have actors within the organization that are accountable etc.

Several of the dilemmas can be linked to the *conceptual* challenges involved in the organization’s management and intertwined understanding of OGD. These challenges are elaborated on below.

Managerial and Conceptual Challenges – analytic categories

Several dilemmas are identified connected to the different inductively generated aspects on managing OGD in the section above. There are dimensions of (1) supply vs. demand; (2) prepacked and quality assured OGD, vs. fast response OGD; (3) to treat OGD as a service among other e-services, vs. as an asset more exclusive and entrepreneur driven; (4) openness vs. security awareness; and, (5) a resource that can be controlled and managed within the organization, vs. a resource that is free and available for third parties to explore and develop.

When we use the merged analytic categories from Table 1 as a lens for analyzing the dilemmas inductively generated, there are several matches. If we focus the (1) information and data category, several dimensions of data quality and accuracy (Gil-García and Pardo, 2005; Janssen et al., 2012) are identified in the case study. The need to handle dynamic information needs (ibid.) is also evident in the case in terms of “fast response”, but also confronted with the need to act based upon prepacked, quality assured and standardized data sets. This is identified as a paradox that needs to be handled managerially and conceptually. The portfolio of (2) information technology is also an issue in the case study, following the essence in previous studies. Aspects of security, a system legacy, and performance problems are evident. Security threats are on the agenda, and the need for the IT systems to be able to response to both the stability and the flexibility needed when launching OGD. From an (3) organizational and managerial perspective, several of the dimensions identified above are also present in the previous studies on OGD by e.g. Janssen et al. (2012) and Zuidervijk and Janssen (2014). They are also echoed in general e-government research focusing on challenges (Gil-García and Pardo, 2005; Melin and Axelsson, 2009). The most salient dimensions are challenges in the case related to creating a possibility to manage OGD and e-services together (and aligned within the two different groups, and together) and on a long-term basis (strategically – not initiative by initiative) taken from different parts of the organization. The diversity of goals within the organization, regarding how to manage services in general, e-services and OGD, are also put in play when discussing the need to conceptually define them. When it comes to the entrepreneurial aura of the OGD (cf. Charalabidis et al., 2016), vs. the more stable management and work with e-services, this was more salient in the case than in the previous studies. As a result, this is an example of a contribution from this case study.

The category focusing on (4) legal and regulatory challenges, is identified in the case study, containing e.g. the balance between openness, personal integrity and security threats. In Sweden, the openness of public

agencies is far-reaching, and so is the external pressure to launch OGD, but this is not easy to combine with present pressure on being secure (and e.g. to protect the more sensitive and classified data on roads and other critical infrastructure in the society). Within this category, the agency is also a part of the one year budget logic present in the public sector. When we analyze the empirical data applying the (5) institutional and environmental category, privacy is also an issue in the case (also in the legal category), and so is the political pressure to be open and to launch OGD as stated above. The norms embedded in this category are also interesting to identify in the case, linked to the entrepreneurial aura surrounding the work with OGD (above). However, this way of working is not always in line with the more stable structures and processes, and rationalized ways of working within the agency (cf. Meyer and Rowan, 1977) regarding forums for defining, discussing, and managing service in general. The work with OGD is more immature and entrepreneur-driven within the studied agency. A bottom-up approach is present with working data, both when analyzing the development practice, and working on a strategic level. If we focus on the conceptual level, both OGD and e-services are defined within the agency on a general level. In contrast, in use and beyond the strategic level of the organization, the concepts are rather fuzzy and not part of a shared understanding. Conceptually, the actors within the organization are struggling with how to relate e-services and open data to general definitions and understanding of services. There are service concepts, routines and established groups strategically managing services using predefined processes, but the relation to OGD and e-services is not explicit and diffused in the agency. Finally, applying the merged category labelled (6) use, the user and usage perspective (cf. Janssen et al., 2012; Zuiderwijk and Janssen, 2014) is present in the case study empirical data. The use of OGD is rather different, compared with the external use of e-services from the studied agency. E-services can be controlled and managed within the organization to a large extent; in contrast to OGD, that is a resource that is free (to some extent) and available for third parties to explore and develop. The user incentive structures can also look different if we compare OGD with traditional e-services, and the challenge is to manage them together (aligned), and to be able to conceptually define and be able to communicate them within and throughout the organization. We also identify challenges related to the support of OGD, when it comes to handling questions and critique from the (often very informed) third-party users. The latter fact, however, reported by e.g. Janssen et al. (2012) in terms of the lack of knowledge to make sense of data, is not evident in our case study. The users identified in this case are knowledgeable and sometimes experts in the field covered by the OGD initiatives taken by the agency. To be accountable of the OGD launched is an issue in our case, like in previous studies (ibid.).

Conclusions

The aim of this paper was to address challenges related to the work with OGD within an e-service context from: (1) a managerial perspective, and (2) a conceptual perspective in terms of if and how we can view OGD as an e-service. Based on a case study of a Swedish government agency working with OGD within an e-service context, different dimensions of challenges related to the management and conceptual work with open data within an e-service context have been elaborated on. In this paper, we have applied a merged set of categories (generated from previous studies in the area) focusing on challenges related to e-government in general, and OGD in particular. The categories used are: (1) information and data, (2) information technology, (3) organizational and managerial, (4) legal and regulatory, (5) institutional and environmental, and (6) use. This set of refined categories is one result of this paper, that can be applied in other setting and future research on OGD within e-service contexts.

The case study shows that there are several challenges related to the managerial and conceptual perspectives and work concerning OGD. Several of the challenges identified in this case, and discussed above, are echoed in previous studies (cf. Gil-García and Pardo, 2005; Charalabidis et al., 2016; Janssen et al., 2012; Zuiderwijk and Janssen, 2014; Melin and Axelsson, 2009). However, this paper also sheds some light upon aspects that are not as evident in the previous studies, and do so explicitly looking at OGD within an e-service context. The analysis in the case study has shown that there are different patterns present when managing e-services vs. OGD. The management structures and processes of e-services are more mature, and governed e.g. via an internal strategic service forum. This is an example of an established model within the case organization and a strategic top-down approach. The management of open data is more immature and innovative, and represents a bottom-up approach. These approaches have different managerial and conceptual dimensions. However, increasing expectations to manage also the work with OGD more consciously – stemming from new strategies, increased security needs, and

central government regulations and laws – results in a need to take a more holistic and strategic approach handling OGD within an e-service context. From the case study, we can also learn that the users of OGD can be very knowledgeable and demanding. This can put pressure on an agency working with OGD, stimulating further development and innovation; but is also demanding when it comes to allocating resources for fast responses and support. This paper contributes to two levels following Charalabidis et al. (2016, p. 47); (1) the knowledge on management and policies for OGD (focusing publishing) and (2) the usage and value of OGD (focusing on the management and needs) within an e-service context.

As implications of this study, several questions can be asked. For example, it is not evident how to manage OGD vs. e-services? Should we (conceptually) view OGD as yet another e-service and manage such assets integrated with services in general? Or should we treat OGD as the entrepreneurial activity described above? This is also an aspect of control and power (cf. Barry and Bannister, 2014) as discussed above, and also an illustration of the intertwined nature of conceptual and managerial issues of OGD and e-services. This study has not provided us with straight answers to questions like these, but has shed light on such issues above and use the results as directions for further studies and exploration. We can conclude that it might be possible to view OGD as an example of an e-service from a managerial and a conceptual perspective, but more studies are needed in order to confirm this and the pros and cons of doing that.

There are some limitations with the research in this paper; even if the study is combined with and put in the light of previous studies in other countries, it is empirically based on a single national case and one government agency level is focused. A deeper literature review is also needed, but the argument of trying to combine results from previous studies with a rather rich case was focused in this paper. Areas for further research include to expand the international outlook, and also to study other governmental levels. A channel management perspective and related literature in general (using e.g. Ebbers et al., 2008; Pieterse and Ebbers, 2008, and the more recent Bertot et al., 2016) or pinpointing e.g. the Swedish government context (Giritli-Nygren et al., 2014) can also be investigated in further research; we have identified that, but focused more on general management and conceptual challenges in this paper.

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