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The barriers to the opening of government data in the UK – A view from the bottom

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Abstract

This paper explores some of the key barriers to Open Government Data (OGD) that responsible civil servants in the UK face as they try to comply with the UK-led OGD initiative. Empirically, we provide a quantitative analysis of the resources published on the government's central OGD portal, data.gov.uk, and a unique insight into the publishing of OGD in the UK based on 22 interviews with responsible individuals at the operational level of publishing OGD. Our findings reveal that while the barriers to open government *information* have been substantially reduced, the barriers to open government *data* persist. Even the most enthusiastic responsible individuals face considerable obstacles in publishing OGD. Further, a key barrier to OGD in the UK is its impression management strategy based on its informational rather than data orientation. Due to the UK's pioneering position in the OGD initiative, these findings are relevant to understanding and improving OGD programmes at local, national and international levels. The findings may, subsequently, lead to evidence-based strategies and policies.

Keywords Open Government Data (OGD), UK government, benefit paradox, privacy, impression management

1. Introduction

The Open Government Data (OGD) initiative emerged as a coordinated, multilateral movement shortly after the turn of the 21st century (Davies and Bawa, 2012). Its primary social purposes are to advance open government through transparency, accountability and civic collaboration, and to act as a catalyst for innovation and economic growth (Janssen, 2012). OGD represents a paradigm shift in the way that governments shape their relationships with their citizens to build more open, progressive, democratic governments (Gigler et al., 2011). A key event in its development was the publication of the eight principles of OGD following a meeting of thirty open government activists in Sebastopol in 2007.[1] These principles provide a framework for delivering these social purposes by setting out the key attributes of OGD and the primary responsibilities of publishers. The framework states that OGD should be: i) complete, ii) primary, granular data, iii) timely, iv) accessible, v) machine-processable, vi) non-discriminatory, vii) non-proprietary, and viii) licence free. Six years later, in 2013, the Open Data Charter was signed by the eight members of the G8, including the UK (G8, 2013). In fact, the UK is considered as a leading pioneer of the OGD initiative alongside the USA (Janssen, 2012).

To date, 19 national governments and 43 local governments have signed the Open Data Charter, and 79 national governments have endorsed the Open Government Declaration in order to join the Open Government Partnership[2]. Furthermore, OGD is often associated with other progressive advancements, such as the Smart Cities (e.g., Mellouli, et al., 2014). However, the OGD movement is beset with a conundrum, which we term the benefit paradox:

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[1] See: https://opengovdata.org.
[2] See: https://www.opengovpartnership.org/about/about-ogp.

despite these multilateral commitments and the publication of thousands of OGD resources, evidence of its actual benefit remains limited, both in the UK and more widely (Davies et al., 2013). Concerns with the lack of meaningful progress have prompted a number of research studies on barriers to the OGD agenda in other countries. For some examples, Janssen et al. (2012) in the Netherlands, Barry and Bannister (2014) in Ireland, Hellberg and Hedström (2015) in Sweden, Ruijer and Huff (2016) in the USA, and Wang and Lo (2016) in Taiwan.

In this paper, we focus on the UK and ask the research question – what are the key barriers to Open Government Data (OGD) in the UK? This research question is made more prominent and intriguing by the strength of the benefit paradox in the UK. It arises from the sharp contrast between the UK's leadership of the OGD initiative and the lack of evidence of OGD's actual benefit in the UK. To answer the research question, first, we provide a quantitative analysis of the resources published on the government's central OGD portal, data.gov.uk.[3] Second, we provide a unique insight into the publishing of OGD in the UK based on 18 qualitative interviews with public sector employees (junior or mid-rank data managers with OGD responsibilities), and 4 interviews with private sector managers who support the government's OGD programme. Our quantitative analysis and qualitative interviews are both guided by the Sebastopol principles, and by focusing on publishing data rather than information. Our research reveals that in the UK, the barriers to open government *data* remain, while the barriers to open government *information* have been substantially reduced. Even the most enthusiastic responsible individuals face considerable obstacles in publishing OGD. A key barrier to OGD in the UK is its impression management strategy based on its informational rather than data orientation. If the UK, as a pioneering of the OGD initiative, is burdened with these problems

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[3] See: https://data.gov.uk/.

then less advanced countries are likely to experience the same or similar obstacles. Thus, our research has relevance at both national and international levels.

2. Background – The UK's commitment to OGD and previous research on OGD barriers

The UK government proclaims its 'number one slot' (Heywood, 2016) in the OGD movement – 'a world leader in making public sector available for re-use' (UKAuthority, 2018). Its pioneering position is supported by two international indices. The Open Data Barometer (ODB) ranks the UK at number one on its global scale, and it is the only country with the maximum implementation score of 100.[4] The alternative measure, the Global Open Data Index, places the UK at joint second with Australia.[5] The UK government's commitment to the OGD initiative is further demonstrated by a range of activities that include: i) its publishing of national strategies, such as the 'UK Open Government National Action Plan' (HM Government, 2016) and departmental policies (e.g., HMRC, 2012; DWP, 2012); ii) its membership of the international Open Government Partnership (OGP, 2018); iii) its support of civil society's UK Open Government Network (u.d.); and iv) its expansion of the resources in the government's primary OGD access portal – the data.gov.uk website. This portal was launched as an exemplary 'world showcase', and during the launch event a government official told reporters that "Departments are queueing up to release data sets" (The Guardian, 2010). At that time, in 2010, the portal was launched with over 2,500 datasets (Davies, 2010). Eight year later, by the 8th February 2018, 43,728 government datasets were listed on the website –

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[4] See: https://opendatabarometer.org/2ndEdition/analysis/rankings.html. The implementation scale is a measure of dataset openness (Open Data Barometer, 2017).

[5] See: https://index.okfn.org/place.

a 737 increase over the previous three months since 1st of November 2017. It is therefore especially paradoxical that, despite the UK's leading position, its bold policies and the considerable efforts of civil servants, there remains little evidence of OGD's actual benefits to the UK (European Commission, 2015).

Research studies have been conducted in other countries to investigate the lack of meaningful progress of their OGD programmes. The prior studies exposed a wide range of predominantly organisational barriers to OGD. The following summarises the three most prominent studies. Zuiderwijk et al. (2012) conducted four workshops at conferences in the USA, Austria, Greece and Norway, and interviewed six published activists in the Netherlands. Their participants were predominantly academics. Their research resulted in a list of 118 socio-technical barriers which they categorised into ten groups: i) availability and access; ii) findability; iii) usability; iv) understandability; v) quality; vi) linking and combining data; vii) comparability and compatibility; viii) metadata; ix) interaction with the data provider; and x) opening and uploading (Zuiderwijk et al., 2012). Similarly, Janssen et al. (2012) conducted a focus group followed by interviews with 14 senior civil service managers, administrators and users in the Netherlands. They listed 57 barriers to OGD under six categories, including: i) institutional; ii) task complexity; iii) use and participation; iv) legislation; v) information quality; and vi) technical. Finally, Barry and Bannister (2014), who were critical of the dismal progress of OGD in Ireland, interviewed a number of senior civil servants in Ireland. They identified 20 release barriers under six categories: i) economic; ii) technical; iii) cultural; iv) legal; v) administrative; and vi) risk related. The authors identified resource constraints, loss of revenue and uncertainty with respect to privacy legislation as the most prominent of these 20 barriers.

To our knowledge, this is the first research into OGD barriers in the UK. It is unique in focusing on a country at the pinnacle of the OGD movement, and in focusing on constraints at the operational level of OGD delivery based on interviews with junior and mid-rank data managers. The previously identified barriers that are most relevant to the present research findings are conveniently set out in Table 1 along with relevant citations. These barriers fall into eight key categories: i) leadership; ii) economic justification; iii) inadequate resources; iv) power; v) distrust; vi) data quality; vii) user engagement; and viii) privacy.

Table 1: Key OGD barriers in literature that are more relevant to this research

Barrier	Description	Reference
Leadership	Lack of leadership and clear direction	Barry and Bannister (2014) Huijboom and Van den Brook (2011)
Economic justification	No business case due to lack of measurable economic benefits	Conradie and Choenni (2012) Martin et al. (2013)
Inadequate resources	Insufficient funding, staff, skills and legacy technologies	Barry and Bannister (2014) Janssen et al. (2012)
Power	Releasing data undermines the power of the civil service	Barry and Bannister (2014) Kornberger et al. (2017)
Distrust	Fear of misinterpretation by press or public leading to misinformation and blame	Barry and Bannister (2014) Grimmelikhuijsen (2013)
Data quality	Inaccurate, obsolete, invalid, missing data and metadata	Janssen et al. (2012) Zuiderwijk et al. (2012)
User engagement	Lack of engagement with users	Martin et al. (2013) Zuiderwijk et al. (2012)
Privacy	Legal privacy restriction	Altman et al. (2015) Zuiderwijk et al. (2012)

3. Research methods – Quantitative analysis and qualitative interviews

Two research methods were employed to answer the research question: what are the key barriers to Open Government Data (OGD) in the UK? These methods were a quantitative analysis of the data.gov.uk OGD portal followed by 22 semi-structured interviews with responsible individuals at the operational level of publishing OGD. The recruitment strategy

and the interview questions were both informed by the results of the prior quantitative analysis of the data.gov.uk OGD portal.

In the quantitative analysis, a data.gov.uk usage dataset, dated 22nd May 2017 and containing 36,263 publications, was downloaded and analysed to generate a usage profile.[6] The file was also used in estimating the percentage of publications that are open based on two of the Sebastopol principles: primary (i.e. granular) data and timeliness. 271 datasets were randomly sampled from the report, accessed on the portal and assessed for their granularity and timeliness. Granular, adaptable data rather than mediated, inert information is central to the purposes of OGD (Yu and Robinson, 2012). Timeliness is important because data which reflects current social conditions and government practices has more utility than historic data (Vetrò et al., 2016). There is, however, no consensus in the literature as to how timeliness can be measured. It is generally subjectively defined, using qualifiers such as 'as soon as possible' (Sebastopol principles), continuous release (Lourenço, 2015) and the presence of updates (Vetrò et al., 2016). The Sunlight Foundation (2017) acknowledges that timeliness is contingent on the nature of the data, and encourages real-time release to maximise its utility, a robust criterion that would disqualify virtually all OGD publications. For our purposes, timeliness was operationalised as 'recency', that is, the period since the resource was last updated. It does not capture the time delay between data collection and publication. The margin of error is +/-6% at the 95% confidence level.

In the qualitative research, a purposive sampling strategy was used to recruit the 22 interview participants. Purposive sampling is useful for in-depth interviews to generate rich information from selected individuals that are especially knowledgeable about, or experienced with, a

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[6] See: https://data.gov.uk/data/site-usage#totals.

subject (Palinkas et al., 2015). It is especially appropriate when access to these individuals is difficult (Kalof et al., 2008). The sample frame included 15 participants from 11 large central government agencies and 3 participants from 3 local authorities. The selection criteria for these individuals were that they were junior or mid-rank managers with responsibilities for organising and publishing OGD. These grades were selected to gain an insight into the operational experiences of publishing OGD 'from the bottom'. They are also less likely than senior managers to reproduce rehearsed corporate narratives whilst providing critical front-line perspectives. In addition, 4 data managers from 4 private sector organisations were included for their external views of government departments. These managers had considerable experience in working with government agencies on their OGD programmes. Nine interviews were conducted by telephone and 13 were in person. Only 5 interviewees consented to their interviews being recorded; the majority felt that recording would be inappropriate considering the sensitivities around their job roles, their responsibilities and potential criticisms. Published documents – including policy statements, statutes, practice guides, websites and OGD releases – were also accessed to confirm some of the participants' statements and to provide context.

In order to evaluate the participants' attitudes towards OGD, the semi-structured interviews commenced by asking participants about their understandings of OGD and their experience in the field. The interviews then used open questions to explore the participants' views of their departments, their senior management and the challenges they faced, for example - "What challenges do you face?"; "What are the attitudes of senior management?" Closed questions, especially about previously identified barriers, were avoided to ensure the collection of fresh perspectives, which could then be compared with the previous findings. The participants' organisations are coded as ORG1, ORG 2… ORG18. The individual participants are coded as ORG1.1, ORG2.2, ORG2.3… ORG22.1. All statements were dissected and entered into a

spreadsheet. Each cell was manually coded to categorise substantive statements and to develop emerging themes (Gillham, 2005).

4. Findings – Key barriers to UK OGD

Next, both quantitative and qualitative findings are presented. In brief, the effect of some of the key barriers to the UK government receiving actual benefits from its OGD programmes are clearly articulated by one of our participants. The participant commented:

"The failure to create an impact comes about because open data is often regarded as the objective. But that's wrong. Open data should be regarded as a tool for a particular purpose and not a goal in itself…. We have to remember that data informs and changes decisions. Open data is a tool, it is not the goal." [ORG8.1]

4.1 OGD usage and openness

In order to understand the level of user engagement, download data from the data.gov.uk usage report was categorised according to the number of times publications were downloaded (see: Figure 1). 33% of publications had not been downloaded at all, 35% had been downloaded between one and nine times, and just one resource (0.003%) had been downloaded more than 60,000 times.

Figure 1: OGD download statistics
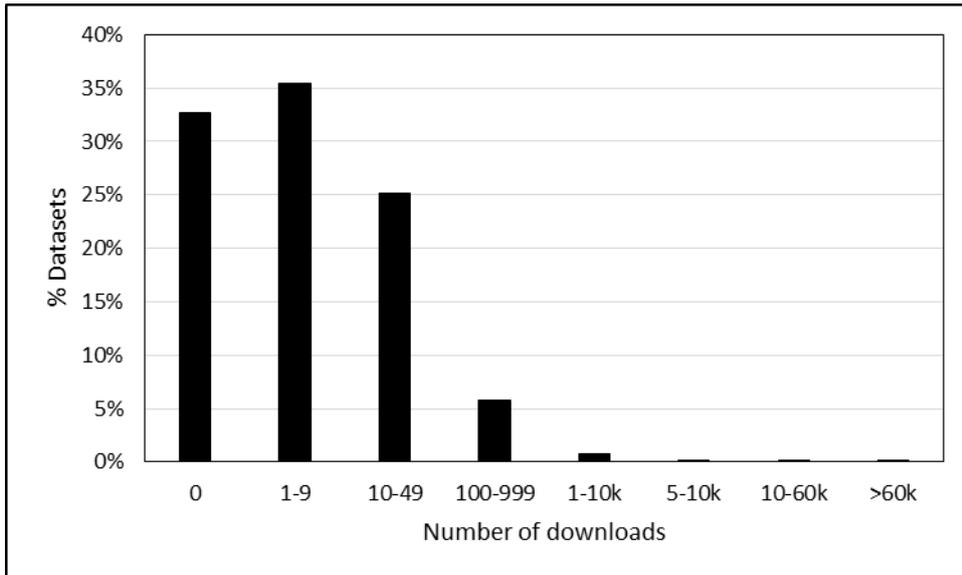
Based on the granularity and recency of publications, the openness of the UK government's publications is charted in Figure 2. The graph shows the percentage of publications that were published within the previous 6, 18, 30, 42 months. The >42 months category thus includes all the publications. Each time category shows the split between granular and non-granular data, i.e. categorised information, summarised information or reports. Overall (>42), 35% of publications were granular, 65% were mediated information. Just 8% of resources were granular data and updated or first published within the previous 6 months. 6% were informational and published within the previous 6 months.

Figure 2: Openness based on granularity and timeliness
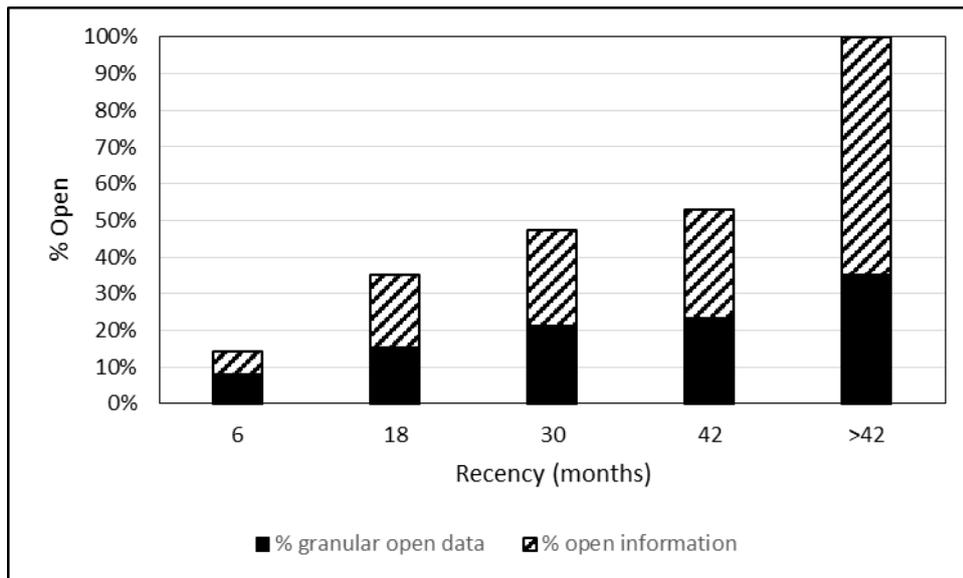
4.2 Barriers to OGD in the UK

Some of the barriers that emerged from the interviews are the same as those found by previous research. This is in itself an interesting finding as it demonstrates that bureaucratic obstacles persist in the UK despite the country's leading position in the OGD movement. However, we also uncovered some barriers that were not previously identified or adequately exposed. We do not claim that these are in any way unique to the UK, but are more likely to be a result of our focus on the experiences of junior grades. These emergent barriers link to the previously identified barriers as set out in Table 2. It would make for a tidy analysis if the barriers to OGD were mutually exclusive. However, this is not the case. For example, the lack of benefits directs to a government agency itself is a sub-set of the general lack of measurable benefits, which creates the justification deficit, and subsequently the lack of adequate resources. For another example, the timeliness of releases is contingent on departments' capabilities and capacities with respect to their data quality control processes. Similarly, economic calculations also influence impression management tactics because web publishing informational materials from a department's stock of internal management resources and reports is an expedient, low cost option.

Table 2: Perceived barriers in UK

Previously recorded barrier	Emergent barrier	Open data activists	Open information activists	Administrators
Leadership	Lack of support from immediate managers	X		
Economic justification	No direct benefit to the government agency itself	X		
Inadequate resources		X	X	X
Power	Protectionism - threat to individuals' jobs	X		
Power/ distrust	Protectionism - inadequate editorial skills		X	
Distrust	Timeliness - frequent updates - misinterpretation of data spikes	X		
Data quality	Timeliness – excessive time in quality control	X	X	
User engagement		X		
Privacy		X	X	
	Impression management	X		

Our findings suggest that a participant's perception and experience of barriers substantially depends on his/her attitude to OGD. The participants could be broadly divided into three groups: *open data activists*, *open information activists* and *administrators*. It is important to note that the table lists the types of barriers experienced by each group; it does not attribute inferred barriers based on reasoned deduction. For example, the distrustful attitude of the information activists is a barrier to OGD, but they see it as a positive trait that does not hinder their work. Thus, it is not recorded as a barrier for the information activists. The administrator group expressed just one barrier to the open information work, lack of resources. They did not

feel the impact of the other barriers because they are not motivated by OGD, nor are they required to meaningfully engage with OGD, open government or stimulating innovation. It is also important to note that the table is not exhaustive as it only reflects the barriers experienced and expressed by our sample of OGD workers. Nevertheless, the simple activist typology does provide a revealing insight into the workings of government.

The *open data activists* (15/22 participants) were distinguishable by their data orientation and their focus on the obstacles they faced to publishing data. This group included the private sector participants, whose attitudes and observations did not distinguish them from the public sector participants. When asked to define the meaning of OGD, the open data activists launched into descriptions of its transparency, accountability, engagement, innovation and economic purposes that closely reflected the G8 (2013) Charter principles. For example, our participants said:

> "Then there's empowerment, and it's kind of linked to transparency but I think slightly different in the sense that you can only, as a public, influence what's going on in Government if you can see truthfully what's going on in Government…" [ORG1.1]
>
> "[*We*] want to engage with the public and encourage their involvement." [ORG6.1]
>
> "…encouraging innovation and identifying and supporting good ideas." [ORG9.1]
>
> "… to help people build businesses, to help people make better decisions." [ORG3.1]

The *open information activists* (4/22) also identified themselves as OGD activists, they defined OGD by its grand social purposes and were clearly committed to the open government objective. However, their information orientation, protectionist attitudes and resistance to publishing granular data differentiated this group from the data activists. They did articulate their experiences of barriers to publication but were more exercised by the perceived threats of

OGD and their challenges in releasing informational resources. This group experienced fewer types of barriers than the data activists. The *administrators* (3/22) were readily differentiated as they described OGD in terms of its content rather than its purposes. All three were local authority managers who regarded OGD as an imposed obligation. Just one type of barrier is associated with this group, lack of resources. We do not suggest that this group is in any way representative of local authorities. For this group, anything published on their websites counted as OGD. For example:

> "It's …. statutory information we have to make available to the public, reports, minutes, councillors and management…. How to access services, who to contact, how to complain, and school terms and so on." [ORG15.1]

> "It's all information that was in the public domain anyway, it's now on the web." [ORG16.1]

Research in other countries identified the lack of leadership and direction from the top of an organisation as a barrier to OGD. Participants in our research also criticised their leaders for their lack of knowledge and ability to give clear direction. However, we also found that a more immediate obstacle was the lack of support from direct line managers. Two of the participants were so frustrated by the intransigence of their managers that they defied hierarchical orthodoxies by running secret OGD projects. Participant ORG13.1 called them 'guerrilla projects' which are only revealed to line managers when completed.

The economic justification for adequately resourcing individual OGD projects or broader programmes remains a persistent problem for open data activists. Whilst there was clear consensus amongst the activists about the social purpose of OGD, they were keenly aware of

the unique benefit paradox in the UK's OGD programme – the government's evident support appears to be in sharp contrast with the lack of substantive benefits.

There was a deep, collective concern especially amongst the open data activists that OGD had yet to prove its utility as a tool for good. Like the previous research findings, our participants were worried about the absence of measurable economic benefits to society at large. However, we also found that they were especially concerned about the lack of quantifiable benefits to the departments themselves. They all struggled to articulate the real, measurable benefits of their own work. ORG9.1 described case study feedback from users as the evidential "gold dust" he needed to demonstrate the tangible purpose of his team's OGD programme. The practical realities of life in financially constrained public offices is that vague social promises are far less persuasive to the financial decision-makers than internal return on investment calculations. Two of our participants commented:

> "Sure, they understand the transparency agenda and all that, but they're so used to cost-benefit justifications, the business case and things like impact assessments that they struggle with these fine transparency reasons... [Civil servants] are not the people who benefit from it. So, why should they do it?" [ORG4.1]
>
> "Though one of the key problems is some organisations and their managers do not see how these benefits relate, most of all, to them, but also to society…. What is their incentive for compiling and releasing the data?" [ORG8.1]

The link in the UK between the justification deficit and the resource barrier is not just about headcount and funding individual projects. There are more fundamental, structural problems with inadequate technologies, data management systems and skills that are unsuitable for OGD. One of our participants clearly expressed this:

"Presently we live in a swamp of data and legacy systems, not interconnected, some visible, some not…We have a big problem in poor data literacy amongst our staff…."

[ORG9.1]

One participant (ORG4.1) described the UK government's present OGD programme as a "cottage industry", which relies on the enthusiasm, skills and goodwill of a few resourceful government employees. These observations imply that lifting the OGD movement in the UK beyond the cottage industry status would require a very significant investment. Considering the benefit paradox, OGD alone is unlikely to justify that structural investment.

The threat to individuals' jobs is a complex barrier that sits under the power category. Open data activists are concerned that *not* publishing open data threatens their positions. Information activists hold the completely opposite view, worried that publishing data threatens their jobs. ORG13.1's managers, for example, were irate with his guerrilla project approach, accusing him of:

"…undermining the purpose of the team and threatening jobs by handing over data access" [ORG 13.1]

Similarly, open information activists are concerned that their roles are under threat by competition from citizen analysts and a superficial, sensationalist media. They justify their attitudes by claiming that data illiterate citizens, especially the media, cannot be trusted with data. For example, one of them clearly expressed:

"49% of adults do not understand enough about data to understand their own payslips

…. The media has misused statistics for ever, sensationalising misinterpreting statistics." [ORG2.4]

They want to compete with, and ultimately defeat, open data by publishing high quality open information. From their perspective, the *open information* obstacle they are grappling with is their inability to properly explain analytical outcomes to the illiterate public. One of our participants said:

> "This means we, the data literate, need to get much more savvy about how we communicate our data. We need to develop our expertise in editorial." [ORG2.4]

The lack of timeliness of data has not previously been adequately exposed. A practical reason for the problem is the lack of resources to sufficiently service the government's time-consuming desire to ensure the quality of data. A more emotive reason is the fear that data spikes in high frequency releases will be misinterpreted by the public and stimulate distracting questions from politicians, as one of our participants articulated:

> "[It would] result in a lot of noise that they would have to deal with. You know, people would stand up in Parliament and go, can you explain to me why the number of …., and they don't have that appetite to be able to deal with that." [ORG1.1]

Poor user engagement continues to be enduring obstacle in the UK. Open data activists are very keen to hear from users to help them develop products and services that would stimulate and support demand, as ORG9.1 commented, "We want users to tell us what datasets they want". However, government data managers are not known for their marketing skills. As ORG4.1 commented, they are "invisible". As a result, they receive little feedback. To underline this observation, it is also notable that data.gov.uk has switched off its commenting and forum features due to lack of interest (data.gov.uk, u.d.). The open information activists and the administrators were different. They were far less concerned about engaging with users because

they see their duty as pushing informational resources out to the public rather than stimulating a public pull for raw data.

Unsurprisingly, the activists regarded privacy by participants as an insurmountable moral, cultural and legal barrier to OGD. They generally reflected the views of privacy advocates (Munson et al., 2012; Solove, 2002), viewing privacy as a right and a social good, which has to be weighed against the benefits of releasing granular open data:

> "We're all grappling with the same issue …. And the way to make best use of data is using the most detailed data, how do you do that while keeping your commitments to the data subjects, protecting those data at all times?" [ORG2.1]

Privacy is enshrined in the General Data Protection Regulation (GDPR) and is central to the Statistics and Registration Service Act 2007, which regulates government publications. Our participants were aware of legal consequences of privacy breach. One of them commented:

> "The vulnerability we'd consider here is …. A big data approach to compare multiple open source data sets and identify individuals." [ORG5.1]

Some participants further explained that their departments were leaning towards not publishing, not only to ensure legal compliance, but also to maintain public trust and their reputations:

> "We cannot do anything …. that would jeopardise the trust that the public have in us."
> [ORG2.1]

This leads us to the final barrier emerging from the participants' experiences – impression management. For example, in discussing the disconnection between his department's espoused policies and internal practices, one of our participants commented:

"…. the forces of inertia are very strong…. change is really hard to achieve…people would think that it would just be an incredible hassle and kind of opening up a Pandora's box…. No, no one would do it voluntarily, no one would want to do it, it would never happen. So, in order to get the Civil Service to do something like this there has to be political will to enforce it to be done." [ORG1.1]

5. Discussion

Next, our analysis moves towards a structured discussion that is guided by four themes, which have emerged from our findings in the previous section.

5.1. Open data activists, open information activists, the administrators

Our findings indicate that, though the stated policies across the UK government are coherent, there is a lack of uniformity in the actual working objectives and practices of departments. The clear enthusiasm for delivering the policies in some areas is reflected in the views, attitudes and practices of the *open data activists*. Other areas are dominated by *open information activists*, individuals who are committed to open government and express their support for OGD but are actually opposed to the opening up of government data. They actively and effectively support open government by publishing professionally prepared informational resources. However, they resist preparing and releasing granular data, in part due to their protectionism and distrust of the public. Cole (2012) refers to this kind of attitude as an 'ownership mentality'. Although the work of the open information activists is valuable in

supporting transparency and accountability, their approach does not accord with the granular transparency objective set out in the Sebastopol principles and the G8 Charter. The third group, the *administrators*, are not committed to the grand social purposes of OGD. They essentially see OGD as an imposed task and seek the most efficient way to comply with instructions by, in Yu and Robinson's (2012) terms, labelling anything they publish on the web as OGD. Their attitudes and approach contribute to the swamp of Zombie data (Gurin, 2014).

One consequence of these divergent standpoints is that the perceptions and experiences of barriers to OGD are not uniform in the UK. The *open data activists* see the barriers as obstacles that they have to navigate. They are, for example, frustrated by line managers who see OGD as a threat to jobs and who distrust the analytical skills of the public. This protectionist attitude forces some open data activists into cunning methods to deliver policy objectives, such as the guerrilla projects. Their secretive approach illustrates that 'policy entrepreneurs' do not just operate at senior levels, but also at the 'coal face' (Chatfield and Reddick, 2018). The *open information activists* experience some of the same barriers, for example, inadequate resources and privacy restrictions. However, these participants did not recognise their own protectionist attitudes as barriers that required navigating. On the contrary, they saw their ownership mentality as a positive trait that reflected the necessary personal and collective values required to properly and professionally advance open government purposes. Indeed, they believed their own inadequacies in explaining compiled statistics to a data illiterate public was a barrier to their work. Naturally, the *administrators* are the least likely to recognise or experience OGD barriers because their focus is publishing inert information, such as meeting minutes and school timetables.

5.2. OGD impression management – the blurring of data and information

Our findings suggest that impression management has become an entrenched strategy across UK government departments. It has become a key barrier to releasing genuine open government data. The analysis of openness based on granularity and timeliness (see: Figure 2) suggests that the *open data activists* are in the minority. The majority (65%) of the resources listed on data.go.uk are informational publications containing aggregated, categorised or summarised information and reports. It is estimated that only 8% of resources are granular datasets that were published or updated within the previous six months. It seems that the barriers to open government *information* in the UK have substantially fallen away, but the barriers to open government *data* remain resolute. This has given rise to a divergence between the UK government's strong reputation in the OGD movement and its actual practice.

The UK government proclaims its OGD credentials, but the majority of its energies under the banner of OGD are directed to open information. The government is able to do so due to the prevalence of the conceptual ambiguities around open government and OGD (Yu and Robinson, 2012). The term open data is used loosely and is often poorly defined (Barry and Bannister, 2014). These ambiguities allow agencies to negotiate the space between closed and open data for their own purposes (Cole, 2012). *Open information activists* can falsely claim to be advocates of OGD. *Administrators* can publish school timetables on their websites under name of OGD to falsely claim their support of the government's OGD programme. The result is that there are far fewer high utility open datasets than the headline figures and indices suggest.

The core ambiguity arises from the blurring of the distinction between data and information. This is surprising considering the clear distinction in the data, information, knowledge, wisdom hierarchy (Rowley, 2007) and the unambiguous pronouncements in published policies and

principles. The first principle of the G8 (2013) Charter is "Open Data by Default". Government departments in the UK have adopted an unwritten, expedient policy of *open information* by default. It appears that the UK government is adept at pursuing an impression management strategy and has done so unchallenged. We argue that this default position has supported the dismantling of informational barriers, as evidenced by the volume of resources on data.gov.uk. However, in doing so, impression management has been exposed as a more profound data barrier because it encourages the indifference of the administrators and supports the protectionism of the open information activists. Firstly, it provides an easy, low cost way for government departments to claim OGD credentials by publishing from their stock of internal management resources and reports. As a consequence, some of our participants (e.g., ORG9 and ORG13) have adopted a high volume 'publish-and-see' approach using inert internal management information. Secondly, it supports senior civil servants in rationing funds to genuine open data projects and programmes. Third, it reflects the misconceived perception that open data is in itself a good thing to have, rather than a means to an end (McGee and Gaventa, 2011).

5.3. Privacy concerns

Privacy poses a substantial challenge to the transparency agenda (Altman et al., 2015; Axelsson and Schroeder, 2009; Verhulst and Young, 2016) – obscurity is good for privacy but bad for transparency – and is a significant legal barrier in the UK. The GDPR applies to all organisations, whilst the Statistics and Registration Services Act 2007 specifically regulates the activities of government departments. Section 39 of the Act requires that data subjects must remain anonymous. It also prohibits publishing government data that is vulnerable to re-identification when mashed with other data sources.

The common solutions are either not to publish or to apply statistical disclosure control (SDC) techniques to the raw data (Government Statistical Service, 2014; UK Statistics Authority, 2009). SDC typically involves aggregating or categorising datasets so they are no longer granular. One participant suggested that government departments are overly cautious in applying these practices. It is, therefore, ironic that the most popular publication on data.gov.uk, the Road Safety Data, provides such a sufficient breadth of granular detail that we were able to re-identify individuals through Internet searches. In conversation, the DfT acknowledged this risk but justified their position with the argument that the data may save lives. This case illustrates that government departments can choose to assess rationally the benefits of publishing anonymised granular data against privacy risks. It shows that justifiable outcomes can reduce the salience of privacy concerns.

5.4. The benefit paradox

These findings may partly explain the benefit paradox in the UK, the lack of measurable benefits despite the country's leading position in the movement and despite the high number of government publications. We argue that the bulk of these publications lack the utility to deliver the intended benefits because they are, using Yu and Robinson's (2012) construction, inert materials – value cannot be added to them by computation, analysis, manipulation and linking in the ways imagined by those who developed the principles in the Sebastopol or G8 Open Data Charter. They lack the granular vitality to either challenge government practices or to catalyse innovative economic growth.

Hellberg and Hedström (2015) suggested that the Swedish public is simply not interested in OGD. The fact that most publications on data.gov.uk website attract little public interest (see: Figure 1) supports their suggestion. Our analysis, however, shows that the public is very

interested in a small range of publications. For instance, the most popular release, the Department for Transport's (DfT) Road Safety Data, is a granular dataset about road accidents and has been downloaded over 60,000 times.[7] It demonstrates that granular, timely data about an attractive topic can stimulate considerable public interest. Thus, we argue that the failure to engage the public in a meaningful way is, in part, explained by the paucity of granular, high utility datasets as a consequence of the UK government's informational rather than data orientation. This research has not examined the value of topics covered by the minority of publications that are granular and timely. This high utility nexus between high value topics and timely, granular data is critical to attracting the interest of citizen analysts and delivering the open governance and economic objectives of OGD. Although judging the value of topics is subjective, it is difficult to see how many of the granular publications in our sample support these data driven purposes, for example the locations of public toilets in Camden and a schedule of tree preservation orders in Eastleigh. Further work is required to explore the extent of this high utility nexus and whether it has the capacity to address the benefit paradox.

6. Conclusion

In this paper, we have provided a unique insight into key barrier to OGD in the UK 'from the bottom'. It is based on the analysis the UK government's central OGD portal – data.gov.uk; and 22 interviews with individuals at the operational level of publishing OGD. Our findings have demonstrated that the attitudes, approaches and experiences of actors within the OGD movement are far from uniform. Three groups of actors have been identified based on their activism within the OGD movement. The open data activists were enthusiastic actors who believed in the grand social purposes of OGD and were granular data orientated. Open

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[7] See: https://data.gov.uk/dataset/road-accidents-safety-data.

information activists were also enthused by the grand purposes, but they were information orientated, protectionist and less enthused about publishing granular data. Administrators showed no enthusiasm for OGD, regarding it as an imposed burden. These findings have indicated that the barriers to open government information have substantially fallen away but the barriers to open government data persist. The retreat of the informational barriers has exposed a key barrier to OGD in the UK, the government's impression management strategy based on its informational orientation. This approach marshals civil service efforts and resources towards publishing information rather than data. The consequence is that the bulk of the UK government's open data catalogue actually contains inert information. There are far fewer high utility open datasets that can be computed, analysed and linked in the ways set out in the founding principles than the headline figures and indices suggest. This situation partly explains the benefit paradox – despite the UK's proclaimed pioneering position in the OGD movement, the bulk of the UK's existing open government resources cannot deliver the envisaged benefits.

The OGD barriers identified in this research and throughout the literature are a complex palette of intersecting obstacles, constraints, anxieties and risk factors that are taken into consideration when a government organisation develops its actual OGD practices, as opposed to its advertised policies, and when it decides on specific releases. The broad direction of a department and how it deals with this palette of barriers depends to an extent on whether it is informational or data orientated. The openness analysis in Figure 2 suggests that the UK government is predominantly informational orientated as a consequence of its impression management strategy, the power of the open information activists, and the prevalence of indifferent administrators. This orientation is fundamentally enabled by conceptual ambiguities around what OGD is and what it is for. Inevitably this leads us back to the leadership barrier.

If senior civil servants and politicians remain content with the existing model, and do not insist on compliance with strict definitions of OGD, such as those in the Sebastopol principle, then there would be little incentive for departments to change their informational orientation and impression management approaches. Thus, civil service managers need to commit to a clear, collective conceptual understanding of the essential attributes of open data that actualise its purposes, and thus deliver tangible benefits (cf. McGee and Edwards, 2016). At the very least, the UK government could bring greater transparency to its transparency project by insisting on a clearer separation of informational and OGD compliant publications.

Although our empirical research is limited to the UK, its findings are relevant to overseas OGD programmes. If a leading pioneer with a 'world showcase' OGD portal struggles with the benefit paradox, is burdened by adept impression management and is information orientated, then other countries further down the league table are likely to face the same or similar problems. Thus, our findings may subsequently, lead to evidence-based strategies and policies. Of course, this requires further research. Furthermore, work is also required to explore the extent of the high utility nexus between high value topics and granular, timely data. Far more hard evidence of positive outcomes from high value, granular and timely data would assist in dissolving the benefit paradox, support the conceptual connection between what OGD is and what it is for, promote a much sharper focus on high utility datasets, and justify appropriate funding.

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