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Lisa Schmidhuber & Dennis Hilgers

To cite this article: Lisa Schmidhuber & Dennis Hilgers (2021) Trajectories of local open government: An empirical investigation of managerial and political perceptions, International Public Management Journal, 24:4, 537-561, DOI: [10.1080/10967494.2020.1853291](https://doi.org/10.1080/10967494.2020.1853291)

To link to this article: <https://doi.org/10.1080/10967494.2020.1853291>



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Trajectories of local open government: An empirical investigation of managerial and political perceptions

Lisa Schmidhuber^a  and Dennis Hilgers^b 

^aVienna University of Economics and Business; ^bJohannes Kepler University Linz

ABSTRACT

'Open government' refers to transparent, participative decision-making and platform-based citizen-government collaboration and has emerged as one paradigm at the local government level, in particular. However, substantial disparities exist in open government adoption among municipalities, and the empirical evidence on the determinants of open government adoption is sparse and mixed. This article considers open government adoption by integrating the resource- and knowledge-based views and decision-makers' open government willingness. We argue that the positive impacts of internal capacity depend on the municipal decision-makers' open government willingness. Using data from a survey conducted among local decision-makers, we investigate organizational ability to implement open government and decision-makers' preferences and adoption level. The findings indicate that organizational capacity is positively associated with open government. In addition, the effect of ability on adoption is partially mediated by leaders' perceptions that open government is a meaningful opportunity for the municipality.

ARTICLE HISTORY


Received 24 April 2018

Accepted 16 November 2020

Introduction

The significance of governmental openness has grown substantially in recent years, and policy-makers and researchers alike have prioritized multiple ways to intensify exchanges between government and its stakeholders (Clarke 2020). Efforts to lower governmental boundaries include transparent decision-making processes and the provision of government information online (open data), giving voice to external actors and enabling them to engage in administrative and political processes. These endeavors of public organizations to collaborate with the external environment have gained importance due to the various advantages associated with openness (Laursen and Salter 2006; Dahlander and Gann 2010). By applying the ideas of open innovation to the public sector (Lee, Hwang, and Choi 2012; Mergel and Desouza 2013; Schmidhuber and Hilgers 2018), open governments aim to exchange knowledge with sources from their external environment, such as citizens, firms, or universities, instead of relying on internal sources. In addition to enhancing organizational performance and public innovativeness (Neshkova and Guo 2012), this mutual exchange of knowledge holds promise for strengthening the relationship between government and the public (Lukensmeyer and Torres 2008) and transforming government (Hansson, Belkacem, and Ekenberg 2015). In particular, the decreasing trust of citizens in the system of

CONTACT Lisa Schmidhuber  lisa.schmidhuber@wu.ac.at  Institute for Public Management & Governance, Vienna University of Economics and Business, Welthandelsplatz 1, 1020 Vienna, Austria.

 Supplemental data for this article is available at <https://doi.org/10.1080/10967494.2020.1853291>.

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public governance and its procedures and the decreasing voter turnout in countries throughout the world highlight the importance of changing the traditional methods of public governance.

Consequently, in recent years, several local governments have pursued a new strategy of public governance and have implemented various ways of promoting exchanges with their stakeholders (e.g., Linders 2012; Nam 2012; Mergel 2015). The evolution of a more open and collaborative government is especially enabled by harnessing modern information technology (Bertot, Jaeger, and Grimes 2010; Jaeger and Bertot 2010). Open government can be understood as an innovative means of managing knowledge sources and organizing public service delivery, as it requires “a departure from a more traditional logic” (Grimmelikhuijsen and Feeney 2017, 581) and, thus, from established organizational practices such as the classical outsourcing of services or the issuance of a tender in a public procurement process. The combination of new communication channels, new interactions with external actors, and the potential risks associated with these new practices relates open government to public sector innovation. The first studies in this area provide empirical evidence of government efforts to foster openness (e.g., Lee and Kwak 2012; Mergel 2015; Kornberger et al. 2017; Ingrams et al. 2018) and highlight several benefits of an open approach to public innovation (Bertot et al. 2010; Janssen, Charalabidis, and Zuiderwijk 2012). Despite the benefits associated with organizational openness, governments struggle to assimilate open government (Zuiderwijk and Janssen 2014; Worthy 2015).

Much debate surrounds the determinants of organizational adoption of public innovation (Greenhalgh et al. 2004; Voorberg, Bekkers, and Tummers 2015; Clausen, Demircioglu, and Alsos 2020). Several public administration scholars have shown that organizational capacity is one of the main forces driving changes in government, such as open data practices (Yang and Wu, 2016), information sharing initiatives (Gil-Garcia and Sayogo 2016) and participation (Grimmelikhuijsen and Feeney 2017). Indeed, resource scarcity seems to be a barrier to initiating innovation and is seen as a “clearest reason for failure in” (Gil-Garcia and Sayogo 2016, 579). Yang, Lo, and Shiang (2015) found that some governments suffer from a lack of knowledge about digitalized approaches, as opposed to the paper-based format, and face technological challenges.

However, an exclusive focus on resources and, thus, the practicality of innovation is insufficient to explain innovation adoption decisions (Silverman 1971; March and Olsen 1989; Greenhalgh et al. 2004; Korteland and Bekkers 2008). For example, Grimmelikhuijsen and Feeney (2017) found that open government implementation in US local government is also influenced by an innovative and participative climate. In addition, Oliveira and Welch (2013) indicated that organizational innovativeness, not organizational size, is related to social media adoption. This approach, which goes beyond organizational capacity, focuses on the willingness of key actors to push innovation activities and provides possibilities to understand the conditionalities of the resources-innovation relationship.

The present study argues that open government adoption requires both organizational capacity and decision-makers' willingness, and it aims to investigate the mediating mechanism of organizational values in the resources-innovation relationship. It seeks to contribute to a better, contextual understanding of the impact of the ability to implement open government on actual adoption at the local government level, and of the conditional effect of leaders' willingness to achieve open government. We focus our analysis on local governments in Austria, examining the extent to which the relationship between organizational capacity and open government adoption is mediated by decision-makers' perception that change in the form of open government is needed and valuable.

Investigating the conditional relationship among ability, willingness and the adoption of open government has both theoretical value and implications for policy. Thus, this study makes several contributions to the open government literature: First, the present study contributes to this stream of literature by examining the role of municipal decision-makers (here, city managers and mayors) in adopting open government. Shedding light on the perceptions of municipal city

managers and mayors is important, as they are the main decision-makers in implementing public change and innovation (Yukl 2006; Hansen 2011) and, thus, influence strategic decisions (Damanpour and Schneider 2006). Furthermore, such officials constitute an important link between citizens and the political-administrative system (Zhang and Feeney 2018). This article argues that the adoption decision depends on the capacity to innovate and implement new practices and their willingness to innovate and adopt governmental openness. Analyzing decision-makers' perception of organizational resources and investigating their belief structure with regard to open government sheds light on the motivation to foster innovation. Accordingly, municipal decision-makers' perceptions of open government might determine efforts to promote innovation adoption (cf. Kim and Lee 2009; Zhang and Feeney 2018).

Second, the previous studies on public innovation have mainly focused on the role of public managers in innovation adoption (e.g., Damanpour and Schneider 2006; Walker 2006, Walker 2007), and only a few have investigated the politicians' perspective (e.g., Hansen 2011; Korac, Saliterer, and Walker 2017). To shed light on the possible diverging interests and viewpoints of the dual leadership in municipalities (i.e., public manager and mayor), this article analyzes both the managerial and political determinants of open government adoption and is thus able to identify differences with regard to the leadership group. By combining survey data from managerial and political decision-makers, this analysis allows a comparison of factors influencing open government adoption.

Third, this study develops a scale for measuring the open government efforts of local governments. It empirically analyzes not simply one aspect of open government such as transparency but different dimensions of the very broad and general open government concept (see Grimmelikhuijsen and Feeney 2017) and provides specific and tangible measures for evaluating the degree of open government adoption. Both managerial and political decision-makers are confronted with the same open government measurements so that variations based on the different types of open government efforts between leadership groups can be identified. Finally, the determinants of open government adoption are investigated differentiating among the dimensions of open government.

The remainder of this article is structured as follows. First, the concept of open government is defined, and the types of knowledge transfers are investigated. Second, we present the theoretical foundation, develop our hypotheses, and illustrate our research model. Third, the data and methods used for testing the research model are described. The fourth section presents the results of the empirical analysis. The fifth section includes the discussion of the study's results, highlights the contributions to the research, and indicates limitations and future research.

Open government

Building on the work of Grimmelikhuijsen and Feeney (2017), this article defines open government as "the extent to which external actors can monitor and influence government processes through access to government information and decision-making arenas." Accordingly, government entities lower their organizational boundaries to stimulate knowledge transfer with the surrounding environment. Involving a wide range of external actors in the innovation process enables organizations to overcome "local search bias" and to solve the problems they cannot resolve internally by benefiting from new external knowledge sources (Chesbrough 2003; Jeppesen and Lakhani 2010). Similar to Gassmann and Enkel (2004), this article distinguishes between different types of knowledge transfer (see Table 1). First, public organizations transfer public information to the external environment (*inside-out*). Second, external actors integrate solution and need information into public organizations (*outside-in*). Third, internal and external actors collaborate and jointly search for solutions (*coupled process*).

Table 1. Taxonomy of Open Government.

Direction of transfer	Inside-out process	Outside-in process	Coupled process
Type of knowledge	Governmental information, raw data (open data)	Solution and need information (Thomke 2003)	Solution and need information in relation to prior revealing of governmental information
Principles	Free revealing (Alexy 2009)	Open call for participation (Brabham 2008; Howe 2008)	Broadcast search (Jeppesen and Lakhani 2010)
Structure of knowledge	Vast amount of data (database)	Generic (broad feedback)	Specific (problem formulated)
Locus of knowledge	Public organization	External environment	Public organization and external environment
Channels used for knowledge transfer (examples)	Government websites, open data portals, video livestream, official announcements via social media, municipal information via mobile app	Web forms for inquiries, online platform for interaction, gathering feedback from citizens via social media	Participatory budget, digital agenda planning, urban planning

In terms of an *inside-out knowledge transfer*, public organizations utilize various ways to provide access to “what is going on inside government” (Meijer, Curtin, and Hillebrandt 2012, 11). Fostering government accessibility includes improved transparency of governmental information, which is defined as “the disclosure of information by an organization that enables external actors to monitor and assess its internal workings and performance” (Grimmelikhuijsen and Welch 2012, 563). In line with the idea of “free revealing”¹ (Harhoff, Henkel, and Von Hippel 2003; Alexy 2009), an organization voluntarily grants access to information for free. For example, public organizations freely reveal public information and data through channels such as Internet websites and open data portals.

Outside-in knowledge transfer refers to the integration of external sources of information with regard to solving problems and decision-making. Accordingly, public organizations encourage external actors to respond to open calls for participation (Brabham 2008; Howe 2008). Externals such as citizens, firms, or universities are recognized as sources through which new ideas are integrated into government, act in an advisory capacity to the administration, and share their experiences with government services departments (Linders 2012; Schmidhuber, Piller et al. 2019). As highlighted in the earlier policy literature (Lindblom and Cohen 1979), the inclusion of a wide range of external actors can benefit the quality of problem solving compared to internal efforts to find a solution. Public services are expected to become more effective when external actors identify defects, e.g., of infrastructure, and this information is subsequently used by the administration to solve problems (e.g., fixmystreet.com). Digital platforms and social media channels have emerged as important enablers for governments to stimulate and organize knowledge transfer (Nam 2012; Mergel 2015; Schmidhuber, Hilgers, and Rapp 2019).

The *coupled process of knowledge transfer* combines inside-out and outside-in knowledge transfers. Public organizations collaborate with the external environment, and these entities jointly develop solutions. Collaboration is defined as “a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible” (Gray 1989, 5). Consequently, public organizations either work with other institutions such as public entities, universities, and companies or engage in knowledge exchange with individuals who have responded to open calls for participation to solve specific problems (Schmidhuber and Hilgers 2018). In line with the ideas of the “broadcast search” problem-solving process, organizations provide a detailed description of their problem and invite externals to propose solutions (Jeppesen and Lakhani 2010). Externals with

the capacity to provide a solution respond to the call and are rewarded for their engagement if it is successful (Jeppesen and Lakhani 2010). This interactive mode of value creation is based on new principles of self-selection, self-motivation and self-integration (Benkler 2002; von Hippel 2005; Boudreau, Lacetera, and Lakhani 2011). The self-selection of potential contributors involves no organizational costs for screening, identifying and allocating tasks to the participants. Self-selecting individuals are motivated to participate because they have the necessary skills for problem solving or they enjoy challenging tasks. Collaboration partners exchange ideas and opinions, develop innovative solutions based on their local knowledge and experience (Neshkova and Guo 2012) and participate in joint decision-making with regard to issues that are relevant to the future of the problem domain (cf. Gray 1989, 11).

A model of open government adoption

This study develops a model for explaining disparities in open government adoption at the local level. Open government is thus considered an organizational innovation (cf. Grimmelikhuijsen and Feeney 2017). Innovation is defined as the generation or adoption of new ideas, objects, or practices (Amabile 1988; Rogers 1995; O'Toole 1997), and the organizational adoption of an innovation is a "process that results in the assimilation of a product, process, or practice that is new to the adopting organization" (Damanpour and Schneider 2009, 497). Open government focuses on the leveraging of new technologies to increase the scope of the innovation community and to stimulate interaction with the external environment and thus extends beyond traditional types of citizen participation. In this study, *open government adoption* is defined in terms of the number of activities that are leveraged to exchange knowledge with external actors.

Organizational capacity

Although municipalities are legally bound to publish certain financial data on the Internet², they are generally not obliged to implement open government in all its facets. Indeed, municipal leaders decide if and how such methods are adopted. To benefit from the interactive creation of value, an organization must coordinate open government; thus, it must decide which tasks and activities are suitable for the integration of citizens, develop strategies and methods, and run initiatives (Reichwald and Piller 2009). These coordination activities require the capacity to innovate and implement new practices driven by organizational resources and support (Lonti and Verma 2003; Damanpour and Schneider 2006). Organizations with a higher level of organizational capacity such as personnel capacity more easily implement innovation (Damanpour 1991). Dutton and Duncan (1987), for example, refer to feasibility in terms of the determination of the likelihood that an issue can be resolved. Accordingly, important management assets comprise intangible and tangible resources (Dutton and Duncan 1987). First, an organization must be familiar with open government and its adoption and thus must be experienced. Second, organizational capacity includes the financial, technical and personnel capacity necessary to adapt received knowledge.

Finally, in addition to the organizational resources required to promote open government, the adoption of open government might depend on organizational support to lower governmental boundaries. Individuals with decision-making power and high hierarchical positions are particularly crucial for organizational innovative behavior (Bartlett and Dibben 2002; Considine and Lewis 2007) so that the support of top management benefits the successful implementation of innovation (Jaworski and Kohli 1993). Austrian local governments are characterized by a dual leadership principle of career civil servants as professional managers and elected mayors as political leaders. Municipal leaders can have diverging rationalities (Demir 2009), interests and visions (Vigoda-Gadot 2003); however, they influence one another reciprocally (Zhang and Feiock 2010). Accordingly, support for open government from city management and politicians is assumed to

be positively related to the municipal level of open government. Consequently, we hypothesize that a high level of organizational capacity in terms of tangible and intangible resources as well as organizational support is positively related to open government adoption.

H1: Organizational capacity is positively related to open government adoption.

Open government willingness

A municipality may be amenable in principle in terms of resources and support but not ready or willing to assimilate the related activities (Damanpour 1991). As city managers and majors are the main decision-makers in implementing change and innovation in local governments (Yukl 2006; Hansen 2011) and thus influence strategic decisions (Damanpour and Schneider 2006), organizational capacity may not be high enough to promote open government; however, decision-makers may have to perceive change in the form of open government as being necessary for the municipality.

In recent years, there has been considerable pressure on public administrations to modernize public service delivery and to leverage digitalization for administrative processes (e.g., Dunleavy et al. 2005; Lee and Kwak 2012). Open government provides a strategic opportunity to leverage modern technology for service improvement to which municipalities can respond if they perceive an urgency to act. This means that public leaders must recognize that there is need for change and that open government is an adequate strategic response.

In terms of innovation adoption, the pro-innovation attitudes of managers have been shown to be positively associated with organizational behavior (e.g., Damanpour 1991; Moon and Norris 2005; Damanpour and Schneider 2009). Similarly, this study assumes that decision-makers' attitudes toward innovation and change influence the municipal level of open government adoption. Open government is associated with a new, innovative means of organizing public service delivery as public organizations transitioning to openness must change from stable, bureaucratic institutions to open and collaborative organizations. If decision-makers are aware of the need for change and have a positive orientation toward innovation, it is assumed that they will take substantive measures to promote open government.

In addition to recognizing the need for change, decision-makers must value open government as a means to innovate and change public management in positive terms. The open government literature argues that a more transparent and participative organization can be more efficient and effective (Meijer et al. 2012; Wirtz and Birkmeyer 2015; Schmidthuber et al. 2017). This is because external actors such as citizens are integrated in, for example, service planning, decision-making or monitoring. However, opening up organizational boundaries to external actors also means more uncertainty and risk for the focal organization. For example, a challenge for public organizations is to attract an appropriate number of citizens to participate in an ideation context (Mergel and Desouza 2013); another barrier is the assimilation and exploitation of external knowledge (Cohen and Levinthal 1990). Additionally, interaction with citizens is time- and resource-intensive. As the implementation of open government activities is voluntary for municipalities, we expect that decision-makers with negative attitudes toward open government will not promote its adoption. Consequently, we hypothesize positive impacts of high open government willingness, defined by positive attitudes toward change and high valuation of open government, on open government adoption.

H2: Open government willingness is positively related to open government adoption.

Organizational capacity and open government willingness

Although open government as a type of open innovation requires both coordination activities and motivation to perform, only few studies have considered how organizational capacity and

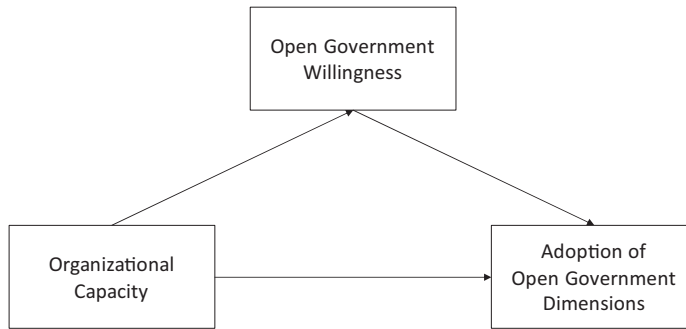


Figure 1. Conceptual model.

open government willingness influence one another. For example, Bekkers, Edelenbos, and Steijn (2011) indicate the requirement of both ability and willingness of key actors to change the current status-quo and to move beyond traditional organizational borders. In the context of family firms, De Massis et al. (2014, 346) argue that ability and willingness “act separately as necessary conditions but neither by itself constitutes a sufficient condition.” Accordingly, ability and willingness are two key drivers of innovation (Chrisman et al. 2015) that can cause disparities in the context of municipal open government adoption efforts.

We thus would argue that decision-makers’ willingness to adopt open government when resources and support are available act in a mediating way to influence such adoption. Providing resources and support to adopt open government is one thing, and decision-makers’ willingness to use these structures is another, and both are expected to have a positive association with open government adoption. Consequently, we hypothesize that open government willingness offers a means for organizational capacity to positively associate with open government:

H3: Open government willingness mediates the effect of organizational capacity on open government adoption.

Influence of dual leadership

The previous research has agreed that decision-makers as well as key actors in organizations are crucial for innovation (Bartlett and Dibben 2002; Considine and Lewis 2007). Many local governments in democratic systems are characterized by a dual leadership of politicians and public managers (Avellaneda 2009). Although political and managerial tasks might often be intermingled (Mouritzen and Svara 2002), each of them is confronted with formally different roles and tasks. An elected mayor serves as a political leader whereas a public manager is a managerial decision-maker and career civil servant. A mayor is the head of the administration and is responsible for the representation of the municipality. In contrast, the manager as the chief official is chief of organizational department heads. He or she coordinates departments, prepares budgets and has an advisory function in terms of legal, financial, and organizational issues.

In spite of the disparities in activities, the adoption of public innovations such as open government requires joint action and mutual support in the preparation and implementation of activities. The previous research has found that public managers and politicians differ in terms of the environmental antecedents of innovation adoption (Korac et al. 2017). Given the different rationalities and expectations of the two leadership groups, we assume a variation in the perception of organizational capacity and open government willingness among decision-makers. To shed light on the possible diverging interests and viewpoints of the dual leadership in municipalities (i.e., public manager and mayor), this article explores both the managerial and political determinants

of open government adoption and is thus able to identify differences in the motivating factors with regard to the leadership group.

Based on the above discussion, we posit the following model (Figure 1). The model is tested with a sample of mayors and a sample of public managers. In addition, as open government is a multifaceted concept that combines activities with different levels of resource intensity, and willingness may vary in terms of type and amount among activities, we test the model for different dimensions of open government.

Methodology

Research context and data collection

The primary source of data was a survey conducted in Austria, which is a federal state consisting of nine regions and 2,100 local governments (status: 2016). Municipalities are characterized by local autonomy, which means that they are governed by a local council with a mayor as its head. The mayor is elected by the local council or local inhabitants for five- or six-year terms (dependent on the region). Whereas the mayor represents the political decision-maker of the local government, the city manager or chief executive officer is subject to directives from the mayor and is responsible for operational matters.

In November 2016, the online questionnaire was sent to both the city managers and mayors of all Austrian municipalities using the LimeSurvey tool. To obtain a high awareness of our inquiry and to motivate a high response rate, the link to the online questionnaire was sent out by the KDZ, which is a well-known and highly prestigious research institution for local government modernization in Austria. The KDZ, the Centre for Public Administration Research, is a non-profit organization and was founded in 1969, on the initiative of the Austrian Association of Cities, by the City of Vienna, and the Bank Austria. The KDZ focuses on the modernization of public management and e-government in Austria, paying particular attention to the reform and strengthening of local and regional authorities.

From about 2,100 local public managers in Austria, 424 individuals (contact rate of 20.19%) showed interest in the survey and started answering the questions, with 235 completing the questionnaire (response rate of 11.19%). Of all contacted mayors, 408 individuals (contact rate of 19.43%) cooperated by clicking the link to the survey and responding to survey questions. A total of 180 mayors completed the questionnaire, which corresponds to a response rate of 8.57%. On average, respondents took 22 minutes to complete the questionnaire. Approximately 8% of the respondents completed the questionnaire immediately after receiving the invitation, 48% after receiving a reminder, and the remaining respondents needed more than one reminder. Of course, the respondents did not receive any form of compensation in exchange for their collaboration.

Since a web-based survey design might hold possible biases (Roztocki 2001), we tested for response bias as the most important possible bias. According to Armstrong and Overton (1977), some individuals might have more interest in participating in a survey than others. In our study, this means, for example, that municipal decision-makers with a high level of open government adoption might be more likely to participate in the survey than those in municipalities with a lower open government level. In testing for a potential bias, we compared the earliest 10% of the respondents with the last 10% of the sample and tested for a higher open government performance level of those in the early group (see Jeppesen and Frederiksen 2006). T-test analysis indicates no bias with respect to the municipal size and level of debt for both the manager and the politician samples. Furthermore, t-test analyses on different dimensions of open government did not show a bias with the exception of ubiquitous government. Decision-makers at a later point in time show a significantly lower level of implementation than those at an earlier point in time.

Table 2. Factor analysis: open government dimensions.

Open government dimensions	Factor loadings and reliability analysis			
	Factor 1	Factor 2	Factor 3	Factor 4
Dimension 1: Real-time Interaction				
Provide information via social media	.822			
Communicate with citizens via social media	.799			
Define a person in charge of social media activities	.792			
	(.85)			
Dimension 2: Citizen Consultation and Ideation				
Consult citizens concerning ideas on urban and building planning		.746		
Obtain proposals for solutions from citizens online		.647		
Gather ideas and needs from citizens		.612		
Public consultation concerning collaborative agenda planning		.593		
Consultation of citizens concerning budget plans		.506		
		(.76)		
Dimension 3: Ubiquitous Government				
Mobile access to municipal information			.657	
Hosting an open data platform			.646	
Online feedback form for citizen complaints			.624	
			(.68)	
Dimension 4: Transparency				
Posting meetings or events via video livestream				.703
Revealing of municipal budget data				.617
				(.61)

Note: Kaiser-Meyer-Olkin: .742, Bartlett's Text of Sphericity: 865.073, df 78, $p = 0.000$; 54.04% variance explained. Composite reliability in parentheses.

However, as the other dimensions do not show this pattern, it is assumed that there is no bias in the data. In addition to response bias analysis for early and late responders, we conducted non-response bias tests. In testing the effect of the municipality's size, we did not find a significant effect on the likelihood to participate in the survey among the manager and politician samples. Furthermore, we tested whether there are differences in terms of the location of the municipality (measured by the federal state). In terms of the manager sample, managers from two federal states were more likely to participate in the survey. However, we did not find a significant difference in the politician sample.

In addition to the survey data, administrative data were used to control for the municipalities' heterogeneity and their contexts. The data on the municipalities' characteristics were obtained from the National Statistics Office.

Variables

Dependent variables

To measure open government adoption, the research team first had to agree on which practices are associated with an open government. To define what open government means in practice, the team organized a workshop with academics and practitioners. Together, a list of 14 activities was developed. This list of channels was presented to the survey participants, and they were asked whether their municipalities have adopted (value of "2"), intend to adopt (value of "1"), or do not plan to adopt (value of "0") each of these 14 practices. After the data collection, the responses were verified by searching the Facebook or Twitter accounts of the municipalities and reviewing the documents disclosed on open data portals. To identify clusters in the 14 variables, we apply a principal component analysis with varimax rotation, which is an orthogonal rotation method. One item has been eliminated due to low factor loadings on the intended constructs (i.e., online platform for interaction with and among citizens). Four factors with eigenvalues above 1.0 (Kaiser's criterion) were extracted. These factors explain over 54% of the variance. Each indicator loads higher on its respective construct than on other latent variables (Chin, 1998). Internal

consistency reliability analysis is performed using composite reliability. Table 2 reports the findings of the factor analysis. Accordingly, open government can be divided into four dimensions: (1) real-time interaction; (2) citizen consultation and ideation; (3) ubiquitous government, and (4) transparency. The means of each factors' items are used to calculate four scores. Each score thus summarizes the number of activities each municipality has adopted or intends to adopt in this area. In addition, we created a score of overall open government by calculating the means of the four factor scores ($\alpha = .71$). Accordingly, the more activities a municipality leveraged for knowledge exchange, the higher the municipal level of open government adoption.

Organizational capacity

Organizational capacity is measured by a composite measure taking the means of intangible and tangible resources and organizational support ($\alpha = 0.73$). *Intangible resources* as a composite measure are derived by computing the means of the survey participants' responses to four items. The items, which were rated on a 5-point agreement scale, reflected the decision-makers' perceptions of the availability of the skills and expertise necessary to adopt open government in their local governments and were drawn from in-depth discussions with practitioners about open government implementation. To measure *tangible resources*, the respondents were asked to indicate the extent to which their municipalities possess the technical equipment, human resources, and financial resources to implement and apply open government practices and to describe the arrangements for guaranteeing data security. The scale for tangible resources was drawn from de Lancer Julnes and Holzer (2001) and adapted to the context of open government. *Organizational support* was measured by two items, each reflecting the decision-makers' perception of municipal key actors' attitudes toward and support for the implementation of open government.

Open government willingness

Open government willingness is a composite measure taking the means of need for change and value of openness ($\alpha = 0.60$). *The need for change* was measured by a 3-item scale adapted from Hage and Dewar (1973). *The value of openness* was measured by drawing on the scale on organizational valence from Holt et al. (2007). We adapted the original scale to the context of government openness, meaning that we altered 'change' to phrases in relation to open government. The answers to the 5-item scale were averaged.

Control variables

To control for the heterogeneity of the municipalities and their contexts, various covariates were included in the models. By drawing on the innovation adoption literature (Lonti and Verma 2003; Walker 2007; Damanpour and Schneider 2009), government size was controlled by the number of inhabitants (*municipal size*), and financial situation was controlled by the municipal debt level (*debt level*). Decision-makers' *age* is measured by three categories: age 40 and younger, 41-60, 61 and older. Dummy variables for the decision-makers' *gender*, and *education* were included, with women and no university degree taking the value of "0."

Definitions of the variables, the operationalization, and the sources of data are summarized in Table 3. The correlation matrix is displayed in Table 4.

Data analysis

After presenting descriptive statistics and correlations for the variables included in the regression analysis, we investigate the mediating role of open government willingness in the relationship between organizational capacity and open government adoption. To measure the effect of

Table 3. Description of variables.

Variables	Definition	Operationalization ⁴
1. Organizational capacity		
Intangible resources	Perception of the knowledge of the tasks that must be performed, the resources that will be needed, the amount of effort that will be required, and the amount of time that it will take to adopt open government in the local government (adapted from Weiner et al. 2009)	Scale based on the following items: (1) We know how to improve citizen involvement in administrative processes. (2) We know how to disclose our data. (3) We know how to cope with the contributions of our citizens (i.e., ideas, suggestions for improvement, complaints). (4) We know how to improve our organizational activities with valuable contributions from our citizens. Response categories: 5-point agreement scale
Tangible resources	Perception of the availability of technical equipment, people, and financial resources needed to adopt open government in the local government (adapted from Weiner et al. 2009)	Scale based on the following items: (1) We have the necessary technical equipment to integrate our citizens into our decision-making and organizational processes. (2) We have the necessary technical equipment to publish our data (such as financial data) and processes online. (3) We have the necessary human resources to involve our citizens in our administrative activities. (4) We have the necessary financial resources to enable our citizens to participate in our organizational processes. (5) We have made the necessary arrangements to ensure safe communication between citizens and administration (protection of privacy). Response categories: 5-point agreement scale
Organizational support	Decision-makers' belief that municipal key actors are committed to the implementation of open government (adapted from Holt et al. 2007)	Key actors in my municipality ... (1) support implementing transparency and participation projects intensively. (2) reliably and continuously work on the implementation of transparency and participation projects. Response categories: 5-point agreement scale
2. Open government willingness		
Need for change	Attitudes and values favorable to change in the municipality. Higher scores indicate a liberal attitude toward change, lower scores reflect a more conservative attitude (Hage and Dewar 1973)	Scale based on the following items: (1) I associate change with something positive. (2) It is my great need to initiate changes and support positive movements. (3) The current situation in the community calls for change; we should do something now. Response categories: 5-point agreement scale
Value of openness	Extent to which the decision-maker feels that local government will or	Scale based on the following items: (1) I think that our organization is

(continued)

Table 3. Continued.

Variables	Definition	Operationalization ⁴
	will not benefit from the implementation of the prospective change resulting from open government adoption (adapted from Holt et al. 2007)	benefiting from the stronger involvement of our citizens. (2) We can better address the needs of our citizens by integrating them into our organizational and decision-making processes. (3) Our organization will lose quality when we open our processes to our citizens. (r.c.) (4) The stronger focus of the administration on our citizens is an improvement from our previous practices. (5) Ideas from our citizens on how to improve organizational processes and public service delivery are more valuable than internal solutions. Response categories: 5-point agreement scale
3. Control variables		
/Municipal Context		
Municipal size	Number of local inhabitants	Categorical: small = 1,500 and less (reference category); intermediate = between 1,501 and 3,000, large = more than 3,000 inhabitants
Debt level	Debt level per capita	Categorical: low = €2,000 and below; intermediate = between €2,001 and €3,000 (reference category); high = €3,001 and more
/Individual		
Age	Age	Categorical: young = 40 years of age and younger; intermediate = between 41 and 60 years old; old = older than 61 years of age
Gender	Gender	Dummy (1 = male, 0 = women)
Education	Education	Dummy (1 = university degree, 0 = no university degree)

Notes: r.c. means "reverse coded"

Table 4. Correlation.

#	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Real-time interaction	1												
2	Citizen consultation and ideation	.33*	1											
3	Ubiquitous government	.28*	.22*	1										
4	Transparency	.13*	.15*	.17*	1									
5	Overall open government	.74*	.61*	.68*	.51*	1								
6	Debt level	-.11*	-.05	.02	-.02	-.06	1							
7	Municipal size	.23*	.13*	.33*	.13*	.33*	-.15*	1						
8	Age	-.06	.04	-.04	.09	-.01	-.01	.03	1					
9	Gender	.03	.10*	-.01	-.01	.02	-.12*	.07	.03	1				
10	Education	.15*	.04	.05	.03	.11*	-.05	.24*	-.05	-.02	1			
11	Organizational capacity	.24*	.25*	.15*	.15*	.32*	-.01	.04	.03	-.02	-.01	1		
12	Open government willingness	.25*	.37*	.25*	.18*	.40*	-.04	.14*	.01	.03	.03	.57*	1	
13	Politician	.10*	.18*	-.16*	.02	.05	-.05	-.04	.23*	.13*	-.01	.14*	.11*	1

Note: * $p < 0.05$

organizational capacity and open government willingness on the municipal level of open government, we conduct various regression analyses (five dependent variables). To test the effect for the mediation hypothesis, standard mediated regression techniques are used following the procedure suggested by Baron and Kenny (1986). Accordingly, testing for mediation requires three regression equations. The first equation establishes the effect between the independent variable (i.e., organizational capacity) and the outcome variable (i.e., open government adoption). In the second equation, we test the significant effect of the independent variable on the mediator variable (i.e., open government willingness). In the third equation, the direct effect of the independent variable on the outcome variable is established, controlling for the mediator variable. Thus, the independent and the mediator variables are predictors. If the inclusion of the mediator variable nullifies the direct relationship, there is complete mediation. When the effect of the independent variable is reduced when controlling for the mediator variable, then it is partial mediation. Finally, we use the Sobel test to investigate the formal significance of the mediation effects (Pardo and Román 2013).

Findings

Open government adoption

This section focuses on the descriptive findings of open government adoption. By measuring open government by 13 activities, we allow a more detailed, nuanced understanding about which dimensions of open government have already been adopted and which activities are not implemented in local governments.

The findings of factor analysis indicate the empirical evaluation of four dimensions of open government: (1) real-time interaction, (2) citizen consultation and ideation, (3) ubiquitous government, and (4) transparency. The first open government dimension addresses information provision and interaction via social media channels. In addition to branding activities (Weske et al. 2019), the government uses social media channels such as Facebook, Twitter or Instagram to provide current and accurate information to citizens (Ingrams et al. 2018). With regard to Table 1 and the various types of knowledge transfer, this dimension is associated with an outside-in process. Actors exchange broad information in real-time; thus, the information is spread via social media channels. The interaction is not used for dealing with specific problems but for more general feedback, news releases, or event information. The second dimension involves citizen consultation and ideation. The government approaches the public to discuss the planning and designing of activities and to collaborate in terms of service execution and service monitoring (Linders 2012). This dimension is in line with the coupled process of knowledge transfer. The government broadcasts more specific problems and thus collaborates with the external environment to solve problems, plan new services or products, and discuss future planning.

The third dimension, ubiquitous government, relates to the accessibility of government by means of various channels. The government provides information online, implements an app for mobile access, and citizens are able to respond via an online form. This more technocratic dimension relates to the tools used to stimulate knowledge transfer. Leveraging modern information and communication technology gives citizens the opportunity to choose among a variety of channels when they wish to communicate with the government. The fourth dimension concentrates on the transparency of government and thus on the inside-out knowledge process. Instead of reading minutes, video livestream enables citizens to fully observe meetings without time delay. In addition, the government provides insight into municipal budgetary data and thereby allows citizens to monitor government activities and decision-making.

Table 5. Descriptive statistics: open government dimensions.

Variable	Observation	Mean	Std. Dev.	Min	Max	Differences
<i>All</i>						
Real-time interaction	405	.65	.68	0	2	.14, $p = .0424$
Citizen consultation and ideation	401	.54	.42	0	2	.15, $p = .0002$
Ubiquitous government	406	1.14	.60	0	2	-.19, $p = .0015$
Transparency	408	.50	.48	0	2	.02, $p = .7101$
Overall open government	393	.70	.35	0	1.63	.05, $p = .1272$
<i>Managers</i>						
Real-time interaction	230	.59	.68	0	2	
Citizen consultation and ideation	228	.48	.42	0	2	
Ubiquitous government	230	1.22	.59	0	2	
Transparency	232	.49	.46	0	2	
Overall open government	224	.67	.34	0	1.62	
<i>Politicians</i>						
Real-time interaction	175	.72	.67	0	2	
Citizen consultation and ideation	173	.63	.40	0	1.5	
Ubiquitous government	176	1.03	.61	0	2	
Transparency	176	.51	.51	0	2	
Overall open government	169	.73	.37	0	1.54	

Table 6. Managerial and political perceptions.

	Managers	Politicians	Difference
Organizational capacity	3.19	3.36	.17, $p = .0213$
Open government willingness	3.48	3.70	.22, $p = .0034$

Managerial versus political perception

Table 5 summarizes the descriptive statistics of the five dependent variables on open government adoption. In the managers' sample, activities in terms of ubiquitous government have the highest adoption level in local government. Transparency activities are ranked third, and citizen consultation and ideation has the lowest average adoption level. In the politicians' sample, activities in ubiquitous government are also mostly adopted, followed by real-time interaction and citizen consultation and ideation. Transparency activities fall behind. T-test analyses indicate that politicians report significantly higher adoption levels in terms of citizen consultation and ideation and real-time interaction than public managers, whereas the adoption level in terms of ubiquitous government is significantly higher in the managers' sample. There are no significant differences in the overall open government measure.

Table 6 reports the descriptive findings of the independent variables split between managers and politicians. The descriptive statistics indicate that the leadership groups rated organizational capacity and open government willingness differently. In more detail, this means that politicians report significantly higher levels of organizational capacity and open government willingness than public managers.

Regression findings

Tables 7–9 report regression analyses in accordance with Baron and Kenny's (1986) four steps to test for mediation. Our hypotheses are tested in accordance with these procedures. Table 7 concerns Step A of the model, in which the direct relationship between organizational capacity and open government adoption is examined, controlling for municipal debt and size as well as individuals' age, gender, and education. Ten models are displayed as a regression with all five dependent variables (four open government dimensions and the overall open government measure) is run with the politicians' and managers' sample. In 9 out of 10 models, the positive relationship between organizational capacity and open government adoption was statistically

Table 7. Regression findings I.

Variables	Politicians' sample					Managers' sample				
	(1) Real-time interaction	(2) Citizen consultation and ideation	(3) Ubiquitous government	(4) Transparency	(5) Overall open government	(6) Real-time interaction	(7) Citizen consultation and ideation	(8) Ubiquitous government	(9) Transparency	(10) Overall open government
Organizational capacity	0.185** (0.0720)	0.208*** (0.0429)	0.242*** (0.0589)	0.0817 (0.0550)	0.175*** (0.0378)	0.223*** (0.0730)	0.272*** (0.0439)	0.237*** (0.0618)	0.144*** (0.0502)	0.220*** (0.0331)
Debt - intermediate	-0.0763 (0.125)	0.0622 (0.0743)	0.254** (0.101)	-0.0258 (0.0947)	0.0419 (0.0651)	0.0537 (0.105)	-0.0470 (0.0633)	-0.0676 (0.0889)	0.0639 (0.0723)	0.00341 (0.0477)
Debt - high	-0.158 (0.153)	-0.0136 (0.0903)	-0.0335 (0.126)	-0.0634 (0.118)	-0.0756 (0.0793)	-0.129 (0.129)	-0.0312 (0.0773)	0.194* (0.110)	0.0149 (0.0888)	0.0179 (0.0588)
Municipal size - intermediate	0.125 (0.123)	-0.000197 (0.0727)	0.211** (0.101)	-0.126 (0.0946)	0.0454 (0.0647)	-0.0221 (0.105)	-0.0158 (0.0624)	0.121 (0.0884)	-0.0275 (0.0714)	0.0103 (0.0475)
Municipal size - large	0.295** (0.119)	0.103 (0.0706)	0.532*** (0.0975)	0.254*** (0.0914)	0.291*** (0.0620)	0.308** (0.127)	0.0734 (0.0766)	0.407*** (0.107)	-0.0109 (0.0873)	0.182*** (0.0578)
Age - intermediate	-0.438** (0.195)	-0.0212 (0.115)	-0.462*** (0.161)	0.234 (0.150)	-0.171* (0.100)	-0.0200 (0.123)	0.0268 (0.0738)	0.0383 (0.104)	-0.0524 (0.0848)	-0.00593 (0.0555)
Age - high	-0.692*** (0.220)	-0.0112 (0.131)	-0.407** (0.181)	0.341** (0.169)	-0.195* (0.114)	0.0209 (0.245)	-0.116 (0.147)	0.0584 (0.207)	0.121 (0.169)	0.0202 (0.110)
Gender (ref. female)	-0.0841 (0.204)	0.125 (0.120)	0.180 (0.160)	0.0413 (0.156)	0.0180 (0.110)	0.0502 (0.123)	0.0885 (0.0741)	-0.129 (0.105)	-0.0637 (0.0843)	-0.00842 (0.0563)
Education	0.0345 (0.134)	-0.0157 (0.0790)	-0.121 (0.110)	-0.105 (0.103)	-0.0548 (0.0691)	0.160 (0.130)	-0.0368 (0.0787)	-0.0725 (0.110)	0.116 (0.0896)	0.0571 (0.0591)
Constant	0.543 (0.376)	-0.208 (0.222)	0.226 (0.299)	-0.0600 (0.283)	0.194 (0.199)	-0.259 (0.289)	-0.490*** (0.174)	0.364 (0.244)	0.0882 (0.198)	-0.0828 (0.131)
Model fit	3.19***	3.37***	7.55***	2.77***	6.60***	3.94***	5.51***	4.64***	1.63	9.03***
Observations	170	168	172	171	165	224	223	224	226	219
R-squared	0.152	0.161	0.296	0.134	0.277	0.142	0.189	0.163	0.064	0.280

Standard errors in parentheses
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 8: Regression Findings II

VARIABLES	Open government willingness	
	Politicians' sample (1)	Managers' sample (2)
Organizational capacity	0.464*** (0.0649)	0.260*** (0.0636)
Debt - intermediate	-0.0145 (0.112)	0.134 (0.0917)
Debt - high	-0.143 (0.137)	0.123 (0.113)
Municipal size - intermediate	-0.0974 (0.111)	-0.0778 (0.0906)
Municipal size - large	-0.104 (0.108)	0.0361 (0.111)
Age - intermediate	-0.223 (0.178)	0.00750 (0.108)
Age - high	-0.211 (0.201)	0.280 (0.214)
Gender (ref. female)	-0.311* (0.177)	-0.0482 (0.107)
Education	-0.0929 (0.121)	0.145 (0.114)
Constant	2.750*** (0.330)	2.674*** (0.252)
Model fit	6.43***	3.25***
Observations	174	226
R-squared	0.261	0.119

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

significant, providing support for Hypothesis 1. In terms of the politicians' sample, organizational capacity is not significantly related to transparency activities. In addition, model 9 on transparency in the managers' sample is not significant.

Step B of the Baron and Kenny approach was used to show that the independent variable was related to the mediator variable. Table 8 contains two linear regression analyses with open government willingness as a dependent variable. Both analyses indicate a statistically significant relationship between organizational capacity and open government willingness.

Table 9 shows steps C and D of the Baron and Kenny approach, in which the mediator variable is related to the dependent variable while controlling for the independent variable. Open government willingness is positively related to real-time interaction, citizen consultation and ideation, transparency and overall open government in the politicians' sample. Besides, open government willingness is significantly associated with ubiquitous government and overall open government in the managers' sample. The results show only partial support for Hypothesis 2. In more detail, first, the findings of the politicians' sample show a statistically significant relationship between open government willingness and real-time interaction, providing support for Hypothesis 2. The unstandardized regression coefficient for organizational capacity decreased in magnitude from .185 to .0797 and is no longer statistically significant (Sobel test $z = 2.46$, SE: .04, $p < .05$). This indicates that the relationship between organizational capacity and real-time interaction is mediated by open government willingness, as specified in Hypothesis 3. Second, some models show that open government willingness partially mediates the relationship between organizational capacity and open government. In the politicians' sample, this is the case in the models citizen consultation and ideation and the overall open government measure, and in the managers' sample, ubiquitous government as well as the

Table 9. Regression findings III.

Variables	Politicians' sample					Managers' sample				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Real-time interaction		Citizen consultation and ideation	Ubiquitous government	Transparency	Overall open government	Real-time interaction	Citizen consultation and ideation	Ubiquitous government	Transparency	Overall open government
Open government willingness	0.222*** (0.0845)	0.165*** (0.0516)	0.0260 (0.0707)	0.155** (0.0650)	0.154*** (0.0449)	0.116 (0.0782)	0.0250 (0.0473)	0.122* (0.0657)	-0.00832 (0.0538)	0.0696* (0.0355)
Organizational capacity	0.0797 (0.0813)	0.128*** (0.0487)	0.230*** (0.0675)	0.0101 (0.0620)	0.0999** (0.0426)	0.193** (0.0756)	0.266*** (0.0456)	0.206*** (0.0637)	0.146*** (0.0522)	0.203*** (0.0340)
Debt - intermediate	-0.0752 (0.122)	0.0600 (0.0722)	0.254** (0.102)	-0.0230 (0.0934)	0.402 (0.0629)	0.0371 (0.106)	-0.0499 (0.0636)	-0.0845 (0.0889)	0.0650 (0.0728)	-0.00562 (0.0476)
Debt - high	-0.127 (0.151)	0.0120 (0.0882)	-0.0296 (0.127)	-0.0383 (0.117)	-0.0509 (0.0770)	-0.144 (0.129)	-0.0342 (0.0776)	0.180 (0.110)	0.0159 (0.0893)	0.00963 (0.0586)
Municipal size - intermediate	0.143 (0.121)	0.00753 (0.0707)	0.214*** (0.101)	-0.110 (0.0935)	0.0552 (0.0627)	-0.0127 (0.104)	-0.0141 (0.0625)	0.132 (0.0882)	-0.0281 (0.0717)	0.0163 (0.0473)
Municipal size - large	0.315*** (0.117)	0.122* (0.0689)	0.535*** (0.0980)	0.271*** (0.0904)	0.309*** (0.0602)	0.303** (0.127)	0.0717 (0.0768)	0.402*** (0.107)	-0.0106 (0.0875)	0.177*** (0.0574)
Age - intermediate	-0.386** (0.192)	0.0160 (0.112)	-0.456*** (0.162)	0.269* (0.148)	-0.136 (0.0975)	-0.0198 (0.123)	0.0264 (0.0739)	0.0384 (0.104)	-0.0524 (0.0849)	-0.00567 (0.0552)
Age - high	-0.644*** (0.217)	0.0203 (0.127)	-0.402** (0.182)	0.373** (0.167)	-0.166 (0.111)	-0.0117 (0.246)	-0.123 (0.148)	0.0249 (0.207)	0.123 (0.170)	0.000946 (0.110)
Gender (ref. female)	-0.0306 (0.201)	0.162 (0.117)	0.188 (0.162)	0.0975 (0.156)	0.0593 (0.107)	0.0567 (0.122)	0.0892 (0.0742)	-0.124 (0.104)	-0.0641 (0.0845)	-0.00671 (0.0559)
Education	0.0550 (0.132)	0.00168 (0.0769)	-0.118 (0.111)	-0.0890 (0.102)	-0.0382 (0.0670)	0.143 (0.131)	-0.0403 (0.0791)	-0.0906 (0.110)	0.117 (0.0902)	0.0468 (0.0590)
Constant	-0.0437 (0.432)	-0.634** (0.254)	0.154 (0.358)	-0.497 (0.334)	-0.212 (0.226)	-0.572 (0.357)	-0.557** (0.215)	0.0376 (0.300)	0.110 (0.245)	-0.270* (0.161)
Model fit	3.67*** (170)	4.24*** (168)	6.77*** (172)	3.13*** (171)	7.52*** (165)	3.79*** (224)	4.97*** (223)	4.56*** (224)	1.46 (226)	8.62*** (219)
Observations	170	168	172	171	165	224	223	224	226	219
R-squared	0.188	0.213	0.296	0.164	0.328	0.151	0.190	0.176	0.064	0.293

Standard errors in parentheses.
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

overall open government measure. In all four models, controlling for open government willingness, the relationship between organizational capacity and the dependent variable shows a reduced but significant effect pointing to partial mediation. Third, in the remaining four models, the positive relationship between open government willingness and open government is not significant so that Step C of the Baron and Kenny approach and thus the mediation cannot be confirmed.

Finally, control variables are related to the four open government dimensions to different degrees. Municipal debt levels are only relevant in ubiquitous government in the politicians' sample, meaning that municipalities with intermediate debt levels have a higher adoption level in ubiquitous government compared to low indebted municipalities. In addition, governments situated in larger cities tend to adopt real-time interaction, ubiquitous government, and transparency in the politicians' sample only compared to those in smaller cities. The age of the decision-maker seems to be relevant only in the politicians' sample. Higher aged politicians adopt real-time interaction and ubiquitous government to a lower extent than younger colleagues, whereas it is the other way around in terms of transparency. The results indicate no difference in open government adoption between male and female decision-makers, and the education level does not seem to play a role in terms of open government adoption.

Discussion and conclusion

In recent years, the concept of accelerating knowledge flows between government and its external environment by lowering organizational boundaries and leveraging modern technology has been promoted by many local governments. On a voluntary basis, public organizations decide to increase government accessibility by revealing public data, to stimulate citizen participation, and to foster collaborations with external actors by increasing the breadth of searches. This study contributes to the understanding of the disparities in open government adoption among municipalities by highlighting organizational determinants.

First, we examined the relationship between organizational capacity and open government adoption and provided empirical evidence that tangible and intangible organizational resources and support are positively related to different dimensions of open government such as real-time interaction, citizen consultation and ideation, and ubiquitous government. Our findings resonate with the research that highlights the importance of organizational capacity in organizational change (Gil-Garcia and Sayogo 2016; Yang and Wu 2016; Grimmelikhuijsen and Feeney 2017). With the exception of transparency, organizational capacity seems to be a building block for inducing open government adoption. Local governments adopting a wide range of open government activities report a high level of intangible resources. Furthermore, technical, human and financial resources and security arrangements are shown to be a prerequisite for open government adoption. However, findings indicate that organizational capacity is not a significant factor for inducing the disclosure of information, according to local politicians. Apparently, politicians perceive transparency as a matter of need for change. Besides, managers seem to perceive real-time interaction and citizen consultation and ideation as a managerial issue, meaning that organizational capacity but not open government willingness has a significant effect on its adoption. In contrast, politicians perceive ubiquitous government as a matter of organizational capacity and not as a matter of willingness.

Second, our results show that open government willingness has a positive effect on real-time interaction, citizen consultation and ideation, and transparency in the politicians' sample and on ubiquitous government in the managers' sample. There seem to be value differences among the leadership groups. Whereas the politicians perceive the mutual knowledge exchange with citizens as of high priority, managers highlight the value of e-government activities such as online forms, improved information provision, and open data.

Third, the findings indicate that open government willingness acts as a (partial) mediator of the effect of organizational capacity on real-time interaction and citizen consultation and ideation

in the politicians' sample, and on ubiquitous government in the managers' sample. Although we provided evidence that the relationship of organizational capacity and some dimensions of open government is mediated by open government willingness, the effect size of organizational capacity was not reduced to zero, except for the case of real-time interaction. The analysis thus indicates that open government willingness only partly mediates the relationship between organizational capacity and overall open government in both samples. Furthermore, we found a partial mediation in terms of citizen consultation and ideation in the politicians' sample and in terms of ubiquitous government in the managers' sample.

Fourth, the findings show that the determinants of open government adoption do not differ only across leadership groups. In addition, different dimensions of open government can be explained by different determinants, in line with the previous research on public sector innovation (Hansen 2011). Open government adoption thus seems to be multifaceted, and there is no one-size-fits-all strategy to promote open government, but rather, different strategies must be exploited to implement the full picture of open government.

Implications for theory and practice

This article provides two distinct contributions to the literature. The first contribution relates to the conditions under which public organizations decide to change and adopt innovation practices. This study develops a model for explaining open government adoption by focusing on decision-makers' perceptions of organizational resource endowment and open government willingness. The study adds to the research on innovation adoption in the public realm, although government innovations and their adoption have already been studied (e.g., Kim and Lee 2009; Moynihan and Pandey 2010; Hansen 2011; Andersen and Jakobsen 2018). Similar to Grimmelikhuijsen and Feeney (2017), this study aims to explain the adoption of local open government, a government innovation that differs from previous innovations in terms of various aspects: First, adopting open government not only involves change by the organization itself but also influences the external environment of the organization. Leveraging modern technologies for interaction changes how citizens and government organizations communicate with each other. Second, while in the past, innovation was introduced by internals (e.g., city managers), open governments aim to collaborate with sources in the external environment, such as citizens, business, and universities, to collect their experiences, knowledge, and ideas and subsequently increase organizational capacity. Thus, this article concentrates on innovations introduced with and for the benefit of the external environment. Third, open government is technology-based, which means that the aims of open government can be better achieved when utilizing modern technology. Such technological innovations, particularly online platforms and social media, are associated with a high degree of uncertainty (Mergel 2013). Whereas communication between citizens and government was formerly two-way, many-to-many communication allows individuals to share their opinions, including negative opinions, publicly. The unpredictability of citizen behavior could result in undesired consequences for government organizations (Mergel 2013).

The second contribution relates to the research on open government. First, this study translates the open government approach to the administrative practices associated with a higher level of openness in terms of knowledge transfer, disclosure of information, and technology intensity (e.g., Lee and Kwak 2012). This list of thirteen practices bundled into four dimensions offers an initial guideline on what it means to implement open government in a public organization. Second, this article contributes to the research by empirically assessing the status of open government in Austrian municipalities and explaining its antecedents. Various authors have provided empirical evidence on open government by conducting case studies (e.g., Lee and Kwak 2012; Mergel 2015; Schmidhuber and Hilgers 2018). Rather than focusing on municipalities that have successfully implemented open government, this study provides a more holistic picture of open

government adoption. It is clear that municipalities' decisions to adopt open government practices vary greatly according to the type of practice. Whereas practices such as exchanges with other municipalities and the release of public data on open data portals have been adopted by the majority of the sample governments, most governments have not adopted and do not intend to implement citizen consultations concerning budget plans and agenda planning or the live streaming of meetings. Similar to the findings of the related qualitative research on open government (e.g., De Blasio and Selva 2016), it is evident that municipalities are stuck in achieving transparency and that only a few have moved toward participation (see the Open Government Maturity Model by Lee and Kwak 2012). Third, varying levels of open government adoption across municipalities are explained by organizational resource availability, which means that open government adoption is highly dependent on tangible and intangible resources and organizational support. Additionally, decision-makers' perceptions of urgency are relevant, and the leadership groups differ in their perceptions of open government willingness. This finding clearly has consequences for adoption as joint efforts are needed for practicing open government.

Our findings are also practically relevant for political decision-makers and managers in public organizations. Awareness of the varying open government willingness of different open government dimensions might help political decision-makers and managers in designing the types of open government projects that are relevant for their respective contexts. Although the mayor is the head of the administration, it might be relevant to settle innovation priorities as the leadership groups are dependent on each other. However, the decision-makers agree that open government adoption is resource-intensive. Resource sharing might help smaller municipalities provide open government activities (compare also Höchtl, Parycek, and Sachs 2011). Furthermore, training, workshops and consulting might support public managers in advancing their knowledge of how to implement open government projects.

Limitations and future research

Several limitations of our study provide promising opportunities for further research and are worth discussing. First, similar to many studies on innovation adoption in the public sector (e.g., Hansen 2011), dependent and numerous independent variables are measured based on the responses of municipal decision-makers regarding the situation in their own organizations. Although the risk of common-method bias was minimized by following the procedure of Salter et al. (2015) and by randomly testing the municipal implementation of channels, objective measures of open government practices would provide more reliable results (Podsakoff et al. 2003). Combining data from different sources (e.g., managers, employees, citizens) might also lead to new insights into varying perceptions of open government among service providers on the one hand and primary service users and potential participants on the other.

Second, the number of activities implemented or intended for implementation in each sample municipality was used as a measure of open government adoption. Whereas this study provides a measure illustrating the breadth of the knowledge search of local governments (cf. Laursen and Salter 2006), further studies could examine the extent and quality of open government adoption and thus add to the depth of the knowledge search and capture the complexity of open government implementation. Furthermore, factor analysis is conducted to identify clusters in the fourteen variables. A limitation of this research is the low factor reliability of two factors (i.e., ubiquitous government and transparency); therefore, these findings must be interpreted with caution.

Third, while this study assessed the factors influencing open government adoption at the local level, it is not possible to generalize the findings to other governmental levels or other countries. Cross-country comparisons could investigate the role of norms, national culture and traditions in open government adoption and examine the external factors of public innovation (Andersen and Jakobsen 2018). When turning from macrolevel research to microlevel research, qualitative

methodologies can shed light on individuals' willingness to implement local open government and to assess "open government readiness."

Finally, open government is characterized by a high level of innovativeness. Unlike private sector innovation, public innovation is not a virtue in itself (see Hartley 2005). In contrast, public innovation must improve public value, increase service performance and be associated with enhancements in governance. Consequently, public innovation such as open government must demonstrate resulting improvements (Hartley 2005). Future research is thus recommended to explore the relationship between open government and outcomes such as attitudes toward government, trust, and satisfaction. The effect of open government adoption on citizens' perceptions of improvement could be studied over time so that learning curves and the long-term effects of measures can be detected, or by conducting survey experiments (e.g., Porumbescu and Grimmelikhuijsen 2018; Grimmelikhuijsen et al. 2019).

Notes

1. Harhoff et al. (2003, 1753) define "the free revealing of information by a possessor as the granting of access to all interested agents without imposition of any direct payment".
2. For example, Austrian municipalities are obliged to publish the municipal estimate of cost and the statement of accounts on the Internet.
3. Next to these 14 open government activities via digital channels, we also included three open government activities via traditional channels: (1) Collaborating with universities and research institutions (in German: mit Universitäten, Forschungseinrichtungen, Fachhochschulen austauschen), (2) Collaborating with companies (in German: mit Unternehmen austauschen), (3) Exchanging regularly with other municipalities (in German: Regelmäßig mit anderen Kommunen austauschen). As we focus on open government via modern and digital channels, we excluded these activities in the paper. However, they might be interesting for further research. Please contact us in case you are interested.
4. Survey items were translated to English. Original items were in German (see [Online Appendix A](#)). Ahead of each question, it was explained to the survey participant what "we" and "our" refer to in the question.

Acknowledgement

The authors would like to thank the KDZ, the Centre for Public Administration Research, for support in data collection.

Notes on contributors

Lisa Schmidhuber is post-doctoral researcher in the Institute for Public Management & Governance, Vienna University of Economics and Business, Austria. Her research interests include public innovation management (open government, citizensourcing, open data), digital transformation, and accounting innovation (IPSAS & EPSAS).

Dennis Hilgers is a Professor of Public and Nonprofit Management in the Institute of Public and Nonprofit Management at Johannes Kepler University (JKU) Linz, Austria. His research focuses on managing innovation and performance in public administration.

ORCID

Lisa Schmidhuber  <http://orcid.org/0000-0002-0349-9965>
 Dennis Hilgers  <http://orcid.org/0000-0003-2660-7057>

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