

Considering the Reluctance to Adopt Open Data in German Public Administration: An Exploration of Individual Innovation-Decisions

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Abstract: This article examines different forms of rejecting Open Data by administrative staff in German public administrations. The starting point for our study, was the observation that the diffusion of Open Data in Germany has been rather restrained in practice, despite potential advantages and strong political commitment. For this purpose, individual innovation-decision processes of administrative staff were examined. The paper is based on semi-structured interviews with experienced Open Data experts and provides insights into rejecting or negative attitudes as well as resistance to Open Data by administrative employees and thus, provides explanations for the reluctance such as perceived high risks associated with the implementation of Open Data. At the same time, experiences regarding barriers, like an insufficient technical framework for Open Data are presented. This provides important insights on how to address negative attitudes and opposition to Open Data effectively.

Keywords: Open data, innovation, adoption, innovation-decision, reluctance

1. Introduction and Background

For more than a decade, there has been an ambivalent discourse in Germany on several levels about Open Data. The discourse takes place in a tension between anticipated opportunities, such as greater governmental transparency and administrative action, and a considerable reluctance to implement Open Data policies. The concept of Open Data was first introduced in the US through president Barack Obama in his election campaign 2008, to increase transparency, participation and collaboration in government (Kubicek & Jarke 2020). Open government data are those data, that are produced by governments and public administrations and subsequently published under open licenses, freely

available to citizens and businesses without any restrictions for further use, re-use and dissemination (Lucke & Geiger 2010: 5-6).

Beginning in 2010, Open Data became an integral part of political discourse and government action at the federal, state and municipal level in Germany. One of the first high-level commitments of the German government was the, "Dresdner Vereinbarung" (Dresden Agreement), which was adopted at the fifth national IT-summit on 7 December 2010. This early commitment was followed by a multitude of further political commitments and measures, that include the promotion of Open Data across all levels of government. For example, Open Data can be found as a topic in several government programmes (e.g. Federal Government of the Federal Republic of Germany 2014), coalition agreements (e.g. Federal Government of the Federal Republic of Germany 2018; SPD & BÜNDNIS 90 / DIE GRÜNEN & FDP 2021: 17) and also in specific laws (e.g. Section 12a of the E-Government Act, Section 16a of the E-Government Act of North Rhine-Westphalia and Section 13 of the E-Government Act of Berlin), which oblige public administrations to publish "their" data under open standards.

In academic literature, the provision of government data as Open Data is associated with a variety of possible advantages, potentials and opportunities (e.g. Kucera & Chlapek 2014; Jetzek & Bjorn-Andersen 2014; Hartog et al. 2014 and especially in the German context e.g. Janda 2011; Hoffmann & Klessmann 2011; Kubicek & Jarke 2020). These include, among other things, increased transparency of public bodies and thus, improved traceability of government actions and decisions. Furthermore, the promotion of innovations and general economic growth and, from an internal administrative perspective, the development of data management, the more efficient implementation of internal processes and the implementation of data-based decision making as well as the involvement of external expertise (Janssen et al. 2012: 261).

Based on the political signals, as well as, the diverse (potential) advantages and opportunities of Open Data, it could be expected that the idea of Open Data has met the enthusiastic (or at least broad) support of the German public administration, during the past decade. However, a look at the current practices and processes of making data available across public administrations, shows that a widespread diffusion has not yet taken place. Many public agencies are reluctant to make data available and the dissemination of Open Data in the German administrative system can be described as heterogeneous at best. For example, as of Aug. 11, 2021, 19 of the 34 agencies of the direct federal administration whose metadata are recorded on GovData, have fewer than 10 datasets discoverable. In addition, the number of municipalities that make administrative data available as Open Data in their own or third-party open-data-portals, amounts to approximately 130 as of 25.11.2020 (Wiedemann & Frerichs 2020). This corresponds to about 1.2 percent of the total of about 11,000 municipalities in Germany.

This paper examines the divergence between the opportunities, advantages and potentials of Open Data as pointed out in the academic literature and policy documents on the one side, and the reluctant implementation of open administrative data in practice on the other side. Based on this observation, a fundamental question arises as to why the diffusion of Open Data has so far only taken place reluctantly. One way to approach this question of 'why', is to examine the individual

decision-making processes that take place in the context of Open Data in public administrations and that result in the adoption or rejection of the idea of Open Data.

The decision for or against adopting the principles of Open Data and the associated "opening up" is not made by a public body as a whole, but is taken at different levels of its hierarchy. For example, the decision to set up an Open Data portal is made at the executive level of the administrative top management, but the functional implementation of the introduction is incumbent on the participation of the constituent organisational units. If they themselves decide against the introduction of such a portal or do not upload data, the introduction process may be impeded, and the effects of the higher-level decision may not unfold (cf. Young 2020: 306).

This paper focuses explicitly on the level of individual actors and examines the extent to which German civil servants perceive Open Data as an innovation, their respective decision-making processes regarding the adoption of this innovation and the factors that influence their decisions. To do so we use the concept of, "*diffusion of innovations*" (Karnowski 2017: 11) and focus at the micro level (civil servants), where innovation decision-making takes place (Rogers 2003). Specifically, we ask: *What reasons for rejecting or developing a negative attitude towards Open Data can be identified amongst German civil servants?*

By examining the (heterogeneous) decision-making processes and investigating the multiple (perceived) barriers to the adoption of Open Data within public agencies, we contribute to a better understanding of the decision-making behaviour of organisational members. This is considered to be of central importance for the management of organisational change, where overcoming barriers, reducing and eliminating resistance are key (cf. Talke & Heidenreich 2014a: 159-160).

In the following, we outline an innovation decision-making process model as the theoretical foundation of our study. Subsequently, we present the current state of research on the adoption of Open Data in public agencies and potential barriers related to Open Data. In section four we explain the study design which followed an explorative, qualitative approach. In total 10 semi-structured interviews with Open Data experts from different levels of the German public administration were conducted and analysed through qualitative content analysis. The results of the analysis are presented in the fifth section and then discussed. In the conclusion we draw recommendations for practice and future research.

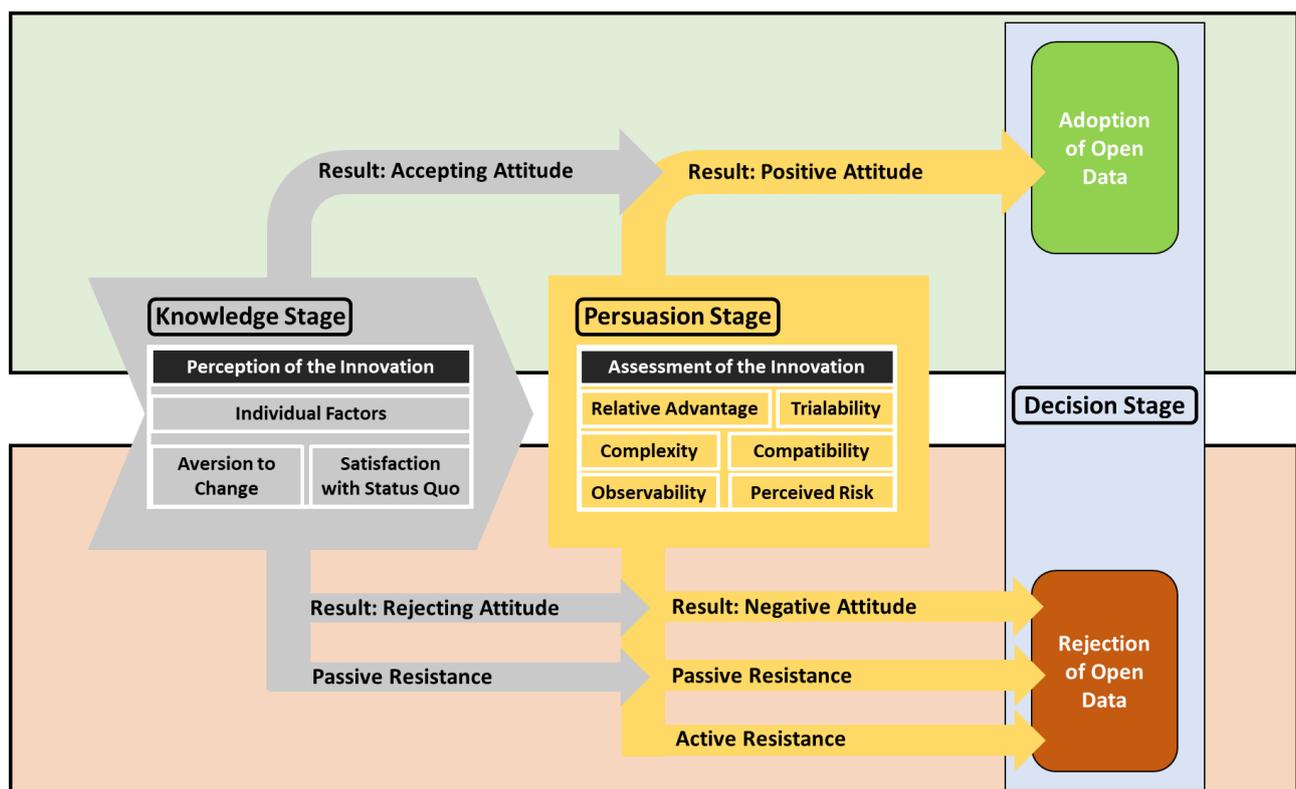
2. Innovation-Decision Process as the Object of Analysis

In order to analyse decisions relating to the adoption of innovations, different models of innovation-decision processes have been developed (cf. e.g. Olshavsky & Spreng 1996; Nabih et al. 1997). The approaches differ to a greater or lesser extent, in terms of content, but their basic structure is largely based on the model of Everett M. Rogers, who divides an innovation-decision process into five stages (Talke & Heidenreich 2014b: 895): (1) knowledge stage, (2) persuasion stage, (3) decision stage, (4) implementation stage and (5) confirmation stage (Karnowski and Kümpel 2016: 100). In sum, Rogers (2003: 20) describes an innovation-decision process as a "*process through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to the formation of an attitude*

toward the innovation, to a decision to adopt or reject, to implementation and use of the new idea, and to conformation of this decision“.

The main aim of research approaches influenced by Rogers is to explain the successful adoption of innovations and to a lesser degree, their rejection. In contrast, however, starting from Jagdish N. Sheth (1981), another branch of research developed that specifically examined attitudes of resistance and rejection towards an innovation. More recently, Katrin Talke and Sven Heidenreich have attended to resistance, rejection and opposition to innovations in several studies (2014a; 2014b; Heidenreich & Spieth 2013) and extended Rogers' basic model, by including the aspects of resistance, rejection and opposition. These closely related innovation-decision models form the basis for this paper. We followed Talke and Heidenreich's model and "zoomed in" to the first three stages (knowledge, persuasion, decision) of the innovation-decision process, in order to guide our exploratory study of individual reasons for resisting, rejecting, and/or opposing Open Data in Germany (see Figure 1). We expanded the model by adding the perception of innovation as well as the assessment of the innovation. The three stages are explained in more detail below.

Figure 1: Innovation-decision process with regard to Open Data.



Of key interest to this paper, is the individual rejection of Open Data by civil servants. According to the innovation-decision model, this potential rejection takes place at the **Decision Stage**. In order to understand the factors that lead to this decision, one has to examine the first two stages of knowledge and persuasion.

At the **Knowledge Stage**, the organisational member learns about the innovation for the first time or becomes aware of it, and aims to understand how it works (Rogers 2003: 171). A negative outcome

of this stage, can be a rejecting attitude towards the innovation. This describes a, "*subconscious, not factually based aversion to innovation-related change*" (Talke & Heidenreich 2014a: 154 with reference to Nabih et al. 1997 and Talke & Heidenreich 2014b). At the same time, this first stage can lead to the emergence of passive resistance, which can be reflected, for example, in lower work motivation or dissatisfaction with the work environment (Talke & Heidenreich 2014a: 155). According to Talke and Heidenreich (2014b: 897-898), individual factors have the greatest influence on the outcome of this stage of the decision-making process. Central, are a personal aversion to change and the satisfaction of organisational members with the status quo (cf. Kim & Kankanhalli 2009: 575).

At the **Persuasion Stage**, the pros and cons of the innovation are being discussed, and the consequences of adoption are weighed up. The characteristics of the innovation in question are central at this point. The result of this stage, is the development of a positive or negative attitude towards the innovation (Rogers 2003: 174). At the same time, active resistance against the innovation can build up based on a negative assessment of the innovation. The same applies to forms of passive resistance, which can also occur for the first time or continue from the previous stage (Talke & Heidenreich 2014a: 154. 157-158). In addition, the perceived characteristics of the innovation come into play, at this stage, as critical success factors, to which importance is attributed within the innovation-decision making process (Schenk et al. 1996: 32; Agarwal & Prasad 1997; Rogers 2003: 16-17). These are the "*relative advantage*", the "*compatibility*", the "*complexity*", the "*trialability*" and the "*observability*" of the innovation (Rogers 2003: 229-264). In studies of diffusion and adoption research, these five perceived characteristics used by Rogers are often supplemented by a further characteristic, the "*perceived risk*" of an innovation (cf. e.g. Schmalen & Pechtl 1996; Meuter et al. 2005; Laukkanen et al. 2008), which was also adopted in this study.

With regard to the perceived characteristics of an innovation, Talke and Heidenreich (2014a: 155-156) explain that negative deviations occur if there is a tension between an organisational member's individual expectations of an innovation and the perceived actual characteristics. The negative deviations are also referred to, as *innovation-specific barriers*. These barriers are again divided in the literature, into *functional barriers* as well as *psychological barriers*. Functional barriers occur, when an innovation is perceived by potential adopters as unfavourable, incompatible, or too complex (Laukkanen et al. 2008). In the case of psychological barriers, the innovation conflicts with the adopters' existing values and social norms, among other things, or the innovation is perceived as too risky (Ram & Sheth 198; Kleijnen et al. 2009). According to Talke and Heidenreich (2014b: 902), such barriers lead to the development of a negative attitude towards the innovation in question.

This study focusses, hence, on the individual civil servants' perception of the innovation Open Data, at the stages of knowledge and persuasion. In particular, we focus on the perceived characteristics of the innovation.

3. Relevant Literature

Relevant to how individuals perceive the characteristics of an innovation, is what they perceive to be barriers. In adoption-research, factors are considered that positively, or negatively, influence the

adoption of an innovation. The negatively influencing factors are closely related to the barriers discussed in general Open Data research, and partly coincide with them. We therefore, review what previous research has identified as factors that influence the adoption of the idea of Open Data, and to what extent, as well as, general Open Data related barriers.

The adoption-studies we reviewed, were each conducted in the specific contexts of individual countries, including Switzerland (Estermann 2014), Australia (Hossain & Chan 2015), Taiwan (Yang et al. 2015; Wang & Lo 2016; Yang & Wu 2016), Saudi Arabia (Altayar 2018), Malaysia (Haini et al. 2019), and Ecuador (Roa et al. 2020). They refer to specific levels of public administration, e.g., Haini et al. (2019), to the local level of municipalities, Hossain and Chan (2015), and Wang and Lo, (2016), as well as, Yang and Wu (2016), to the level of federal agencies, and Estermann (2014), to cultural heritage institutions. A corresponding study for Germany does not yet exist.

What these studies have in common, is that they have focused on the overall adoption decisions of Open Data, of an entire public authority or other public bodies. The individual decision-making processes, the factors influencing individual decisions for or against the idea of Open Data, as well as, occurring innovation-specific barriers in decision-making processes, have not been considered yet. Nonetheless, these decisions and their analysis are of great importance for the successful implementation of Open Data.

An early and much-cited study in the field of Open Data related barriers, comes from Janssen et al. (2012), who identified a total of 57, "adoption barriers for not publicizing data", in the categories, "institutional", "task complexity", "use and participation", "legislation", "information quality" and "technical" based on a group survey (Janssen et al. 2012: 262-263). In addition, Barry and Bannister (2014), were able to identify a total of 20 different barriers, from practice through semi-structured interviews, with administrative managers in their study conducted in Ireland, in which they investigated the question, "What are the barriers to making data open in Ireland?". These were in turn, divided into the areas of "economic", "technical", "cultural", "legal", "administrative" and "risk related", (Barry & Bannister 2014: 140). In a study by Conradie and Choenni (2014), workshops, interviews, questionnaires, desk research and practice based cases, involving six local public sector organisations, were used to examine barriers for local government releasing open data. Wirtz et al. (2016), used a cognitive theory perspective to conceptualise and summarise the barriers perceived by administrative staff, when implementing Open Data, with the help of a quantitative survey. Furthermore, Hunnius et al. (2014) investigated the situation of open data in Germany and Spain through document analysis, and more than 30 in-depth interviews with experts from the public sector, as well as, users and open data advocates from outside the public sector and identified several, country-related barriers, regarding Open Data. Finally, in 2018, Crusoe and Melin conducted a systematic literature review, in which they identified a total of 34 articles regarding barriers to Open Data, which in turn, identified a variety of actual and potential barriers (Crusoe & Melin 2018).

The research on the barriers to Open Data is thus, extensive and diverse, focusing in particular, on the recording and categorisation of barriers. What has received less attention so far, are the specific points in time at which the barriers occur, or the process stage of the implementation of Open Data, to which they can be assigned. Furthermore, the dependencies or the interaction of the barriers

are not fully explored (cf. Ruijter & Meijer 2020: 614, 616). Finally, there has been little focus on individual organisational members, who must implement Open Data in practice, and the barriers explicitly related to these individuals.

This paper contributes to this line of research, by examining the adoption of Open Data on the micro level of the innovation decision-making processes for Open Data, in the German context. In particular, we highlight less observed factors that negatively influence the adoption, and present themselves as barriers in innovation-decision processes of individuals. In addition, this paper complements adoption research in methodological terms, since this branch of research has so far predominantly used quantitative methods, but here qualitative methods, are used methods.

4. Empirical Data-Collection and Evaluation

The empirical data of this study, is based on ten interviews with experts who work at all three levels of the German public administration, or in their direct environment. Expert interviews enable researchers to develop and structure a research field, on the basis of their specific practical and advanced knowledge. As a central element within a research design, expert interviews can be used to scientifically develop connections, explanations and justifications (Bogner et al. 2014: 13, 22). Following our explorative research design, we chose to interview experts, as the method of data collection, to explore and systematise the research field of reluctance to adopt Open Data. As argued above, most of the data by government and public administrations are produced on the local level, however, very few municipalities are publishing their data. We therefore, carefully selected more interviewees representing this level of government. Five of the experts work in local government, two in state government and two at multiple levels. Only one interviewee is employed in the federal administration. The interviewed experts are characterised by their specialist knowledge on the topic of Open Data, based particularly on many years of professional experience, as well as the execution of diverse activities in the context of Open Data in practice. These include the strategic management and coordination of the topic of Open Data, advising and supporting employees, as well as the creation and publication of materials, such as manuals, instructions and guides, and the implementation of qualification and training measures.

The explicit investigation of differences in the innovation-decision making processes of staff at the various administrative levels, was not a declared goal of the study. The aim in selecting the experts was rather, to interview individuals who have a wealth of experience with Open Data in administrative practice, and who are in direct contact with administrative staff.

The interviews were conducted from July to August 2020, through videoconferencing software. This form of interviewing was required, because of the Covid 19 pandemic. The interviews were structured using an interview guide (Oates 2005). This guide contained questions about the role of the interviewed experts, in the context of Open Data, questions about the concepts of rejection of Open Data, negative attitudes as well as resistance to Open Data, derived from the innovation-decision model, explained in the previous chapter, and explanatory approaches for these, from the interviewees. The interviews were recorded and subsequently transcribed. The transcripts were analysed using content analysis, according to Kuckartz (2018: 100). The material was coded, with the

help of main- and sub-categories, which on the one hand, were based on the structure of the interview guide used, and on the other hand, were developed inductively during the coding process. The coded material was evaluated, along the developed main categories. The direct quotations in this article were translated into English.

5. Results of the Empirical Study

In the following, the findings of the interviews are presented. Their presentation is aligned with the innovation-decision model (Figure 1), and relates to the first two stages (knowledge and persuasion). Specifically, the findings focus on the development of a negative attitude, and the emergence of resistance against Open Data.

5.1. Rejection of Open Data

With regard to a rejecting attitude towards the innovation of Open Data, the experts report that, Open Data is perceived by some administrative employees as merely a trendy topic, that will not last long, so that they are not willing to deal with it or invest their working time. This suggests that, Open Data is perceived as less important than other topics related to public sector innovation.

Furthermore, the experts state that, many public sector employees are often fundamentally critical of changes to their work and reluctant to get involved in something new or uncertain. According to one expert, scepticism about new things is traditionally very high in public administrations as they stand for stability, consistency and reliability, rather than for an agile, innovative mindset. They argue, that there is often a tendency to stick to procedures that have been established for a long time and for which people have become accustomed. Regarding the openness to change, one expert speaks specifically of the fact that there is, "*still a very high level of inertia*" among civil servants. Also, there is sometimes an, "*aversion against technology*", which leads to a fundamentally negative view about technical topics and reduces interest. An expert who works in local government reported, for example, that "*...you must not bother people here with technical things*".

5.2. Negative Attitude towards Open Data

A negative attitude towards Open Data is a possible result of a first assessment of the innovation Open Data. In the interviews, a number of findings relating to a negative attitude emerged, although no uniform picture can be determined. Six of the ten experts state that, in their estimation, administrative staff do not judge the topic negatively per se. One expert reports that, he perceives a lack of understanding, rather than, a clear negative attitude. Another expert explains that, in his perception, civil servants show more reservations than fundamentally negative attitudes towards Open Data. In his direct organisational environment, he cannot identify any outright deniers of the topic. There are only a few clear supporters, as civil servants approach the topic mainly passively, and aim to "get along".

The following chart (see Figure 2), provides an initial overview of different aspects that, have a negative influence on the perception of the specific characteristics of the innovation Open Data, and

which, taken together, can promote the development of a negative attitude. In the following subsections, the aspects are explained in detail against the background of the respective characteristics.

Figure 2: Aspects of negative attitudes towards Open Data.



5.2.1. Relative Advantage or Disadvantage

Regarding the perception of relative advantages or disadvantages, one aspect was raised by the experts that stands out in the empirical material. This is the perception of personal added value from the adoption of Open Data and closely related to this, the relationship between the effort and benefit of adoption. The experts report a predominantly unfavourable perception of Open Data innovation by the administrative staff, and in some cases even an explicitly negative perception.

In terms of the added value, it should first be noted that, according to the experts, there is only a low level of awareness among administrative staff about the possible advantages of Open Data. It often remains too abstract to civil servants, and hence, the potential benefits remained obscure and generally invisible. This is exacerbated by the fact that, the advantages and added values of Open Data are often not self-explanatory. In addition, one expert explains that, in her estimation, administrative staff lack a general awareness of the potential of data itself. She argues that, not all employees understand the opportunities associated with the use of data and its importance. This leads in turn to Open Data also not being considered particularly important and beneficial.

With regard to the effort associated with the adoption of Open Data, and the subsequent implementation, five of the ten experts state that, this outweighs the potential benefits in the perception of the administrative staff. One expert reports, on his experience that, there is often no discussion about the content of Open Data, but rather, reference is made to the fact that, "[Open Data] would

generate additional expenditure, which in fact also happens to a certain extent. The fact that there are savings on the other side is something else, but that is often kept quiet. But you can see the additional effort...".

Furthermore, three experts report on situations in which the adoption of Open Data means, a negative deviation from the previous status quo for the organisational unit, in which, the adopters work, in the form of a lack of income, and is thus perceived, as disadvantageous overall. In these organisational units, which include the surveying department or the municipal archives, part of the income is generated through the sale of data, which is no longer possible with a consistent implementation of Open Data, and thus, resulting in financial losses.

5.2.2. Compatibility

According to the experts, Open Data in many ways, represents a departure from institutionalised values and norms, as well as, established work routines within public administration, which calls compatibility into question, creates potential for conflict and fosters a negative attitude.

The loss of control associated with Open Data, was most frequently mentioned by the experts in this context. This is closely connected to the idea of interpretative sovereignty, over one's own data. According to some of the experts, administrative staff firmly assume that, only they, who have collected the data, can also interpret it and therefore, have the exclusive right to decide on its whereabouts and use. Turning away from this way of thinking represents a loss of control for employees. The relinquishment of control, in turn, contrasts with the administrative culture, which is characterised, among other things, by the fact that the administration usually works in a very meticulous and planned manner; preparing decisions extensively. The loss of control over the use of government data, associated with Open Data, was mentioned several times by the experts as problematic for civil servants. They often expressed fears of negative consequences of data publication that cannot be assessed. On the one hand, there are potential negative consequences for the administration itself, that could arise after the opening of data, and on the other hand, there is the danger that people will misuse the data, for negative or illegal purposes.

In addition to the loss of control and the sovereignty of interpretation, one expert named the loss of power as relevant in the context of administrative culture. According to the expert, the opening of previously closed administrative data means that, individuals give up a position of power that was previously based on an information advantage. This is also associated with, the perception of a downgrading of one's own significance.

Furthermore, administrative staff sometimes hold on to traditional approaches and ideas that contrast with the idea of Open Data. For example, some of the experts repeatedly raised the issue of data ownership in connection with Open Data. This refers to the understanding that, collected data belongs exclusively to the person or organisational unit that collected it. Closely related to this is also, the understanding that invested work, in this case the process of data collection, should always be linked to a service in return. The unrestricted and, above all, free sharing of government data represents an unusual approach to administrative staff.

Furthermore, according to the experts, the idea of Open Data challenges an administrative culture in that it is directly linked to the occurrence and detection of errors. Published government data, can potentially contain errors that can be discovered by people outside the administration. One expert points out that, a pronounced error culture does not exist within the public administration and that, administrative staff therefore, want to avoid errors as much as possible. Another expert explains that, in his experience, there is still a tendency in public administration to punish people for difficulties that arise, rather than, rewarding them for innovative approaches. The employees who follow this culture, thus lack the incentive, to comprehensively publish data that could potentially contain errors and thus, cause them difficulties.

Finally, according to some of the experts, transparency, which is closely related to the idea of Open Data, is an aspect that is perceived as contradicting the administrative culture of official secrecy. Senior employees in particular, are sometimes conditioned to maintain official secrecy and to protect information and data accordingly, and not disclose it.

5.2.3. Complexity

Regarding the complexity of the innovation Open Data, a differentiation must be made between Open Data as a concept or idea, and the actual (technical), implementation. Here, great differences in the reported perceptions of the administrative staff became apparent.

According to one expert, the idea of Open Data is quickly grasped by many people, even though the high degree of abstraction can sometimes lead to difficulties, as discussed above. The situation is different, with the technical aspects of Open Data, which, according to the experience of the experts, regularly lead to situations of feeling overwhelmed, in practice. The experts provide several explanations and examples, all of which, can be traced back to insufficient technical skills of administrative staff. This leads to the fact that Open Data, cannot be easily understood, and implemented by administrative staff, which corresponds to a high individually perceived complexity of the innovation and requires a learning effort for the employees concerned. One expert speaks of a, "*broad technological ignorance*", of the employees in the administration and a resulting excessive demand and a perceived high level of complexity. There is a great deal of uncertainty, especially among employees who do not work much with data. Often, there is a lack of basic but important skills in dealing with data (data literacy), and Open Data, for example, when questions such as: "*Does the software you are working with have an export interface?*" cannot be answered.

In addition to these personal aspects, two of the experts, particularly mention the inadequate technical framework conditions, which have a negative influence on the perception of complexity. One expert sees the main problem here, in the fact that, a good technical infrastructure for Open Data is lacking, which makes the provision or opening of the data extremely cumbersome. He states that, the employees basically understand how the provision process of administrative data works technically, but they perceive it as very laborious. Another expert also picks up on this aspect and considers the technical implementation of Open Data to be only possible, to a limited extent, at the present time, due to the design of the technical systems in public administration. Above all, there is a lack of Open Data-compatible interfaces, that enable automated opening.

5.2.4. Trialability

According to the interviewed experts, Open Data does not really offer the possibility of trying things out and thus, testing the innovation. One expert sees Open Data itself and the process of trying it out, for example in a test environment or protected space, as contrary. According to her, the non-existing possibility of impact assessment for adopting Open Data, is one of the essential features of this innovation (which in fact excludes trial and error). Furthermore, one expert explains that, she personally considers test phases and artificial environments, in which new things like Open Data can be tried out in a playful way, to be very useful. However, she has observed very little willingness for such formats within the public administration and that only a few employees have the necessary motivation.

5.2.5. Observability

The observability of the individual results of an adoption of Open Data, is, like the trialability, limited. It is often not possible to trace who has used which specific data sets, for which purposes, or what has been created from Open Data. Recently, however, there are various examples of Open Data applications that are being communicated nationally and internationally. The experts have had very good experiences with such examples, such as applications developed based on Open Data. This shows what is basically possible with Open Data, and what benefits Open Data can have. Communicating potential benefits is central in convincing employees.

5.2.6. Perceived Risk

The, "perceived risk," of Open Data stands out against other dimensions of individual assessment in the innovation-decision process. It was emphasised by all experts, and includes fears, with respect to errors, in the provision process, internal administrative risks and external administrative risks, which are now explained in more detail.

First, there is often a fear among administrative staff to make mistakes in the provision of government data. This fear relates to the general risk of accidentally publishing data that should not have been published, and particularly, to the risk of publishing personal data that should have been protected. According to the experts, many employees have a high awareness of the protection of personal data, so that processes in which there is a possibility that such data could be published inadvertently, are perceived as fundamentally risky. However, concerns about the protection of personal data are sometimes raised in contexts where the publication of data that obviously does not fall under the General Data Protection Regulation (GDPR) is in question. One expert reported on such a situation, in which data on potential areas for housing construction were published, which had no privacy restrictions whatsoever.

Second, the perception of risks related to the transparency associated with what can be seen, "through", Open Data in practice. The experts report that, employees often anticipate the risk that people outside the administration can check and monitor their own work. This concerns the possibility of work control, personal vulnerability, as well as, the disclosure of one's own work basis. At

the same time, employees perceive a risk in external actors, detecting errors in the data sets or in administrative processes.

Third, according to the experts, employees fear that the publication of administrative data could lead to various negative consequences, that are not directly related to the administration, but for which they could be held liable. On the one hand, there is the risk that people outside of the administration may misinterpret or misrepresent the published data or use the data in a different way than originally intended by the administration. On the other hand, the published data itself can pose a risk in different contexts. For example, published data on child poverty and people with a migration background could stigmatise a neighbourhood. In the case of such data sets, which are sometimes security-relevant, the administrative staff are always concerned that external parties will misuse the published data for illegal purposes. In addition, there is also the danger that the administration itself, will illegally intervene in the free real estate market by publishing certain data, thus causing negative economic consequences.

5.3. Resistance to Open Data

A negative attitude can result in resistance to Open Data, it is however not necessarily the case. The experts report different experiences: In some cases, there is no or only very little resistance, which can be responded to relatively quickly, through educational work. Overall, active open resistance only occurs in exceptional cases. An expert from outside the administration, who worked with civil servants from public agencies at the federal, state and municipal levels, explains that he has not yet met anyone, "*who has actually led a campaign against Open Data*". In contrast, another expert states that, for the first couple of years, in which the idea of Open Data emerged in his local administration, resistance was common and took place every day. Enquiries on the topic were flatly rejected with, "no". Over the past few years, however, a positive attitude was developed even in this organisation.

In contrast, covert or passive forms of resistance to Open Data are more prevalent and occur more regularly. For example, the idea of Open Data is simply ignored in some areas or not pursued after a confrontation. Furthermore, attempts are often made, to seek and present individual arguments against data publication. One expert states that, "*everything is tried*", and that, employees sometimes build up comprehensive counter-argument structures. Often, the general argument of protecting personal data is used, which, as already explained, is also used in contexts where no personal data is actually in question.

On the other hand, civil servants try to reject their own responsibility for Open Data or pass it on to colleagues. It often happens that employees of a department are contacted directly regarding the publication of a dataset, but refer to another department, (which may refer back in turn). In other cases, the responsibility for deciding on the publication of a specific data set is negated, the name of the body actually responsible is not provided or the responsibility is ignored. According to one expert, these procedures are, "*used as a strategy to simply not publish data*".

6. Discussion of the Results

The expert interviews allowed for an ideal-typical reconstruction of the early stages of the innovation-decision process, that administrative staff go through when confronted with Open Data. We discuss now, how these early stages impact on the adoption and implementation of Open Data.

Rejection of Open Data

First of all, the results regarding the development of an outgoing attitude towards Open Data show, that the topic can cause a defensive attitude among administrative staff not only because of its novelty, but especially because of its perception as a technological topic. From the perspective of administrative staff, Open Data can therefore, be seen objectively as doubly unattractive. In addition, the significance of the topic may be assessed, less against the background of other topics in connection with the modernisation and digitalisation of administrative activities. This lower attribution of importance or prioritisation of other topics, was also found in an online survey on digital trend topics in public administration in Germany from the year 2020, in which, 246 employees from public administrations participated. In terms of importance as a topic for public administration, Open Data was ranked 19th out of 23 topics by the respondents, which underlines the higher evaluation and thus fundamental prioritisation of other topics (Klessmann & Opiela 2020).

Negative attitude towards Open Data

Regarding the development of a negative attitude to Open Data, a variety of findings could be collected, which overall indicate that the innovation-specific characteristics of Open Data currently offer more potential for a negative than a positive perception. As a result, predominantly negative assessments of the innovation appear more likely than positive ones, and the development of a negative attitude therefore, appears to be the rule rather than an exception. This can be seen in the experts' direct assessments of the perception of the innovation-specific characteristics, by the administrative staff and especially in the abundance of counter-arguments, that the experts are confronted with in practice, and which, they were able to report on in the interviews.

Based on the interviews, the overall predominantly negative assessment can be attributed particularly to a perceived risk, associated with the innovation Open Data, which was given more emphasis by the interviewed experts than the other perceived characteristics. Moreover, the administrative employees perceive many different potential or actual risks in connection with Open Data, which in turn, can lead to a negative assessment. The perception of the dangers of inadvertently publishing personal data, that should actually have been protected, or of publishing erroneous data and thus, causing a potential embarrassment for public administrations, was also noted in a study by Hunnius et. al (2014: 10). Furthermore, these authors establish a connection between this perception and the generally low tolerance for errors in public administration, which can be confirmed through this paper.

Overall, a pronounced negative perception of the risk of Open Data innovation, does not seem surprising, against the background of the often more pronounced risk aversion among administrative employees, in comparison to employees in the private sector (cf. e.g. Buurman et al. 2009), and the essential characteristics of Open Data. Among other things, Open Data is inextricably linked to

the fact that it is fundamentally impossible to control or influence, who uses which published data for which purposes. This means that there is a high uncertainty associated with Open Data. One of the interviewed experts explains that, the ideas associated with Open Data sometimes, "*go to the very substance of a public administration*", and seem particularly apt against this background.

In addition to influencing the perception of risk, these characteristics also, ensure that Open Data cannot really be tested or tried out in practice and that, the possibility of observing the potential results of an adoption is limited. A reduction of the perceived risk through prior trial and error is not possible, or only possible to a limited extent, which in turn, can be seen as favouring the development of a negative attitude. In practice, Open Data inevitably requires the willingness to enter unknown or unfamiliar territory.

These findings can be seen in close connection with a study by Wirtz et al., (2016), who found in a quantitative survey of administrative staff, that there is a positive causal relationship between the expression of an attitude, based on perceived risk and the resistance to Open Data that occurs. The authors identify such an attitude as a major barrier to the implementation of Open Data. Overall, the findings regarding the importance of perceived risks can also be linked to the findings of previous research on the overall adoption decisions of an entire agency. For example, in a quantitative study conducted in the context of government agencies in Taiwan, Yang and Wu, (2016), found perceived risks of Open Data to have a significant negative influence on the intention to adopt it. The risk of data misuse and the liability for resulting negative consequences were recorded there as having an influence, which is also consistent with the results of this qualitative study.

In connection with the perception of relative advantages or disadvantages, one aspect was raised by the experts that, also, stands out in an overall consideration of the material. This is the perception of personal added values of the adoption of Open Data, and closely related to this, the relationship between the effort and benefit of the adoption. Based on the results of the interviews, this aspect is of the greatest importance, both in the assessment of the innovation Open Data and in convincing a person of the innovation.

The central question here, is why an individual person within a public body should adopt Open Data, regardless of constraints or other external influences. Due to the fact that, this question is often difficult to answer and sometimes cannot be answered conclusively, there is often a perception of a discrepancy between the effort required and the benefits which can be realised through Open Data. This can refer both to the individual level of an employee, who has to consider whether the investment of personal labour is worthwhile, and to the management level, where decisions have to be made regarding the use of resources in financial and/or personnel form.

In sum, with Open Data there is always the potential danger that the adoption of the innovation is perceived merely as additional work associated with extra effort that does not generate any added value. According to the interviewed experts, this danger is always present in administrative practice. This is backed by similar research, that identified the anticipation of additional work as one of the central problems of the introduction of Open Data, (cf. e.g. Conradie & Choenni 2014: 16; Yang & Wu 2014: 657).

The results regarding the compatibility of Open Data should be viewed against the background of the overall organisational culture within public administration, to determine the actions of members as a normative guideline and to serve to promote the overall interests of the organisation (Jian & Jeffres 2006: 254). Based on this conclusion, according to Wilson (1989: 315 ff.) it seems likely that organisational members, will also be critical of changes that contradict the lived organisational culture and will be more relaxed in carrying out new tasks associated with the changes or even resist them. In the interviews, it was possible to identify several changes associated with Open Data that run counter to the present organisational culture within the public administration and are thus, also perceived critically by the administrative staff. It has been shown that in particular loss of control, sovereignty of interpretation and/or power are of great importance in the perception of Open Data and are perceived negatively. These aspects have also been identified as critical barriers in several studies on the provision of Open Data (cf. Janssen et al. 2012: 261; Barry & Bannister 2014: 140; Conradie & Choenni 2014: 16).

Resistance to Open Data

In addition to the reactions to Open Data at the cognitive level, which can take the form of a negative attitude, there are also negative reactions at the behavioural level. Thus, when confronted with Open Data, administrative staff may display behaviour that can be classified as (active), resistance through individual defence mechanisms, (cf. Frank 2012).

These mechanisms take the form, on the one hand, of a comprehensive search for arguments for not having to deal with Open Data and, on the other hand, of a dismissal of one's own responsibility for the topic, as well as, the avoidance of responsibility for making decisions in this context. Civil servants try to avert negative consequences for them personally or their organisational environment with such behaviour. Against the background of the innovation-decision model used as the theoretical basis of this work, the personality traits of the potential adopters, such as the fundamental tendency to resist change, on the one hand, and the negative perception of the innovation-specific characteristics on the other hand, can be seen as triggers for the defence mechanisms.

In addition, the bureaucratic decision-making culture and the strongly developed hierarchical structures within public administrations appear to be potentially conducive to such behaviour. The decision-making culture has already been addressed in the context of Open Data in research and identified, for example, in a study by McDermott (2010) as a barrier to the introduction of Open Data. At the same time, Moon (2005) found in an empirical study on the diffusion of electronic procurement, that the large number of decision-makers and the low level of decision-making competence of individual employees, can hinder change processes within public administration. This is aggravated by the fact that employees in organisations with strong hierarchical structures, tend to take little personal responsibility, which was confirmed, for example, in a study on innovation management by Narver et al. (2004). Overall, it has been shown that, forms of resistance to Open Data can arise or continue both in the initial stage of becoming aware of the innovation and in the subsequent stage of forming an opinion.

7. Conclusion and Outlook

This paper contributes to scholarship on the adoption and implementation of Open Data, in two ways. First, it provides an interesting case study on why Open Data is only reluctantly adopted in Germany, despite political commitment. Second, it expands on scholarship that studied barriers to Open Data adoption by focussing on factors that negatively influence the decisions of individual civil servants (e.g. perceived risks). In so doing, this paper provides important insights on how to address negative attitudes and opposition to Open Data effectively.

Regarding the rejection or non-implementation of Open Data, it was first established that Open Data, as a technical as well as cultural and institutional innovation for public administration, often triggers defensive reactions among administrative staff. In addition, the innovation offers many opportunities for the development of a negative attitude towards it. It has been shown that the perception of the risk associated with Open Data, seems to have a significant influence on the development of a negative attitude towards the innovation. Often, in practice, a variety of risks are associated with Open Data, the perception of which leads people to develop a negative attitude and potentially reject it.

Furthermore, the individual added value for a person associated with the adoption of Open Data, has turned out to be a central factor. If the perception of the added value is correspondingly negative or absent, or if there is a perception of a disproportion between effort and benefit, the development of a negative attitude and thus, ultimately a rejection is likely to occur. Finally, it became apparent that when confronted with Open Data, administrative staff rarely react with open resistance and actively oppose the innovation. Rather, more passive and above all covert forms of resistance can be seen in practice.

Previous research on the adoption of Open Data in public agencies could be partially confirmed. At the same time, by deliberately focusing on the actor or personnel level of Open Data adoption, this study also provides another facet in the overall research context, regarding Open Data adoption. With the findings, individual decisions for or against the adoption of Open Data by administrative staff, as well as, the decision-making processes behind them, become more comprehensible and thus, in principle, can be influenced. The analysis of the collected data material showed that the negative reactions to Open Data can be differentiated into changeable and unchangeable aspects or aspects, that are difficult to change. In the case of the changeable aspects, experts who are involved in the implementation of Open Data in administrative practice have a wide range of options for shaping the process.

The experts themselves play a central role in the adoption process of Open Data by organisational members, and when looking at the results in detail, it becomes clear how important the dedicated commitment of individuals or an Open Data team (which has the capacity and freedom to constantly engage with the topic), is for the success of the implementation of Open Data in public agencies at large. The multitude of challenging situations in the individual adoption processes of Open Data, will probably not be eliminated without the constant commitment of such persons. Accordingly, if

the idea of Open Data is to be seriously pursued in a public agency, it is imperative to build competencies or hire individuals with existing expertise on the topic of Open Data and, at best, competencies on change management techniques.

In particular, Open Data experts should try to consciously influence the opinion formation of the employees on Open Data through comprehensive clarification and argumentation for the idea, as well as, the continuous demonstration of added values of an adoption of Open Data. Based on the findings, a comprehensive internal and external information and communication strategy is recommended, as well as, a regular open exchanges between the stakeholders involved and users of Open Data from outside the administration. Furthermore, the change of framework conditions, e.g. to reduce the complexity of the innovation, especially through training measures and continuing education programs, or the accompaniment of the innovation process with methods of change management to support an integration into the organisational culture, seems useful.

Overall, it was possible to gain insights into the micro level, which refers to the individual decision-making processes for the adoption of an innovation and represents a sub area of the theory of the diffusion of innovations, used as the theoretical basis for this work. As outlined in the introduction, this micro level is closely related to the macro level, since the diffusion of an innovation considered at this level, is to be seen as the result of all aggregated individual adoption decisions within a social system. Based on this mechanism, the manifestations of rejection, negative attitudes and resistance to the innovation Open Data, identified at the micro level, are also of particular importance, with regard to explaining the problem described above at the macro level.

In summary, the problematic situations and obstacles in the individual innovation-decision processes, present themselves as insightful clues in answering the question of why, the diffusion of Open Data in the German public administration, has only taken place to the extent it has so far, despite potential advantages, and the affirmative signals given by the political authorities.

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