

OPEN DATA IN GERMAN MUNICIPALITIES – BETWEEN ADDED VALUE AND LEGIT CONCERNS?

Tobias Bürger¹, Annegret Hoch², Henrik Scheller³

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Abstract

The corona pandemic has shown that open data can have an added value for cities in dealing with the global pandemic. In May 2020, we conducted a municipal survey in which officials responsible for data coordination and publication in cities with more than 10,000 inhabitants stated that open data could have an advantage in combating the corona pandemic, for example by informing its citizens and providing local open data to a wider public. Despite these positive assessments, the provision and use of open data in Germany still varies greatly in German municipalities. Against this background, the paper highlights the different perspectives of cities and municipalities on the topic of open data, including: (1) assessments of the opportunities and risks of open data in the municipality, (2) references to the political factors that have favoured or hindered the provision of open data, and (3) desired support for municipalities to conceptualize and implement their own open data strategy. Our research aims to provide suggestions for and perspectives on why the municipal level in Germany finds it so difficult to implement innovative approaches to data management as part of their digitization efforts.

1. Introduction

Open data is an essential building block in the digitisation of public administration. To make official data available to the public, however, administrative processes often must be realigned. The opportunity for corresponding reforms lies, for example, in breaking down existing data silos and enabling more participation and transparency in administration and politics by opening up data stocks. At the same time, against the backdrop of changing social, technological, and economic conditions, the importance of open data is becoming increasingly apparent. It can act as an important driver of innovation and technological developments, both in public administration and in companies.

Supported by the Open Government Partnership Initiative (OGP), launched in 2011 under Barack Obama, open data provided by public administrations has become an increasingly important building block for the digitalisation and modernisation of public administration. Already 78 countries participate in the global initiative and are thus committed to creating more transparency and political participation [1]. Open data is data that can be used, reused and distributed without restrictions [2]. In order to be reused and shared, open data must meet specific criteria. The Open Knowledge Foundation (OKF) therefore defines open data as data that comes with an open licence (the further processing and modification of the data must not be restricted), is freely accessible (e.g. as a download free of charge) and in an open format (readable by machines) [3].

¹ Bertelsmann Stiftung, Carl-Bertelsmann-Str. 256, 33311 Gütersloh, Germany, tobias.buerger@bertelsmann-stiftung.de, www.bertelsmann-stiftung.de

² DIW Econ, Mohrenstr. 58, 10117 Berlin, aholch@diw-econ.de, www.diw-econ.de

³ Deutsches Institut für Urbanistik, Zimmerstraße 13-15 10969 Berlin, scheller@difu.de, www.difu.de

In the past ten years, open data has gained momentum, in particular through political and legal resolutions for the creation of frameworks for the publication, provision and use of open data at the European level. The national implementation of the European Directive on Open Data and Public Sector Information (PSI) by mid-2021, the E-Government Act (EGovG) at the federal level in Germany (and in particular § 12a on open data) as well as regional transparency laws have recently put the topic of open data more firmly on the agenda of internet politics while also raising its visibility.

Legal frameworks that provide both data providers and users with a secure foundation for working with open data are essential for disseminating and adopting open data practices. However, from the user's perspective, there are also concrete requirements for the way open data is made available, such as making the data easy to use, a high level of benefit resulting from the use of the data, and quick retrieval of searched data sets [4; 5]. For data providers such as municipalities, on the other hand, other factors are crucial, such as the organisational adaptation and implementation of open data and open government principles, as well as the implementation of technical measures that enable the use of open data by the broadest possible user community [6; 7].

The provision and use of open data in municipalities varies greatly from region to region in Germany. While some municipalities are already proactively providing open data in some federal states, there has been no provision to date in many municipalities. Only about 90 of the 10,795 municipalities in Germany currently operate open data portals [8]. There is also an uneven distribution between larger and smaller cities. The municipalities with own open data portals include 43 per cent of the large cities surveyed, but only five districts and only 30 smaller municipalities.

2. Methodology

The survey is a joint project of the Bertelsmann Stiftung and the German Institute of Urban Affairs (Difu) and was carried out with the German Association of Cities' support. It aims to map the nationwide provision of Open data in municipalities comprehensively. The survey targeted municipalities with more than 10,000 inhabitants. A total of 1,145 cities and municipalities were contacted by post and invited to participate in the survey. While a full survey was carried out for municipalities with more than 20,000 inhabitants, contacting the group of municipalities with 10,000 to 19,999 inhabitants comprised a sample of 50 per cent. Addresses of the administrations contacted were obtained from the publicly accessible address directory of the Statistische Ämter des Bundes und der Länder.

The questionnaire was developed in tandem with the open data community and tested with three municipal representatives. It includes 19 questions that could be completed in about 15 minutes. The survey period lasted five weeks in April and May 2020, which coincided with a phase in which many employees of the municipal administrations were already working from home due to Covid-19. The response rate to the survey was 19 per cent (212 responses). Compared to other city surveys, one particular benefit of this survey is that small cities and municipalities were included. The response rate in this size category is lower (in percentage terms) than in the other size categories, but it is still large enough to represent this group. Survey data is accessible as open data and can be retrieved from the website of the Bertelsmann Stiftung.

3. Open data in German municipalities

For most municipalities, open administrative data is a relatively new field of activity. This development is reflected in the fact that one-third of the respondents state that they have only dealt with the topic on an ad hoc basis so far. Only three out of ten respondents have already dealt intensively with open data issues. In municipal administrations, data is generated in many places and cleaned, processed and adapted for communication and/or official statistics, for example when it comes to annual budget planning or the collection, evaluation and presentation of topic-specific databases, such as on education, integration, sustainability, or care. The processing of (open and non-open) data is thus part of municipalities' everyday tasks [9]. More than half of the municipal employees surveyed are familiar with these processes and frequently or very frequently process data themselves.

Open data offers added value for many different stakeholders, who may have very different social or business interests in open administrative data. These include citizens, local and non-profit organisations and regional businesses, programmers and developers, journalists and academics [10]. One group of people that is often not directly mentioned are the administrative employees themselves. As open data unlocks the opportunity to link specialised departments in the administration more efficiently and break down existing data silos. The use of open data formats also makes it possible to quickly convert data into the required end formats for specific purposes such as creating reports and presentations.

3.1. Chances, risks, and added value

Overall, the respondents consider open data to be a positive driver in municipal administrations. Almost half of the respondents personally associate the opening of municipal data with opportunities rather than risks; only 9 per cent see more risks. Especially respondents from cities with more than 100,000 inhabitants contribute to this positive overall assessment. Here, three quarters see more opportunities than risks, while in medium-sized and small cities the figure is around 40 per cent. However, the overall assessment within their administration reveals that the surveyed administrative employees are more optimistic than the administration's assessment as a whole.

A study published in 2016 by the Konrad Adenauer Foundation estimates the economic value creation potential of open data in Germany at up to 43 billion euros per year [11]. A more recent study by the European Data Portal, the European data portal for open administrative data, estimates the Europe-wide market share of products and services enabled or improved by open data at 200 to 334 billion euros by 2025, with an annual growth rate of up to 10 per cent [12].

More than 80 per cent of respondents perceived the direct added value of open data primarily for citizens in our survey, as open data contributes to improving information needs. In principle, open data can also increase identification with the municipality by making the use of funds transparent through open budget data and other indicators, which could strengthen citizens' trust in the municipality's perceived performance. Still, according to the respondents, open data does not automatically lead to citizens identifying more strongly with their municipality (see Table 6). On the other hand, around two-thirds of the municipalities surveyed expect citizen participation to improve through open data. Municipalities are also regarded as benefitting from open data through the development of new applications and business models, although mentioned less frequently. More important from the point of view of municipal workers is the benefit from a simplified

exchange between departments and municipal companies, new impulses for changing the organisational culture, and increased transparency.

	fully agree	rather agree	rather disagree	do not agree at all	do not know
<i>What added value do you generally attribute to open administrative data?</i>					
Improved information for citizens	39	42	13	2	4
Simplified exchange between offices and between offices and municipal companies (reduction of “data silos”)	37	41	17	1	4
Impulses for a change in administrative culture	27	42	19	5	8
Increased transparency of municipal development processes	23	52	19	3	4
Reduced workload for municipal employees	20	38	27	11	4
Improved exchange with businesses and civil society	19	52	20	3	6
Improved participation of citizens	18	46	26	4	6
Development of new applications and business models (for the benefit of our municipality)	16	37	26	7	13
Increased attractiveness of the municipality as a business location	13	43	31	7	7
Strengthened identification of citizens with their municipality	9	32	41	13	6

Table 6: Added value of open data (values in per cent)

Especially in times of crisis, the municipalities surveyed attribute a substantial value to data. Half of the respondents currently see an advantage in open data in the fight against the Covid-19. 33 per cent are undecided, and only 17 per cent see no direct added value in using open data for this purpose. For tackling the Covid-19, respondents believe that open data’s added value lies primarily in providing up-to-date information on the threat situation (such as the rate of infection). Almost half of the respondents named this aspect as the most important added value.

3.2. The status quo of the provision of open data at the municipal level

Open data can be made available in various ways. Municipalities do not always have to operate their own open data portal. Some municipalities have commissioned a regional IT service provider to prepare, operate and maintain the participating municipalities’ open data. Open data can also be made available and curated via state data portals such as Open.NRW, the open data portal of the state government of North Rhine-Westphalia (NRW).

The status of the provision of open data varies in municipalities varies greatly. About a third of the municipalities surveyed already provide open data (see Table 7). A further 23 per cent do not yet provide open data but have taken measures such as political decisions or organisational measures to make their databases publicly available. However, 36 per cent of respondents point out that their municipality does not yet provide open data and has not yet pursued any measures in this direction. How a municipality handles its data depends strongly on the size of the city. Most of the surveyed large cities with more than 100,000 inhabitants (94 per cent) have already opened up their data or taken corresponding measures. However, in small and medium-sized cities, the proportion of municipalities providing open data or planning to do that in the future is significantly lower. Smaller municipalities with populations of up to 20,000 hardly provide any open data. Still, 26 per cent of these municipalities have taken measures to provide open data in the future.

	population 10.000- <20.000	population 20.000- <50.000	population 50.000- <100.000	population 100.000 and more	total
<i>How would you describe the current state of open data provision in your municipality?</i>					
Already provide open data	15	24	32	71	35
No open data yet, but measures taken	26	24	21	22	23
No open data so far	56	46	37	4	36
Do not know	3	7	11	2	6

Table 7: State of open data provision by size-class (values in per cent)

The conception, coordination, and implementation of measures to build a data infrastructure, identify potentials, and the actual provision of open data is based in different departments within municipal administrations. Who leads the efforts to provide open data? A coordinator for data or data publication was only appointed in every sixth municipality. In fact, about 80 per cent of the large medium-sized cities have not yet appointed a coordinator for the topic of data and data publication at all. Larger cities, however, have been quicker. Around 40 per cent have appointed coordinators or officers for data, compared to between 5 and 13 per cent in small and medium-sized cities. Open data is based in the IT department in about a quarter of the municipalities surveyed and in the statistics department or with the person responsible for digitalisation in about one-fifth respectively.

More than half of the municipalities exchange information with other municipalities on how to work with data or have begun to define processes, structures, and responsibilities (see Table 8). Data handling is now anchored at the strategic level in about 40 per cent of all municipalities. Though they have rarely received support from the state, the federal government, or the European Union (EU). Just every eighth municipality applies for funding to build up a data infrastructure.

	yes	no	do not know
<i>What measures for building a data infrastructure are already being pursued in your municipality?</i>			
Exchange with other municipalities on the handling of data.	58	36	5
Processes, structures and responsibilities for handling data are defined.	53	36	12
The handling of data is the subject of municipal strategy and mission statement processes.	41	46	13
Implementation of pilot projects on open data/open government issues.	26	66	8
Systematic inventory of the data stock (e.g., creation of a data catalog).	25	68	6
Monitoring of data needs on the user side (e.g., citizens, civil society, business, etc.).	16	74	11
Appointment of a coordinator for data or data publications (e.g. “open data officer”).	16	79	6
Actively network with data users (e.g., Open Knowledge Labs), academia, or businesses.	14	80	6
Acquisition of funding (e.g. for the development of a data infrastructure).	13	72	14
<i>How is potential for providing open data sets identified in your municipality?</i>			
We look at what open data other municipalities have already published (e.g., in data portals or sample catalogues) to get ideas.	74	21	6
Our departments publish open data proactively and at their own discretion.	54	41	6
An internal open data officer actively seeks potential for making open data available.	36	57	7
When making open data available, we are guided by the needs of our target groups (e.g., through community events or surveys).	35	48	17
We actively train our employees on the topic of open data to find potential for providing open data.	7	90	3

Table 8: Measures to build a data infrastructure and ways to identify potentials for providing open data (in per cent)

A systematic catalogue of internal administrative data is necessary for fostering a more comprehensive practice of data publication (see Table 3)[14]. Two-thirds of respondents state that no systematic inventory of data holdings has yet been carried out in their municipality. From the user’s perspective, one factor is crucial: the simplicity of handling or re-using the open data [13]. The provision of data should therefore be intuitive for both the administration and the user. Just about one in six municipalities say they have already identified what data needs exist on the user side. Only a few municipalities have included the perspective of potential data users, such as civil society, companies, and the administration itself. And only one in seven municipalities is actively involved in networking with data users. Nevertheless, around a quarter of the municipalities have initiated projects on open data or open government issues. Small towns are the least active in networking with users, acquiring funding, and carrying out pilot projects.

Municipalities favour different approaches for identifying the potential of open data. Three-quarters of municipalities already providing open data study other municipalities for inspiration, for example by using the sample data catalogue (see Table 8) [14]. Departments publish open data proactively in more than half of the surveyed municipalities. In about a third of municipalities, an open data officer actively searches for potential data. Only in a few cases are local government employees actively trained in curating open data.

3.3. Drivers, challenges, and need for support

Building a data infrastructure is a complex task and affects public administrations' organisational culture as a whole. A fundamental change in organisational culture must be initiated to overcome associated organisational and practical hurdles for working with data. For example, the standardisation of processes for storing open data is an essential milestone for an administration and, at the same time, represents one of the most significant challenges in its implementation.

Regardless of a city's size, municipalities cite the lack of an internal data management system and the standardisation of practices as their primary concerns (see **Table 9**). This applies to almost 80 per cent of the municipalities surveyed. Challenges to internal data management are significant and spread across all size classes. More than seven out of ten municipalities disclose that both the necessary resources and employees' expertise in dealing with data are lacking. The low degree of digitisation of administrative processes also makes the acquisition and transfer of data difficult in seven out of ten municipalities. This aspect is of particular significance in small towns with fewer than 20,000 inhabitants.

	fully agree	rather agree	rather disagree	do not agree at all	do not know
<i>What challenges do you face in your municipality with regard to the acquisition and internal sharing of data?</i>					
Lack of resources	33	38	20	6	3
Few standardized processes for storing and processing data	30	48	14	5	3
Lack of expertise among employees in handling data	23	48	21	3	5
Low degree of digitization of administrative processes	19	53	20	4	3
Lack of direct exchange within the organization across departments	18	48	26	5	3
Data protection concerns	16	34	37	8	5
Lack of knowledge about where which data is collected and stored	13	51	25	8	3
Inadequate IT infrastructure	9	27	41	19	4
<i>What aspects were important on the way to the current state of provision and use of open data in your municipality?</i>					
Relevant legal and regulatory requirements at federal and state level (transparency/information laws, etc.)	36	30	23	7	4
Access to or establishment of corresponding technical infrastructures	26	46	11	10	8
Relevant decision-making at the municipal level	23	32	20	14	11
Establishment of concrete data governance structures in own administration (e.g., establishment of an organizational unit with corresponding responsibilities)	12	22	26	25	14
Demands/needs on the part of civil society and/or companies.	9	39	30	15	7
Provision of open data in other (neighboring) municipalities	5	33	31	23	8

Table 9: Challenges and drivers of open data (values in per cent)

While challenges to provide and share open data internally are mainly organisational and practical, such as low standardisation, lack of direct exchange, or simply a lack of resources, the question about the aspects that drive the adoption of open data in municipalities paints a different picture. Almost three-quarters of the municipalities already engaging in the provision of open data indicate establishing a technical infrastructure was very important for the initial provision of open data.

Furthermore, 66 per cent refer to legal and regulatory requirements at the federal and state level, such as state-specific transparency laws. Only slightly more than half of them see relevant decision-making at the municipal level as an important aspect of open data provision. Growing demand for open administrative data is another crucial aspect for nearly half of the municipalities.

Municipalities without measures to provide open data cite various reasons why they have not yet made open data available with the most common being a lack of human resources (over 80 per cent, see Table 10). Three-quarters justify this with the fact that the provision of data as open data is not part of their legal mandate. Municipalities already providing open data cite legal and regulatory requirements at the federal or state level as one of the most important supportive factor. This result underlines the important function of a clear and compulsory legal framework for the provision of open data. 60 per cent name potential additional costs as one reason why they have so far refrained from offering open data. Additionally, almost 60 per cent of respondents indicate a lack of competence in dealing with open data in local government as a reason for not making open data available. It is, however, also clear that neither the lack of acceptance among the citizens nor a negative decision by the city or municipal council are perceived reasons for not sharing more open data.

	fully agree	rather agree	rather disagree	do not agree at all	do not know
<i>What support would you like to see in the design and implementation of Open Data in your municipality?</i>					
Practical handouts, such as guides	51	39	7	1	2
A supra-regional data portal where we can post our data without having to build our own open data portal	46	27	12	12	4
Financial support for the provision of open data	42	39	10	5	4
Stronger inter-municipal cooperation in the area of open data	38	44	12	3	3
A better overview of which data sets are published as open data by other municipalities	37	39	16	6	2
Data protection advice and support	35	37	20	5	4
Technical support for the provision of open data	32	40	17	7	4
<i>What were the arguments that led to the decision not to provide open data in your municipality?</i>					
Lack of human resources	43	38	6	1	12
Lack of legal mandate	29	45	14	1	10
Fear of data misuse	29	30	25	1	14
Data protection concerns	23	30	30	1	14
Additional costs due to data provision and processing	19	41	19	3	18
Lack of competencies in local government	19	43	20	1	16
Concern about commercial use by third parties	18	34	28	6	15
Unclear added value for the municipality	13	54	14	3	16
Lack of acceptance in the urban society/population	3	10	29	9	49
Rejecting resolution of the city or municipal council	1	6	17	54	22

Table 10: Support for open data and reasons for not (yet) providing open data (values in per cent)

Although the support of the administrative leadership seems to be relevant for the fundamental decision to provide open data, it is not decisive for its concrete implementation, it is rather the shortage of human and financial resources. Legal aspects seem to either create security and provide a framework for the provision of open data or have the exact opposite effect.

Most municipalities would like support for the task of designing and implementing open data (see **Table 10**). Nine out of ten say that they would benefit from practical handouts and guides. The most frequently mentioned reason for not making open data available is the lack of trained staff. Therefore, almost three-quarters are in favour of a supra-regional data portal where they can post and manage their open data. Especially when staffing and funding are scarce, this support service could be a compelling argument for providing open data.

3.4. Policy changes and the legal framework

For implementing open data in municipalities, political developments and the resulting legal regulations are of vital importance. Almost all municipal employees surveyed consider the political efforts to make open data more widely available as being the right decision. A more nuanced picture emerges when comments of respondents are taken into account. For example, one comment states that, “municipalities need more safeguards from the (often unfounded) allegations ‘this violates data protection’ and the like by the legislator”. As one possible solution, the commentator suggests enforceable and uniform data protection guidelines: “GDPR [EU General Data Protection Regulation]-compliant guidelines for the release of data [must be] uniformly regulated.”

In a recent position paper, the Deutsche Städtetag rightly describes the framework conditions for municipalities to provide open data as “very complex”. There is a need for clarification and improvement in the application of existing legal provisions and the licences required for publication: clear regulations to enable open data to be published as official works in the public domain, for example, by adapting Section 5 of the Copyright Act (UrhG); abandonment of the misleading Datenlizenz Deutschland, which adds to legal uncertainty; clarification that Section 87a of the Copyright Act does not apply to administrative open data or databases created on behalf of public authorities. Still, respondents see the greatest need for action on a policy-making level: they must ensure that the necessary course is set for the provision of open data at the federal and state levels. Only then can a corresponding process for opening respective databases be initiated and implemented at the municipal level: “The initiative for making the data available must be driven by the municipalities. Mere legal regulations do not strengthen acceptance and implementation”.

Despite the high level of approval for the provision of open data, municipalities show a high level of uncertainty in implementing open data processes due to incomplete or missing specifications and laws. In their opinion, the implementation of the European Directive on Open Data and the re-use of Public Sector Information (PSI), which must be transposed into national law by July 2021, will be crucial for the future development of open data in municipalities. The PSI directive is intended to promote the re-use of data, accelerate European innovations and developments in artificial intelligence (AI), and contribute to the development of new business models while also stimulating the publication of real-time data [15]. An online survey conducted as part of the public consultation on the federal government’s data strategy recently revealed a growing, societal interest in open geospatial, environmental and transport data, and data from parliament, government, authorities and courts [16].

4. Conclusions and recommendations

The municipalities surveyed do see opportunities in the provision of open data. However, when municipalities’ ideas of designing and implementing the necessary processes for providing open data take shape, the challenges associated with taking these steps become apparent. Our results indicate that the digitisation of public administration in Germany – at least regarding the provision

of open data – is still in its infancy and will remain a significant challenge in the future. Open data can be of added value for municipalities in many respects, first and foremost in improving citizens' information needs and stimulating the exchange between departments and municipal enterprises. Four recommendations for action are derived from this study for cultivating more open data in municipalities:

1. **Create a clear legal basis for the provision of open data:** It is advisable that the national legal and administrative standards for the provision and use of open data are designed with municipalities as data owners in mind. Existing legal uncertainties should be reduced. What is needed are clear regulations and guidelines. For innovation to flourish, potential external open data users should be given the opportunity to demand this data from data owners in a binding manner. At the same time, the data sovereignty of municipalities must be ensured.
2. **Support financially weak and smaller municipalities in implementing open data:** It is crucial to ensure that all municipalities, even those under very tight budgetary constraints, have the resources to advance their digital transformation. The Corona pandemics consequences comprise the risk that municipalities will further reduce their investments and postpone digitalisation efforts.
3. **Open data requires a modern and professional organisational culture:** The implementation of open data must be taken seriously and supported by the city and administrative leaders. The standardisation of processes for storing open data is a vital milestone in providing open data in an organisation and it often represents one of the most significant challenges.
4. **Communicate the added value of open data for municipalities:** Public services that benefit from digitisation and open data within are good starting points for widely communicating the value of open data. Communication could focus on the added value that can be “seen” and “felt” by citizens.

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