Coordinating Digital Government

Explaining coordination challenges regarding the digital transformation of public administration in a federal context

Moritz Heuberger

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Prof. Dr. Sabine Kuhlmann   Prof. Dr. Julia Fleischer

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Abstract

This thesis is analyzing multiple coordination challenges which arise with the digital transformation of public administration in federal systems, illustrated by four case studies in Germany. I make various observations within a multi-level system and provide an in-depth analysis. Theoretical explanations from both federalism research and neo-institutionalism are utilized to explain the findings of the empirical driven work. The four articles evince a holistic picture of the German case and elucidate its role as a digital government laggard. Their foci range from macro, over meso to micro level of public administration, differentiating between the governance and the tool dimension of digital government.

The first article shows how multi-level negotiations lead to expensive but eventually satisfying solutions for the involved actors, creating a subtle balance between centralization and decentralization. The second article identifies legal, technical, and organizational barriers for cross-organizational service provision, highlighting the importance of inter-organizational and inter-disciplinary exchange and both a common language and trust. Institutional change and its effects on the micro level, on citizens and the employees in local one-stop shops, mark the focus of the third article, bridging the gap between reforms and the administrative reality on the local level. The fourth article looks at the citizens' perspective on digital government reforms, their expectations, use and satisfaction. In this vein, this thesis provides a detailed account of the importance of understanding the digital divide and therefore the necessity of reaching out to different recipients of digital government reforms. I draw conclusions from the factors identified as causes for Germany's shortcomings for other federal systems where feasible and derive reform potential therefrom. This allows to gain a new perspective on digital government and its coordination challenges in federal contexts.

Zusammenfassung

Die vorliegende Arbeit analysiert die vielfältigen Koordinationsherausforderungen, vor welchen die öffentliche Verwaltung im Zuge der digitalen Transformation steht. Dabei werden im Speziellen Herausforderungen in föderalen Systemen anhand von vier Fallstudien in Deutschland betrachtet. Theoretische Erklärungen, sowohl aus der Föderalismusforschung als auch aus dem Neo-Institutionalismus, werden herangezogen, um die Ergebnisse der empirisch getriebenen Arbeit zu erklären. Die vier Artikel zeichnen ein umfassendes Bild des deutschen Falls und beleuchten Gründe für Deutschlands Nachholbedarf im Bereich der digitalen Verwaltung. Die Schwerpunkte der Untersuchungen reichen dabei von der Makro- über die Meso- bis zur Mikroebene der öffentlichen Verwaltung, wobei zwischen der Governance- und der instrumentellen Dimension von digitaler Verwaltung unterschieden wird.

Der erste Artikel zeigt, wie Verhandlungen im Mehrebenensystem zu kostspieligen, aber letztendlich zufriedenstellenden Lösungen für die beteiligten Akteure führen und ein subtiles Gleichgewicht zwischen Zentralisierung und Dezentralisierung geschaffen wird. Im zweiten Artikel werden rechtliche, technische und organisatorische Hürden für die organisationsübergreifende Erbringung von Verwaltungsleistungen diskutiert und die Bedeutung des interorganisatorischen und interdisziplinären Austauschs betont. Vor allem wird dabei die Notwendigkeit eines gemeinsamen Verständnisses und von gegenseitigem Vertrauen herausgearbeitet. Der institutionelle Wandel und seine Auswirkungen auf die Mikroebene, auf die Bürger*innen und die Mitarbeitenden in Bürgerämtern, stehen im Mittelpunkt des dritten Artikels, der die Kluft zwischen den Reformen und der Verwaltungsrealität auf kommunaler Ebene aufzeigt. Der vierte Artikel befasst sich mit der Sicht der Bürger*innen auf die digitalen Reformen der öffentlichen Verwaltung, ihren Erwartungen, ihrer Nutzung und ihrer Zufriedenheit. Im Zuge dessen wird in dieser Arbeit ausführlich dargelegt, wie wichtig das Bewusstsein für den Digital Divide ist, um die verschiedenen Adressat*innen von digitalen Verwaltungsreformen zu erreichen. Die identifizierten Faktoren für die Defizite in Deutschland lassen sich bis zu einem gewissen Grad auf andere föderale Systeme generalisieren und aus den Ergebnissen können Reformpotenziale abgeleitet werden - was eine neue Perspektive auf die Debatte rund um die digitale Verwaltung und die damit zusammenhängenden Herausforderungen für die Koordination in föderalen Kontexten ermöglicht.

Contents

Tables and Figures[1]

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[1] all tables and figures are creations or compilations of the author, if not indicated otherwise

"Digitization is, in a way, a disruptive force, a disruptive technological force that brings about deep-seated change, transformation of a society."[2]

Angela Merkel, German Chancellor (ret.)

1. Introduction

The disruptive force of the digital transformation is undeniable. Nevertheless, the digital transformation of German public administration can be considered – in various aspects – as an ongoing failure. Taking a look back at another technological challenge may undergird the argument by providing a contextual understanding: On May 25th, 1961, under the impression of the Sputnik Crisis, when the Soviet Union outpaced the United States in launching the first artificial satellite, John F. Kennedy, President of the United States at this time, declared in a speech to a joint session of US Congress the national agenda to achieve "the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth" (Kennedy, 1961). Eight years, one month and 26 days later, on July 21st, 1969, the American Neil Armstrong was the first man in history to set foot on the surface of Luna.

Early plans of digitalizing the entire service landscape of German public administration reach back to the beginning of the millennium. The federal government of Gerhard Schröder, Angela Merkel's predecessor, announced the initiative 'Deutschland online' in 2003, including digital signatures, replacing handwritten ones until 2005 and a digital health insurance ID-card until 2006 (Schröder, 2004). Up to today, neither of these projects has been successfully implemented. In 2010, a national e-government strategy followed (IT-Planungsrat, 2014), but even the recent (constitutional) reforms of 2017 are still well behind their goals (Nationaler Normenkontrollrat, 2021b) and in international comparison, Germany can be considered as a laggard in terms of digital administration (Kuhlmann and Heuberger, 2021). The search for reasons, why the digital transformation of public administration is this difficult and challenging, can be started in different places and might need a variety of scientific disciplines to approach this puzzle. This work aims at highlighting one dimension of this challenge from the perspective of the discipline of Public Administration. From Institutional arrangements and organizational coordination on a

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[2] According to the White House protocol of a press conference with President Barack Obama (Merkel, 2016).

macro level to questions of public management and citizen-interaction on a micro level, the tools and theories of Public Administration allow to shed more light on the existing challenges and to explain intertwining struggles of government in this field.

A digital public sector, both in terms of digital service provision and in digital processes and workflows within government organizations, is in many aspects a very recent, pushing, and complex challenge. Especially in the context of federal states with multilevel governance objections, the coordinative challenges are obvious. The preferred representative of federalist administrative types is the Federal Republic of Germany (European Commission, 2019a; Kuhlmann and Wollmann, 2019: 87). Examining the challenges of digital government implementation, Germany appears as an excellent case to be considered in an appropriate depth. In a federal system, there is no such thing as one government, but a huge variety of actors, split in horizontal and vertical dimensions, different authorities, public servants in these authorities and citizens. The digital transformation of administrative processes and services comes with a huge coordinative effort between different actors: On the vertical dimension, the federal government must coordinate its actions with the state and local governments. Implementing digital solutions, standardizing, and creating channels for data exchange are only some of the coordination challenges which arise. On the horizontal level, different government authorities that were isolated in their action before, must interact. Digital tools allow shared or combined service provision across departmental boundaries. The coordination and interaction of employees changes as well as the interaction of public authorities with citizens. The numerous changes in actor interrelation on different levels and in various ways will be explained in the upcoming chapters in detail. The guiding research question across all chapters is:

> *Which coordination challenges regarding the digital transformation of federal-context public administration can be identified and how can they be explained?*

The added value of this study is a holistic picture of a case study of Germany as one federal country, which allows to identify barriers and hurdles of coordinating the digital transformation of public administration in detail. These identified factors can, to a certain extent, be generalized for other federal systems and reform potential can be derived from the results. Therefore, the results are not only interesting to the research community but also for a broader public of public administration practitioners.

On this basis, the dissertation at hand combines the examination of coordination challenges across governmental level in a multi-level system in form of a case study of the recent

developments in the Federal Republic of Germany, ranging from a macro- over a meso- towards a micro-perspective on actor constellations:

Article I: "Reforming digital government in a federal system: A case study of institutional change of multi-level governance."

Article II: "Breaking the silos – explaining the challenges of automated cross-organizational service delivery in complex contexts"

Article III: "The Digital Transformation Going Local: Implementation, Impacts and Constraints from a German Perspective" (with Sabine Kuhlmann)

Article IV: "Challenges of digital service provision for local Governments from the citizens' view: Comparing citizens' expectations and their Experiences of digital service provision with the focus on German One Stop-Shops" (with Christian Schwab)

Within the introduction, the research content, digital transformation of public administration in a federal context, is presented in a first step. The underlying debates in the recent research literature will be discussed, followed by the overview of the research design, referring to the overall theoretical and methodological approach. The nexus of the introductory chapter and the first article is a detailed introduction to the case of digital transformation of public administration in Germany. The historical backdrop is setting the scene for the macro-perspective, which is the starting point of the following journey from macro to micro through the fields of German digital government landscape.

1.1.   Research Design

The central goal of this dissertation is to deliver an integrated view on coordination challenges in federal systems that arise with digital transformation of public administration. In a first step, this requires a description and a careful empirical observation of the overall situation, the institutional arrangements, and the involved actors of digital government. Not only state authorities as organizations (article II) but also political coordination on macro level (article I), the effects on public servants (article III) and citizens (article IV) are research objects in this case. In a second step, theoretical models and approaches from literature have to be incorporated in order to contextualize the observations thus enabling to explain the challenges, for both laying the groundwork for further research and mapping out advice and recommendations for practitioners, regarding the high practical relevance of this research field (Hardy and Williams, 2011).

Conducting a case study is often used to detect relations and derive explanations in the research field of digital government (Asgarkhani, 2005; Ho and Ni, 2004; Torvinen and Haukipuro, 2018; Yang et al., 2014) and especially in the field of organizational and administration research (Borchhardt and Göthlich, 2007; Pflüger et al., 2017). Following the rules of case study design, one case is classified as revelatory case, i.e. concerning a situation which was "previously inaccessible" – or non-existing and thereby "worth conducting because the descriptive information will be revelatory" (Yin, 2018: 50). Taking the articles itself, single-case studies were conducted. Taking the articles together, we receive both a cross-case study with different foci and one larger case study of German digital government reforms in the late 2010s, expanding the research frame and allowing cross-case evidence (Mahoney, 2007).

The main argument of this dissertation is the plea for the necessity of a holistic understanding of digital government reforms in a federal system to understand the coordination challenges with all its interconnectedness. Thus, selecting one specific country as case and then conducting several case studies of different aspects and levels of this country and its digital government developments is expedient. This leads to the specific design of the collected case studies as *exemplary in-depth case* studies by investigating few cases, which are intensively explored to allow analytical penetration of striking individual cases (Pflüger et al., 2017: 394) aiming to explain complex social contexts – such as a federal system to come back to the research interest.

To systematize the approach, the differentiation between macro and micro level was already introduced, conducting research on different levels, either looking on individual actors (such

as citizens or employees) and the changes on the micro level, or examining change on the macro level in between organizations and governments. Furthermore, a differentiation between two forms of change is required: On one hand, there is the phenomenon of institutional change, which can happen both on micro and macro level, when institutions and institutional arrangements are undergoing certain change processes. Organizational change on the other hand is focusing on an inward-looking view, using organizational theory to explain changes considering the organizations' coordination or the effects of their coordination (e.g. on citizens). This leads to a research matrix (table 1), covering all six possible combinations with the following four articles. The overarching approach is to reach mechanistic explanations (Toshkov, 2016: 150) identifying especially the causal paths linking causes and effects, answering the question of how coordination challenges of digital transformation in federal systems can be explained by tracing the links of a causal chain in specific case studies, embedded in a larger case study context.

Table 1.1 - Empirical focus of the articles

	coordination of institutional change	*coordination of organizational change*
macro level	multi-level coordination (article I)	multilevel service delivery (article II)
meso level	implementation of digital services on local level (article III)	cross-organizational service delivery (article II)
micro level	impact of digital transformation on staff members (article III)	citizens' expectations and experiences with digital services (article IV)

In the first article, the empirical part focuses on coordination in the multilevel system, which suggests locating it at the macro level. In this context, institutional change is examined, meaning the transformation of institutional settings (e.g., creation of new authorities and committees). In contrast, the second article focuses on organizational change. This involves digital transformation at the organizational level (e.g., new processes and routines). This contribution is to be located on the macro level as well as on the meso level because the empiricism aims at the cooperation between authorities (meso), but legal and organizational contexts in multi-level coordination (macro) are also affected. A similar overlap of observation levels occurs in the classification of the third article. Here, the focus is on the

effects of digitization for employees (micro), which in turn depend on political and organizational conditions beyond the individual authority (meso). In terms of the categorization of change, we can speak of the coordination of institutional change. Questions about citizens' use of and satisfaction with digital government services in the fourth article clearly place it at the micro level and point to organizational change.

As the empirical research of this dissertation is partly descriptive and partly explanatory, the choice of theoretical approaches is labelled *theory application* and aims to explain observations of the empirical cases (Toshkov, 2016: 40). In the following, these theoretical approaches are discussed in detail.

1.2. Conceptualization

In this work, the term *theory* is considered as a system of specified constructs – with agreed definitions and terms, – supporting to describe facts, comprehend relationships of variables, explain phenomena and allow predictions (Häder, 2019; Wacker, 1998), following an empirical-driven approach, close to grounded theory (Glaser, 2000; Strauss and Corbin, 2003), which is used primarily for explorative research to understand formerly unknown territory which does not allow to start with presumptions or expectations. The striking difference of the used theoretical approach to grounded theory is the embeddedness of the topic in a research field – Public Administration[3] – which comes with a variety of theoretical approaches and models that are suitable for application. This said, the phenomenon of digital transformation of public administration is going to be examined from different angles, allowing to dissect the cases, selecting variables according to existing theoretical frameworks and concepts to enable a proper analysis and providing approaches to explain aspects of the phenomenon. To get more specific: When focusing on the change of coordination between states as actors in the federal context, theory from the field of federalism research may be the right address, when focusing on the change of coordination of public officials within a state authority, organization and leadership literature may provide the appropriate theoretical input to adapt. The goal of the use of theory is to enable classification and integration of gained knowledge from the empirical work as well as to allow generalization of certain aspects of the findings. Nonetheless, for an empirical-driven work, all claimed theoretical relationships and explanations must be rooted in empirical evidence. Speaking of empirical-driven research, one often faces the allegation of mere descriptive research and the lack of (theoretical) explanation. However, the distinction between description and explanation is not only vague in some cases, but "good description is of enormous value itself" (Pollitt, 2016: 28). Especially in the field of this work where we face a lack of long-term data and therefore a need for explorative research, a solid scientific description is needed in many cases. Nonetheless, this does not contradict the necessity and the use of theory, but shows the different role of theory, compared with other fields of research. Thus, theory building by using conceptual models and theoretical frameworks is necessary in some cases, the creation of inductive analytical categories in others. In the end, the use of theory and theoretical

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[3] *Public Administration* (PA) with capital letters describes the academic discipline, while *public administration* with small letters stands for the research phenomenon, the state authorities, the bureaucratic apparatus.

models should not be an end in itself, but the analysis of the empirical work should benefit from it.

The challenge of this dissertation is to address different concepts and to connect them in a way that enables the use of specific theoretical approaches which have the potential to explain empirical observations. The first steps are to identify interesting phenomena, observe them with scientific methods, detect explanations based on existing theoretical works and discuss the results against other research in the field. As several research fields are included to answer the underlying research question and different concepts have to be discussed, a presentation of the research context follows, discussing the debates on digital government, coordination in public administration, federalism research and organizational change. This selection of analytical dimensions was made to address both the central concepts of the research question (coordination of digital government) and the levels of research (macro – federal systems; micro – organizational change).

Table 1.2 - Analytical dimensions with relevance for the articles

Analytical Dimension	Concepts/Theories
Federalism Research	Joint-Decision Making (article I)
	Positive/Negative Coordination (article I)
Implementation Challenges	Digital Government frameworks (articles II and III)
	Barriers for Digital Government (articles II and III)
(Institutional) Reforms	Polity Policy (articles I and III)
	Evaluation Research (article III)
Change Management	Stage Models (article III)
	Interests of actors (articles I, III and IV)
Citizens' perspective	Digital Divide (article IV)

Digital Government – new requirements for coordination

The debate on the introduction of information and communication technology (ICT) in the public sector started in the late 1980s (Bretschneider, 1990; Burkhardt and Brass, 1990; Milward and Snyder, 1996), when models from private sector technology adoption were transferred to public sector research. The potential of digital public service provision for citizens was an early focus (Milward and Snyder, 1996). It followed the goal to improve

accountability, transparency, efficiency, effectiveness and the quality of government services by making them accessible online (Gil-Garcia and Pardo, 2005: 187–188; Scholl and Klischewski, 2007: 889; Yildiz, 2007: 650). Back then, the research field was labelled as electronic government or e-government. In the 2000s, several strands of literature evolved, facing the implementation of digital forms of citizen participation or e-participation (Norris and Moon, 2005; Robbins et al., 2008; Stanley and Weare, 2004; Vigoda, 2002), back-office challenges or e-administration (Bekkers and Homburg, 2007; Gil-Garcia et al., 2007; Pardo and Tayi, 2007) and the transformation of service delivery towards e-services (Buckley, 2003; Gilbert and Callahan, 2005; West, 2004; Wimmer, 2002). To compare the maturity of e-service provision, different stage models were developed, both from consultants and researchers (Baum and Di Maio, 2000; Layne and Lee, 2001; Wescott, 2001) and later critically discussed (Coursey and Norris, 2008). Nonetheless, the practical introduction of e-services is still characterized and structured by the classification in maturity models (Bundesministerium des Innern und für Heimat, 2019), culminating in once-only applications, where users don't need to submit their data every single time, but can access online services by logging in on a single platform and submitting service requests and applications completely online and receiving a seamless online service.

The introduction of e-government, later labelled as digital government, is discussed to be a new governance paradigm such as New Public Management (Bekkers and Homburg, 2007; Dunleavy et al., 2006; Lips, 2012; Margetts and Dunleavy, 2013). Over the years, an intertwined research community across Information Systems, Information Science, Public Management and Public Administration developed (Gil-Garcia et al., 2017; Hwang and Murphy, 2017), using a variety of methodological and theoretical approaches (Wirtz and Daiser, 2018). Lately, the focus shifts from success factors (Gil-Garcia and Pardo, 2005) and barriers (Lips et al., 2011; Meijer, 2015; Wirtz et al., 2016) for digital administration towards the impact of digitalization on the public sector (Fischer et al., 2021; MacLean and Titah, 2021). Digital government can be considered as both a policy field and an organizational challenge of public administration. In contrast to the discussion of the policy field (about the content of and how to achieve the goals of digital government) other authors addressed the framework of macro-level institutional-settings, necessary for digital government. This includes questions about the organization, regulation and governance of digital government (Organ, 2003; Löfgren, 2007; Tolbert et al., 2008; Johnston, 2010; Laffin and Ormston, 2013; Melitski and Manoharan, 2014). This general overview shows the necessity of examining different dimensions if the goal is to present an integrated observation of digital government. Therefore, not only the governance of digital government but also the implementation

process of digital government in state authorities and the effects on both citizens and employees should be included in further research.

Distinguishing different definitions of digitalization and digital transformation, the upcoming chapters follow the work of Mergel et al. (2019) describing the mere change of the technological channel (i.e. scanning documents) from analog to digital as *digitization*, the change of processes as *digitalization* and referring to *digital transformation* when there is an emphasis on "the cultural, organizational, and relational changes" in an organization (Mergel et al., 2019: 12). As this work picks several implementation and coordination challenges on various levels and with different actors, the overall phenomenon can be labelled as digital transformation, referring to the above-mentioned definition. Therefore, this term is used both in the title and the research question.

Discussing theoretical approaches which explain phenomena in the field of digital government (reforms) needs to bear in mind that the diverse field and the multiple levels of research cannot be explained by a single, overarching theoretical approach. Moreover, the different strings require individual analytical explanations within a certain frame of theoretical presumptions and inferences. Exploring the theoretical landscape on digital government research, specifically the crossroads between Public Administration and Information Systems, was formerly criticized to suffer from a "lack of theory" (Flak et al., 2007; Scholl, 2006), but Bannister and Connolly (2015) delivered a substantiated overview of the existing variety of inherent theoretical frameworks in digital government research and furthermore explained the feasibility of using existing theory in Social Science to explain phenomena in the digital government context. The observed phenomena are mostly not only policy field specific challenges but embedded in other research contexts – such as federalism or organization research – with grown theoretical backgrounds, which can be adopted. Bringing both approaches together – imported and native theory –, this work is making not only a contribution in explaining the examined cases accurately, but also in developing further a *mixed theory approach*. This is not only helpful for this work at hand, but also for exploring the crossroads of inter- and transdisciplinary research. The selection of specific theories depends on the purpose of theory use: Phenomena of Political Science need Political Science theory for further explanation, measuring maturity of e-services is better done with the respective models from Information Systems literature. Therefore, an introduction to native digital government approaches will be discussed in the following, before other theoretical strands, applicable for this dissertation, are added to the discussion.

According to the beforementioned work of Bannister and Connolly (2015), who differentiated between imported theory and native theories of e-government research, many social scientists use (*imported*) parts of theories to explain phenomena within the range of digital government, including neo-institutional approaches (Carter and Weerakkody, 2008; Luna-Reyes and Gil-Garcia, 2011; van Dijk et al., 2008). Besides that, native theoretical frameworks evolved since the early 2000s, as for example the stage models, measuring the maturity level of e-service provision (Baum and Di Maio, 2000; Layne and Lee, 2001; Wescott, 2001; West, 2004). These stage models usually contain four to six stages, from mere online presence (websites, information dissemination) to interaction (online contact, two-way communication), transaction/integration (online service delivery, payment, exchange of value) and participation/transformation (either democratic participation and/or seamless integration across vertical/horizontal levels). The concept not only helps to measure the maturity of digital services, but also serves as template for implementation processes for practitioners (Bundesministerium des Innern und für Heimat, 2019). These stage or maturity models have been criticized, because they suggest a (linear) development of e-services and above all consider digital reforms from a normative perspective generally as good and desirable (Coursey and Norris, 2008). Considering this critique means cautiously using these models to assess digital governments' maturity levels, not displaying them as advanced or from higher quality but as different manifestations of digital tools. Especially on the micro-level, when it comes to concrete implementation of digital government services, a sensitive approach, which avoids normativity, is necessary. In the third article, the maturity of services is used, but embedded in a broader theoretical context. To analyze the institutional changes within local one-stop shops driven by digitalization – the research object of the third article – , the maturity of one-stop shops' services is examined in a first step by creating three different categories: information function (websites), partly available online processes (contact, downloadable forms), fully available online processes (Kuhlmann and Heuberger, 2021: 4). As we studied in this particular case the success of implementation – and the announced goal is to provide fully available online services –, a normative judgement is appropriate, saying, that the "current state of digital immaturity can […] be regarded as a partial implementation failure. This does not mean, that online service provision is superior in general, but only in this context, as the governments' goal was to set up fully integrated online services and not only online information provision. The normativity of digital government literature is a serious problem and must be taken into consideration for the research articles. Thus, the 'dark sides' of digital transformation is an integral part of the research by addressing the question of disadvantages and additional effort for employees in

the second and third article. Digital transformation does not necessarily lead to a better public administration, even if the implementation is successfully managed. Digital processes and tools are not an end in themselves, but their added value or risk depends on their use. In the end, the question of whether digital government changes people's lives and the work of public employees for the better is a political question. Another dysfunctionality of digital government is the risk of totalitarian use of its tools in terms of mass surveillance and the loss of privacy (Bull, 2022).

The introduction of new technologies - from fire to nuclear technology to digitalization - is always ambivalent and dependent on their use. Digitization as technology which changes everyday processes faces a challenge in particular: Because its introduction disrupts familiar routines and this disruption is by no means universally positive, this change inevitably draws criticism. People protest against the change or are frustrated to discover that promises of modernization have not been kept.

Besides the stage models, there is a discussion in digital government literature regarding the users' perspective (Gilbert and Callahan, 2005; Ma and Zheng, 2018; Piehler et al., 2016; Porumbescu, 2016), which includes debates on trust in government and/or technology, performance and citizen-centeredness. These discussions are featured in the fourth article, examining the citizens' perspective on local governments' digital services, their expectation, and their satisfaction. These discussions are originally more descriptive and less analytical. Nevertheless, the question of digital divide is an important analytical dimension in this field (Brännström, 2012; Chang et al., 2004; Hilbert, 2011; Kim et al., 2009; Petrović et al., 2012), allowing to get a systematic view on (non-)usage of digital services. Therefore, the fourth article features this discussion and adds an empirical analysis on the usage divide across several divides such as gender and age, as well as on education and income.

Finally, many articles in the research field of digital government are built upon a specific analytical framework, including several dimensions of *drivers*, *barriers* or *success factors* for implementation (Cinar et al., 2019; Lips et al., 2011; Meijer, 2015; Zhang and Dawes, 2006), mostly technical, legal, organizational, political, external factors that either drive or hinder digital government reforms. In the second article such a framework is used primarily, enriched by neo-institutional explanations. The third article is using a different framework from institutional reform literature (see below) but is integrating the discussion and theoretical elements from the debate on barriers.

As digital government research stands in some parts in the tradition of New Public Management (Dunleavy et al., 2006; Torres et al., 2005), the user-centricity and therefore the

focus on the interests of the citizens is very dominant in the discussions. Nonetheless, the back office and therefore the situation of the employees (i.e. public servants) is also from high importance, when it comes to struggles of implementing digital government on a micro level (Lindgren et al., 2019; Moon and Welch, 2005; Snellen, 2002). Therefore, the impact on staff plays a central role in the third article but is also considered in the second one. In the literature, potential fears and uncertainty, connected with digital government reforms are discussed (Baldwin et al., 2012; Meijer, 2015) as well as the effects on their work or decision making (Breit et al., 2020; Busch et al., 2018; Palumbo, 2021; Wirtz et al., 2016).

The field of digital government is much wider than the selection, this dissertation addresses. The whole discussion on e-participation (Kim and Lee, 2012), Social Media use in government (Brainard and Edlins, 2015; Young, 2021), cybersecurity (Chatfield and Reddick, 2019) or more recently on the use of Artificial Intelligence and algorithmic tools (Bullock, 2019; Busuioc, 2021; Vogl et al., 2020) is not part of the analysis, because the focus was set on the very question of coordination between actors in a federal system, including the challenges of federal government – state government relations, local government implementation challenges and attached to these major points, the interests of the involved actors: citizens and employees.

Federalism Research – joint-decision making as mode of coordination

One entire branch of – especially German – Public Administration is federalism research, based on challenges of the so-called *cooperative federalism*, which is describing the decision-making structure in federal countries like Germany in which most public tasks are not decided and executed by individual territorial authorities, but through cooperation between the federal, state, and local governments. Especially coordinative challenges of administrative interdependence (Bogumil and Kuhlmann, 2022) are a central phenomenon to be dealt with. Administrative interdependence or inter-administrative relations (*Verwaltungsverflechtung*) are the Public Administration counterpart of joint-decision making in Political Science (Scharpf, 1988), explaining interdependencies, forcing autonomous decision-makers (or in the case of administration: executers of policies) at the federal and state levels to cooperate in the fulfilment of their tasks, which causes – especially with increasing complexity of the tasks – increased coordination effort, which brings us back to the initial research question. If digital transformation of public administration increases complexity of policy execution (setting standards, introducing technology, etc.), according to the theoretical implications of administrative interdependence, we would expect an increased coordination effort with

increased costs. In the case of the first article, this theoretical approach can help to explain the vertical interdependencies between federal government and state governments coordinating common action in the field of digital government. In the second article, an observation on the meso level also delivers insights in interdependencies – this time on the horizontal level – when inter-organizational service provision urges different authorities to cooperate, exchange information and provide a unified online service.

Coordination is not only a question of costs, but also of decision quality. Ideally, all interests of all stakeholders in a decision-making process are involved to find the optimal solution. This process of including every particularity is called positive coordination (Bogumil and Jann, 2020: 183). However, with increasing complexity and number of actors, the coordination is getting reduced to identify the lowest common denominator on which nobody disagrees. This is known as negative coordination (ibid.). Negative coordination leads to sub-optimal outcomes, caused by complexity-reduction, lack of trust and pressure.

Although, digital government implies to be more suitable for more central structures and systems – setting common standards and benefiting from scale effects of a unified IT-infrastructure – federalism research also discusses the downside of central decision-making. Central decision-making authorities mostly lack information about the local context and the specific needs of citizens or street-level bureaucrats, still the authority of central authorities needs to be strong enough to be able to ensure the implementation across the whole territory (Kropp, 2010: 21). This leads to the hypothesis that the rather cost intensive and demanding process of building a consensus in decentral systems pays off, as it requires more information exchange, better communication and in the end a more intensive dialogue between local and central administration.

To resolve negative effects of administrative interdependence – known as the the joint decision-trap –, unbundling and re-organization of certain tasks is discussed (Bogumil and Kuhlmann, 2022; Kropp, 2010), leading to larger bargaining-processes to find a common solution and reforming federalism (*Föderalismusreform*). Reforming political and administrative systems includes not only bargaining but also a complex interrelation of actors trying to maximize their power and/or reducing their costs. Therefore, theoretical approaches, which explain the behaviour of actors can help to understand those processes. Neo-institutionalism not only provides explanations for the analysis of formal institutions such as traditional institutionalism, but also for a wider range of public organizations and systems. It describes how specific cultures, norms and values of an institution shape the beliefs, norms and choices of the individual actors within these institutions (Pollitt, 2016: 32). Following the research

on actor-centered institutionalism, actions of actors are not always rational but follow the concept of bounded rationality. Starting with the early works of Public Administration (Simon, 1947) and lately inspired by the rise of behavioral science in this field (Battaglio et al., 2019), actors are not considered to be fully rational but their behavior and their choices underly cognitive biases and the fact of limited availability of information. Therefore, the examination of actors' choices (e.g., state governments in article I or different authorities in article II) is considering a broader scope of motivations and not only the achievement of their (political) interests.

Institutions of public administration can be considered as "arenas for contending forces, but they are also collections of standard operating procedures and structures that define and defend values, norms, interest, identities, and beliefs" (March and Olsen, 1989: 17). Besides actor-centered institutionalism, the branch of the historical institutionalism (Hall and Taylor, 1996: 937) can provide explanations on how institutions change and adapt change due to the developments of digital transformation of public administration, using the concepts of path dependency (Pierson, 2000), layering and displacement (Streeck and Thelen, 2005).

Institutional Change – reforming coordination

From a public policy perspective, the digitalization of administrative processes and public service delivery can be conceived as an institutional policy or 'polity policy' (Wollmann, 2004: 3). Analyzing the rearrangement of procedures and organizational structures of public institutions, the concept of polity policy serves as an explanatory approach in the first and third article. Impacts and effects of polity policy – in contrast to sectoral policies – require a more complex analytical framework (Kuhlmann and Wayenberg, 2016: 239; Kuhlmann and Wollmann, 2011). For the third article, the analysis is based on a three step-model of impact assessment drawing on Kuhlmann and Wayenberg (2016: 239; Kuhlmann and Wollmann, 2011; Pollitt and Bouckaert, 2017; Reiter et al., 2010): The maturity of the already implemented services – referring to the above mentioned maturity models – is analyzed in a first step, followed by an explanation of institutional and procedural changes and their effects on the staff and administrative processes in local government and as a third step an explanation of the citizens' experience of the reforms (which is explained in more detail in article IV).

Explaining organizational change – coordination of actors and their interests

Discussing explanations for digital shortcomings of federal systems. Regarding the German case, not technological issues but rather organizational challenges are made responsible (Lenk, 2018: 220). Therefore, the second article draws a theoretical framework (according to digital government literature traditions; see above) around organizational factors – besides existing legal and technical ones – which are considered as barriers for digital government reforms. In the specific case of the second article, where cross-organizational service provision is examined, missing trust between actors is a key aspect (Gil-Garcia et al., 2009, 2010; Hudson et al., 1999; Lips et al., 2011; Luna-Reyes et al., 2007), but also organizational self-interest (Van De Ven et al., 1976) and lack of goal consensus (Dawes and Pardo, 2002; Schalk, 2013) are included. As all of this requires understanding motives of actors – be it a state, an organization, or a public servant – it is crucial to understand the analytical category of actors and their interests. Actors are characterized by having "diverse interests, perceptions and resources" (Klijn et al., 1995: 444) as factors, explaining their actions. In Public Administration research, actors can be identified in the policy-making process (Stone and Ladi, 2015; Tosun and Lang, 2017), at institutional reforms or arrangements (Goetz, 2001; Kuhlmann and Wollmann, 2011) in between governments or authorities (Henning and Ng, 2009; Sicilia et al., 2016; Thurmaier and Wood, 2002; Vangen et al., 2015), within internal government processes (Fleischer, 2016; Meyer et al., 2014), at citizen-government interaction (Bryer, 2007; Simmons and Birchall, 2005) or in inter-sectoral networks (Denis et al., 2015). Therefore, identifying the position and the interests of actors in the examined contexts is key to analyze the given phenomena. With this in mind, two of the well-known grand theories or "big name theories" (Pollitt, 2016: 31) are fitting well: neo-institutionalism and rational choice theory. The first comes initially from Political Science and Sociology, the latter from Economics and Political Science, but both are often used in Public Administration Research and ideal approaches to serve the needs of this work. Analyzing public administration with a rational choice approach reaches back to the works of Herbert Kaufman (1959), Anthony Downs (1967) and William Niskanen (1971), explaining individual behavior within public organizations. However, the term rational choice is misleading, as the choices are not rational but underlying the before mentioned bounded rationality. Rational choice theory can be considered as another version of neo-institutional theory (March and Olsen, 1989; Peters, 1999) but with the focus on the (bounded) rational interest of the actors involved – also known as actor-centered or rational choice institutionalism (Hall and Taylor, 1996: 942). Maximizing utility and satisfying preferences (with the mentioned restrictions) of the actors is key to their decision-making (Pollitt, 2016: 39). Additionally, the actors are said to have "a

fixed set of preferences or tastes" (Hall and Taylor, 1996: 944). Due to the methodological individualism (collective norms leading to individual choices leading to individual behavior aggregated to collective behavior) and the logic of consequentiality (normative standards shaping individual choices), complex decisions and developments in public administration can be described theoretically.

1.3.   Methods and Data

The methodological choice is a mixed method approach, focusing on qualitative research methods. The choice is based on the needs of the research field and topic, which is partly explorative and unstructured and requires methodological variety. A contribution of this work to digital government research is to build analytical categories and gather a general overview of the interconnected phenomena which allows further research to test hypothesis with quantitative methods.

Articles III and IV are partly based on quantitative data. Both articles use data from a larger research project about the digital transformation of German one-stop shops *(Bürgerämter)* (Bogumil et al., 2019; Schwab et al., 2019). They both include each one survey with the mayors and staff councils of all German cities with more than 15,000 inhabitants, one citizen survey in two selected cities, and one staff survey in the local government of the same cities (see table 3 for details).

Article IV combines findings from this research project with secondary analysis of other data sources, namely two data sets from the research institute *Civey* (representative samples of German citizens, n = 5041 and n = 5043) and data from the popular *Lebenslagenbefragung* of the German federal agency for statistics *(Statistisches Bundesamt,* representative sample of German citizens, n = 8761). As there were no existing hypothesis to test, the statistical methods were limited to descriptive statistics, showing proportions (articles III and IV) and using odds-ratio (article IV).

The use of qualitative methods is based on expert-interviews and qualitative content analysis with added information of systematic document analysis (articles I, II and III). Expert-interviews are a good method to gather in-depth knowledge on social contexts and to reconstruct social situations and processes (Gläser and Laudel, 2010: 12–13). This is ideal for this research context, as the goal is to enhance the understanding of the status quo of digital government reforms in Germany and the causes that lead to this situation. Especially the discussion on civil servants as "experts who base their elite position on knowledge" (Peters et al., 2016: 12) should be emphasized on this point, because it leads to the necessity to approach public servants as experts in understanding and analyzing structures, power and relations between actors.

The interviews were prepared and carried out following the rules of Gläser and Laudel (2010) with semi-structured questionnaires, considering the interviews as communication process, adding questions inquiries when necessary and building upon the knowledge of previous

interview results and other research information (e.g. from document analysis). Using foremost qualitative methods, cross checking is key (Flick, 2019: 475–476), meaning that a combination of document analysis and expert interviews allow to double check crucial information from another source. This may imply inserting questions in interviews to validate previous interview as well as checking information from documents in interviews or the other way round to ensure the validity of qualitative research. The qualitative data in the second article is furthermore used for a qualitative content analysis (Mayring, 2015) for both documents and interviews to ensure triangulation (Denzin, 2012; Flick, 2018). It allows multiple perspectives on the phenomenon for the means of validity and reliability. In total, 19 interviews were conducted and the interview protocols on the base were structured by both factual and thematic coding to proceed with the analysis. For the document analysis, publicly available documents such as protocols, press releases and draft bills were used, as especially in (formal) organizations, events and decisions tend to be documented and written down, which is an ideal source for organization research (Salheiser, 2019; Schmidt, 2017). In comparison to expert interviews, document analysis as a nonreactive method eliminates the problem of researcher-field interaction during data collection by avoiding phenomena such as social desirability (Schmidt, 2017: 445) and granting access beyond existing barriers (especially non-response).

Table 1.3 - Overview of the used methods and data sources

	Data sources	Observations	Details
Article I: Reforming digital government in a federal system	Expert interviews Document analysis	n=11	
Article II: Breaking the silos	Expert interviews Document analysis	n=9	
Article III: The Digital Transformation Going Local	Survey 1: mayors Survey 2: staff councils Surveys 3&4: citizen surveys Karlsruhe & Bochum Surveys 5&6: citizen surveys Karlsruhe & Bochum	n=221; 30,7% n=263; 35,3% n=1171; 19,5% & n=418; 21% n=40M 53,3% & n=70; 51,9%	All via Mail
Article IV: Challenges of digital service provision for local Governments from the citizens' view	Civey-Survey 1602 Civey-Survey 1334 Lebenslagenbefragung 2018	n=5041 n=5043 n=8761	Online Online CATI

Table 3 delivers an overview of the four articles and the data sources used for the mixed method approach. Further information about the data and details on the methods are found within each article in the following chapter.

1.4. Case Selection and Case Description

The reasons for choosing a case study with several minor case studies within were already discussed. In this section, the reasons for the selection of Germany as case and a contextualization of the German digital government background are given. The first and foremost reason: The Federal Republic of Germany is the most commonly used example when challenges of federal systems are discussed or compared in literature (Behnke and Kropp, 2016; Grossi and Reichard, 2008; Wollmann, 2004) with an administrative type, classified as Continental European federal model (Kuhlmann and Wollmann, 2019: 87) consisting of a parliamentarian democracy and strong local governments. Secondly, Germany ranks severely behind the European average when comparing quantity and quality of digital public services for both citizens and companies (European Commission, 2019b). Although Germany is a politically powerful part of the European Union with a strong and technology-oriented economy known for its engineering mentality and therefore its innovativeness, in the field of digital government, the performance of German public administration is often a source for jokes. In any conversation with inhabitants of Germany, at least one person can contribute an anecdote from their recent contact with a state authority and the anachronistic-bureaucratic character of a public administration which has not arrived in the digital age, yet. Year after year, the German National Regulatory Control Council urges the federal government to intensify the effort of the federal government to digitalize the public administration (Nationaler Normenkontrollrat, 2018, 2019a, 2021b). Especially in the COVID crisis, the deficiencies of digital preparedness were a painful reminder of the slow developments in this field (Nationaler Normenkontrollrat, 2021a; Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Energie, 2021: 11). The simple truth is: "Germany is, thinks and acts too complicated" (Nationaler Normenkontrollrat, 2021a: 2). But and this is the third argument for the case selection: Something is happening in Germany lately. The recent digital government reforms, introducing new legal frameworks – including constitutional reforms (more in article I) – and new forms of multi-level cooperation arose interest in the literature (Fleischer and Carstens, 2021; Rackwitz et al., 2021; Wegrich, 2021). Therefore, the time to observe this case is ideal.

Taking an in-depth look at the case of Germany requires to examine on different levels and with different approaches, because in comparison with other federal systems, such as Austria where digital government reforms are quite successful (Eixelsberger and Wundara, 2018), Germany's situation cannot be explained with being a federalist system alone, but the whole context needs to be observed. Therefore, the historical context will be described in the

following, preparing the ground for the first article, which is going to be a study on the recent institutional reforms.

Legal and institutional framework of digital government in Germany

When it comes to the challenge of digitizing documents, digitalizing processes and transforming public service provision and the back office of public authorities, the very high level of fragmentation, decentralization, and separation of power leads to conflicts, specifically in the field of coordinating different actors to come to agreements and to find a path towards common action. On February 10th, 1970, the first informal institution for federal digital government coordination was initiated in Germany: The Cooperation Committee for Automated Data Processing (*Kooperationsausschuss Automatisierte Datenverarbeitung; KoopA ADV*), responsible for common principles concerning information and communication technology at the federal, state and local level. However, without constitutional anchoring and no binding decision-making powers (Lühr, 2021: 101) it was rather an advisory body than a political committee.

An early and still prevailing conflict of interests can be described as the balance between self-administration of state and local governments on the one hand – one key principle of the German federal system (Kuhlmann et al., 2021: 16) – and the obligation for responsible and sustainable budget management on the other hand. With the introduction of ICT on local and state level, all administrative units of the 11.000 municipalities and 16 states needed not only hardware but also software. For the latter, they had the option to buy or develop the software on their own, according to their independence and the principle of self-administration, with the downside to spend money parallel on very similar things ignoring scale effects and therefore their budgetary responsibility (Bischoff and Bode, 2021). To join up their efforts though, not only coordination would be needed, but the local and state governments would also risk losing a part of their independency, not being able to define every detail of their ICT infrastructure but agreeing to compromises. In 1979, the KoopA ADV renewed the *Agreement of Kiel* (*Kieler Beschlüsse*) from 1968 – the founding principles of this organization –, stating that the state governments are open to adopt federal solutions on a voluntary basis (KoopA ADV, 1979). Sharing software solutions should be in principle free of charge, calling it the "principle of general reciprocity" (*Prinzip der allgemeinen Gegenseitigkeit*). However, the developing organization can also charge rents or sales prices to share costs. Beside the regulation of sharing software, the possibility to form development alliances (*Entwicklungsverbund*) and software support alliances (*Pflegeverbund*) was added.

Clarifying the details – e.g., excluding the liability for errors in the exchanged software – had the goal to increase trust and therefore cooperation in between federal levels.

On June 22nd, 2006, the conference of prime ministers and the federal chancellor (*Ministerpräsidentenkonferenz*; MPK) adopted the first action plan of the already mentioned *Deutschland Online* project, aiming at a fully digital government by 2010. Besides yearly updates of the action plan (until 2011), agreeing on priorities for digital infrastructure projects and flagship projects, a federal working group of e-government state secretaries (*Arbeitskreis der E-Government Staatssekretäre*) was introduced (Suhl, 2006). Every state was invited by the federal ministry for the interior (*Bundesministerium des Innern; BMI*) to send one state secretary, responsible for e-government affairs (Lühr, 2021: 102), a first step to coordinate the topic on a political level.

In the early 2000s, the process of public sector digitalization was already seen ambiguous: While almost every local government had a website and government information was available online, online transactions (i.e. digital service provision) were already a disappointment (Kubicek and Wind, 2005: 61). One reason was – and still is – the lack of integrative projects across administrative levels, including several authorities from different levels (Kubicek and Wind, 2005: 62). The initiative *Deutschland Online* was preceded by the project *Bund Online 2005*, as the starting point of e-Government on federal level, stating that 376 e-services of the federal government should be available by 2005 by investing € 1.4 billion (Sietmann and Kossel, 2005). A central critique was the inconsistency and the lack of coordination across the federal levels (ibid.). This was a driver for *Deutschland Online* which had exactly this multi-level coordination as a goal by setting a common strategy of the federal government, state governments and local governments (Bundesministerium des Innern und für Heimat, 2010) with the institutionalized regular meeting of state secretaries. Additionally, an office was created to coordinate this regular meeting: the "program-office of Deutschland Online" at the BMI. This institution was responsible for developing the first national e-government strategy in 2006 (Bundesministerium des Innern und für Heimat, 2010), followed up by separate e-government strategies of several Länder and the federal state. At this early stage in 2005, it was already remarkable that the initiative and the original coordinative organization both were *located on the federal government level*, despite of the general trend of decentralization in Germany's federal system at that time (Kuhlmann and Wollmann, 2019: 172–175).

At that time, the budget and the power of these institutions – both the KoopA ADV and the council of state secretaries – were heavily criticized, particularly by the state secretary of

Hessia, Harald Lemke, who declared the state secretary council as an "entire failure and not worth the money" as the council's only budget covered "just enough for coffee and cake" (Suhl, 2006). The goals for any of the institutions were ill-defined and the scope of action not observable. As they were Informal institutions, they were only able to work based on unanimous agreements, which were non-binding for the participants.

Furthermore, not only the institutional setting was updated, but also the legal framework was adjusted. In 2002, the Administrative Procedure Act (Verwaltungsverfahrensgesetz; VwVfG) was amended and §3a created the option of replacing the written form with a qualified electronic signature. Because the latter was never successfully established (both the introduction of a certified e-mail service called *DE-Mail* and the introduction of the eID failed), the written form (*Schriftformerfordernis*) is still required and thus a major barrier for digital procedures (see article II). The federal e-government strategy was institutionalized with the E-Government Act (*E-Government-Gesetz; EGovG*) in 2013, focusing on online communication and information provision as well as on Open Data principles, implementing the requirements of the EU agreements of the Malmö Declaration of 2009. The federal law of 2013 was accompanied by states' e-government laws, starting with a corresponding Electronic Administration Act for Schleswig Holstein (EGovG SH) in 2009 and followed by the other states across the 2010s with regulations analog to the federal act (Beckermann, 2018: 167–168). One part of these regulations was the introduction of representatives of the state governments for information technology or Chief Information Officers (CIO), mostly in the rank of state secretaries, introducing an institutional responsibility within the state governments for this policy field. With constitutional reforms in 2009 and 2017, not only rules for cooperation between federal government and state governments were imposed, but also the institutional framework was changed by introducing the German IT planning council (IT-Planungsrat; IT-PLR) in 2010 based on an IT-Staatsvertrag (state treaty on information technology) between all 16 state governments and the federal government, adding the federal IT coordination (*Föderale IT-Koordinierungsstelle;* FITKO). The latest developments are only described very briefly, because the details about these reforms are discussed in depth in the first article. Furthermore, the so-called "law for online access" (*Online-Zugangs-Gesetz;* OZG) was established in 2017, binding the state governments to provide most of their services online by 2022 and to offer all administrative services digitally via administrative portals, linking these portals as a network (*Portalverbund*). The services have to be accessible for citizens and companies using a single user account (*Nutzerkonto*), allowing to save information for several independent processes, according to the once-only principle.

Additionally to the OZG, the Digital Family Benefits Act (*Digitale-Familienleistungen-Gesetz*) in 2020 bundled several changes of existing federal legislation (not only within the OZG but also within other laws[4]) to enable more digital provision and cross-organizational cooperation within public administration. This act was initiated by the state government of Bremen as a result of their reform project to unify and digitalize different family benefits – which is the selected case for the second article. Furthermore, the Registry Modernization Act (Registermodernisierungsgesetz; RegMoG) was introduced in 2021 to implement the European single digital gateway regulation and the once-only principle. It introduced a unique identifier by using the already existing tax ID number as inter-register identification number for 51 registers. Furthermore, a data dashboard (*Datencockpit*), where citizens can overview the access of state authorities on their data, is one of the promises of this new legislation. Though, the register modernization is an ongoing project (until 2025), the research on its effects on the German case has yet to be done in the near future.

Figure 1.2 - Timeline of Digital Government reforms in Germany
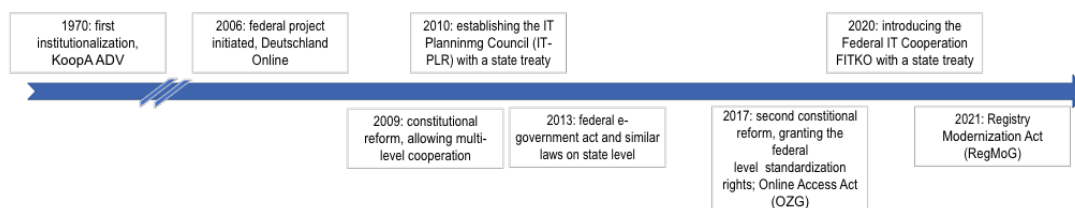
The developments can be described as formalization of informal processes and institutions. The examination of centralization or decentralization processes will be part of the first article. Nevertheless, a certain extent of intergovernmental integration can be stated at this point already. While the digital transformation of German public administration was proceeded without a general legal basis for years, with the federal E-Government Act an "enabling law" was introduced in 2012 and only in 2017 the OZG added a legally binding "compulsory act" based on the previously amended Article 91c GG of the German Basic Law was added (Kühn, 2021: 18).

This introduction to the broader context of the developments of the German digital government allows to set the frame for the following articles. Articles I and II were already

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[4]https://www.onlinezugangsgesetz.de/SharedDocs/kurzmeldungen/Webs/OZG/DE/2020/digitale-familienleistung-tritt-in-kraft.html (accessed on February 4th, 2022)

mentioned within the section and historically sorted into the described developments. Articles III and IV can be considered as snapshots of the situation in 2017/2018, when the OZG was already in its way, but not implemented, the FITKO was not established yet and the RegMoG was still in discussion.

2. Research Articles

In this chapter, four different research articles will be presented, which approach the general topic with specific research questions in detail. The first article (chapter 2.1.) starts with the macro-level perspective in the federal context of Germany. The introduction of the organizational structure and the change of the institutional arrangement in between federal government and state government over the last 4 years is discussed and explained. This article was presented at the Annual Conference of the *European Group for Public Administration* (EGPA) in 2019 and the 13th annual meeting of the *Forum Junge Staats-, Verwaltungs- und Policy-Forschung* (FoJuS) in 2020.

The following article (chapter 2.2.) draws on one case study were different government authorities on all three levels (federal, state, and local) introduce a combined digital service provision for citizens. Here, both, the horizontal and the vertical interaction between government organizations, underly a change process due to the digital transformation. It was accepted and presented both at the 14th annual meeting of the *Forum Junge Staats-, Verwaltungs- und Policy-Forschung* (FoJuS) in 2021 and the Annual Conference of the *European Group for Public Administration* (EGPA) in 2021.

The third article (chapter 2.3) is focusing on the micro-level and explains the employees' perspective on the changes of their work through the introduction of digital technologies. After the first two articles in single authorship, this one is co-authored with Prof. Dr. Sabine Kuhlmann. We have presented an earlier draft at the Annual Conference of the *European Group for Public Administration* (EGPA) in 2019 and published the article in 2021 online first and with open access in *Public Money & Management* (Kuhlmann and Heuberger, 2021). The print is expected to be part of issue 2 in volume 42 in 2022.

The last article (chapter 2.4.) reflects the micro-level, taking the citizens' view into account. An analysis of their expectations, use and satisfaction with digital public services completes this all-round view of actors in digital administration. This article is written in co-authorship with Christian Schwab and was presented at the Annual Conference of the *European Group for Public Administration* (EGPA) in 2018 and published as chapter in the peer-reviewed Palgrave-anthology *The Future of Local Self-Government: European Trends in Autonomy, Innovations and Central-Local Relations* in 2021, edited by Bergström et al. (Heuberger and Schwab, 2021).

Additionally to the four presented articles, the author published several other articles as textbook chapter (Heuberger, 2020) or as scientific blog-entry (Heuberger and Freund,

2021), as well as expert opinions (Kuhlmann et al., 2020) and co-authored books (Bogumil et al., 2018). Furthermore, the author of this dissertation co-edited a special issue of the journal *dms – der moderne Staat* (01/2021) together with Dr. Caroline Fischer, a Public Management researcher and Prof. Dr. Moreen Heine, an Information Systems researcher. Besides the organization of an author-conference in 2020 and the anonymous peer-review process, this effort included the co-authorship of an article with a systematic literature review and overview of the debate on effects and impact of digital government (Fischer et al., 2021).

Figure 2.0.1 - Citations of all publications of the author
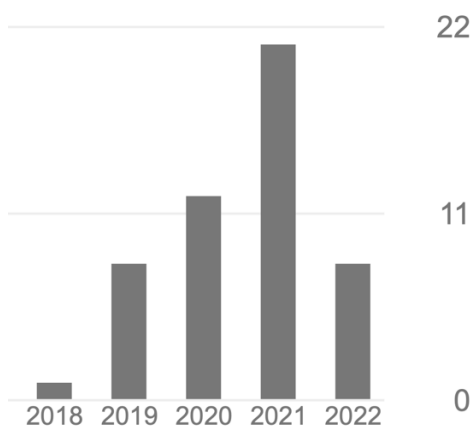
Source: Google Scholar.

In total, the academic record is 51 citations in total, rising annually (see figure 1; April 2022) and currently an h-index of 3. Two of the articles are part of this listing, article III with five and article IV with three citations so far. The other two articles of this work are currently under review for publication in other peer-reviewed journals.

2.1.   Reforming digital government in a federal system

A case study of institutional change through digital government reforms in the multi-level system of Germany.

Moritz Heuberger

Abstract

The link between technological changes in governments and the necessary change of the institutional design is the central topic of this article. The reconfiguration and adjustment of federalism and the interconnection is discussed in in the context of recent legislative reforms in Germany, creating new institutions and new coordination mechanisms across federal levels. Using the methods of document analysis and qualitative expert interviews in a single case study, both tendencies of centralization and decentralization can be observed. The examination of the case study of the creation of the German federal IT-coordination office (FITKO) shows how institutional design of digital government coordination in multi-level contexts is shaped and explains the mechanisms behind such administrative reforms with neo-institutional theory. Furthermore, the joint-decision trap was identified as one explanation of slow reform processes, characterized by the lowest common denominator.

Keywords: administrative reform, digital government, federalism, multi-level governance, institutional reform

Introduction

Governments all over the world face the challenge to orchestrate the digital transformation of administrative processes and service provision on all administrative levels. Introducing the innovation of information and communication technologies (ICT) in public administration is not only a highly and publicly discussed topic (Pias, 2019), but it also receives increasing importance in administrative reform literature (Castelnovo & Sorrentino, 2018; Ma & Zheng, 2019), while the link between technological changes and the necessary change of the institutional design is highly underexposed (Dawes, 2008, p. 91). The reconfiguration and adjustment of federalism are discussed in different contexts (Benz, 2007; Bogumil & Kuhlmann, 2022), but rarely in connection with digital government as a new paradigm of governance (West, 2005; Dunleavy, Margetts, Bastow, & Tinkler, 2006). While the scientific debate on centralization and decentralization tendencies is well developed in the field of public administration research (Reiter, Grohs, Ebinger, Kuhlmann, & Bogumil, 2010; Kuhlmann, 2015; Kuhlmann & Wayenberg, 2016) and the questions of interconnectedness of governmental levels and the so-called joint-decision trap are well-known phenomena (Scharpf, 1988; Benz, 2007, 2008), the examination of institutional design of digital government coordination in multi-level contexts and the resulting tendencies are rarely discussed (Moon, Lee, & Roh, 2014, p. 8–9). Furthermore, this contribution serves as an example to the recently identified "missing link" in federalism research under the topic of inter-administrative relations (Bogumil & Kuhlmann, 2022).

This article attempts to bridge this gap and link the digital government discussion with theoretical approaches to federalism and multi-level governance. As this field needs a rather exploratory approach to identify relevant aspects for further research, the research question is: *What shapes institutions of multi-level coordination of digital administration and which explaining factors can be identified?* We aim to add further evidence to the research field of institutional reforms by making an empirical examination. Therefore, the research interest of this article is to explain an institutional change process with interacting levels in federal states, conducting a single case study of recent reform efforts in Germany, which is generally taken as the representative of the (central European) federal type of government (Schröter, 2001; Kuhlmann & Wollmann, 2019).

This article first draws on the literature on institutional change and interconnectedness of levels in federalist contexts, proposing theoretical implications. After the introduction of the research design and the methods used, we are presenting the results of an empirical

examination of the case study. We conclude by providing theoretical and policy implications of our findings for federal coordination of digital government reforms.

Explaining institutional reforms of multi-level governance

Focusing on the policy-field of digital administration, the differentiation between digitization (more or less simple transition from analog to digital services), digitalization (changes in the processes beyond mere digitizing of existing processes and forms) and digital transformation, proposed by Mergel et al. (2019, p. 12) can be used to clarify the specific research interest: Digital transformation describes the cultural, organizational and relational changes (ibid.), taking place in public administration by introducing information and communication technology (ICT) innovation to allow new forms of services. The general understanding of "digital transformation of public administration" can be conceptualized as the introduction and the increased use of information and communication technology (ICT) innovation in public administration with the goal to improve accountability, transparency, efficiency, effectiveness and the quality of government services by making them accessible online (Gil-Garcia & Pardo, 2005, p. 187–188; Yildiz, 2007, p. 650). Research on digital transformation in public administration – often referred to as digital government (Fishenden & Thompson, 2013) or more commonly as e-government (West, 2004; Yildiz, 2007) with certain subcategories such as e-administration (for back-office processes), is a broad field with a lack of systematic differentiation in research subjects. In recent research, two dimensions can be identified: Firstly, the tool-dimension research focuses on ICT-tools and how they change public administration, on adoption and with success factors and barriers (Gil-Garcia & Pardo, 2005; Manoharan, 2013; Li & Feeney, 2014). Secondly, in a much less developed field, a governance-dimension can be identified: In contrast to the tool-dimension it is not about the content but the framework; not about micro-level management but macro-level institutional-settings. This kind of research focuses on how digital transformation is organized, regulated and governed (Organ, 2003; Löfgren, 2007; Tolbert, Mossberger, & McNeal, 2008; Johnston, 2010; Laffin & Ormston, 2013; Melitski & Manoharan, 2014). This study stands in the tradition of digital government research with the governance-dimension focus and therefore the literature which will be considered to explain inter-governmental institutional settings and institution creation were selected from the field of institutional reform rather than traditional e-government literature.

To address the research question, the change of multi-level governance in the field of digital administration can be identified as *institutional policy* or "polity policy" (Wollmann, 2003, p. 4). Comparable to substantive ('normal') policies, which essentially target the socio-economic situation and development in the policy environment, institutional policies have specific goals, subjects and objects of intervention as well as measures and activities and results and effects (Jann, 2001, p. 329).

To further develop this theoretical debate, this study refers to the existing literature and expands its implications on the debate on multi-level governance of digital administration. From the toolbox of neo-institutional theory, historical institutionalism (HI) can be used to explain the corridor for action, rational choice institutionalism (RI) allows to explanation of actor-specific factors. Combining RI and HI helps to explore the institutional changes on the inter-governmental level between federal levels with the examination of principle-agent relations and the analysis of transaction costs (RI) and the identification of historical developments, traditions, and patterns as well as path dependencies (HI). This theory is based on the assumption that actors have a fixed set of preferences and interests and behave intentionally (Hall & Taylor, 1996). The strength of the combination with HI lies in its ability to explain the absence and limits of change caused by path-dependencies (Pierson, 2000; Mahoney, Kimball, & Koivu, 2009; Pierson, 2004; Mahoney & Thelen, 2010). Behnke and Kropp describe institutional reform as a change of formal bodies, which are never completely consistent or stable but underly ongoing changes of rules (Behnke & Kropp, 2016). They advance the approach of Benz, who identifies institutional change as rearrangements of interaction patterns and standardized procedures – mostly on the micro-level (Benz, 2004, p. 20) –, whereas the creation of institutions can be considered as change of institutions on the macro-level (ibid.). For the analysis, the actors of institutional policy can be defined as the ones interested in and/or affected by changes in institutions (Benz, 2004, p. 21). As this study focuses on the explanation of the origin of an institutional design in form of formal bodies, we can follow Raudla et al. (Raudla, Keel, & Pajussaar, 2018, p. 63) and take over the definition of institutions, which can be conceptualized as "a structural feature of the society and/or policy" (Peters, 1999, p. 18) therefore formal organizations.

Table 2.1.1 - Explanatory dimensions of institutional reforms

Explanatory dimensions	Underlying patterns	Indicators
Path dependencies	• Layering • Displacement • Drift • Conversion	• Pre-existing structures • Distribution of responsibilities • Critical Junctures • Transaction costs
Vertical power shifts	• Centralization • Decentralization	• Policy-inherent tendencies • Paradigm of the polity policy

Path dependencies

To analyze path-dependencies, not the complete government system has to be considered, instead focus on the governance mechanisms and the development of the specific institutions in the field of digital administration on different vertical levels: How are the responsibilities distributed? Who can control and intervene and how is the willingness to follow? How did the corridor for reforms evolve? To approach these questions, HI can be used to describe different forms of institutional change as gradual/incremental changes or radical changes caused by critical junctures (Streeck & Thelen, 2005). As this article focuses on the institutional change over time, path dependencies may explain the development of the incremental change. Four different forms of incremental change are commonly used (Streeck & Thelen, 2005, p. 31; Mahoney & Thelen, 2010, p. 16–18). While *displacement* describes the replacement of existing rules with new ones (Mahoney & Thelen, 2010, p. 16) – in this present context it would be organizations replacing others, suggesting a failure of the existing institutions in fulfilling their purpose. *Layering* describes the attachment of new rules to existing ones – changing the original rules structure (ibid.), due to pre-existing traditions and distribution of competencies and knowledge. Here also, the adaptation to the definition of institutions as formal bodies would imply adding institutions to the existing institutional design. When the rules – here the organizations – formally stay the same but the impact changes caused by external conditions, one speaks of *drift* (Mahoney & Thelen, 2010, p. 17). Finally, *conversion* is identical to drift (rules/organizations stay the same but the impact changes) with the difference being that the understanding and the enactment of the rules are

changing (ibid.). This last form is merely transformable to the organizational context, however considering the other examples (displacement, layering and drift), it can be seen as a part of the analytical framework to explain the institutional change in the context of the institutional policy it focuses on. Change happens, according to HI primarily at crucial points, when the conditions are right. These points are called critical junctures (Thelen, 1999), allowing incremental change, which then perpetuates.

Implementing institutional change consists of altering actor constellations which happens – according to RI – only if the actors involved recognize a benefit in transaction costs, which means the creation of the new institutional design is lower than the cost of the status quo, at least in the long run (Epstein & O'Halloran, 1999). An exception is potentially increasing political transaction costs, which can be justified to enable better decisions (Bartle & Ma, 2001). It is assumed that the actors generally expect lower transaction costs associated with the operation of the new institutional design (compared to the status quo) as a result of the planned institutional change.

(De-)Centralization

Organizational centralization was found to be positively related to ICT use in public administration (Wang & Feeney, 2016, p. 302; Henning, 2018, p. 65) and also the positive effect of centralization of decentralized and fragmented digital ecosystems, enabling the adoption of necessary (interoperability) standards are discussed in recent literature (Kassen, 2019, p. 747). Cooperation is described as an integral part of ICT, especially in multi-level public administration (Schliesky, 2008, p. 312). In contrast, federalism is decentral by definition (Galligan, 2006) – allowing solutions to develop decentrally, that are optimally adapted to the respective needs. Another reason for vertical separation is the provision of checks and balances (Jaeger, 2002, p. 359). That means, that we expect a certain clash of the paradigms of decentralization in federalism and centralization and standardization in digital transformation policies (i.e., setting standards for security and data exchange). In the direct comparison, we can see that "e-government has to react to fast developments, decision-making in federal states is slow in comparison to unitary states" (Scholta, Niemann, Halsbenning, Räckers, & Becker, 2019, p. 3273).

The antagonistic relationship of digital government (and its trend towards standardization) on the one hand and federalism and decentral organizational principles on the other hand is an already – yet not very much – addressed topic in social sciences (Gibbins, 2000, 2004; Ubaldi & Roy, 2010) yet it is expected to have a constant struggle between those two poles,

which is expressed by the tendency to centralize resources and IT-infrastructure as well as competencies in this policy field. Furthermore, inter-administrative relations (*Verwaltungsverflechtung*) block further progress, as "regulatory responsibility of higher levels are combined with simultaneous extensive decentralization of its implementation" (Bogumil & Kuhlmann, 2022, p. 4), requiring a high amount of coordination between federal levels and high transaction costs, while digital government projects require stronger standardization and centralization (ibid, p.12).

The case of Germany – case selection and methods

As we conduct a case study to discover potential causal mechanisms (Yin, 2018), we need to select a case, which allows access to a large number of empirical observations, leading to an intensive and iterative reflection on the relationship between observations and theoretical concepts (Blatter, Langer, & Wagemann, 2018, p. 174). To analyze the institutional setting of inter-governmental coordination of the digital transformation of the public administration, the case of Germany's coordination mechanisms was selected for different reasons. First, the German system is paradigmatic for the Continental European federal model (Kuhlmann & Wollmann, 2019, p. 87) with its vertical fragmentation and therefore a representative example for coordination principles in other federal states. Second, Germany is not known for their successful digitalization of public administration. When it comes to digital public services, Germany ranks 25 out of 29 in Europe (European Commission, 2019), provoking the question of why Germany as economically strong and politically stable as it is, presents such an unsatisfying outcome of its efforts to digitalize its public administration? This is another reason to take a closer look at this particular institutional setting, to identify potential barriers in the federal structure. Third, the institutional setting was exposed to several major changes in the last years, which allows the examination of specifically institutional change.

The main institution to coordinate the inter-governmental digitalization processes – the IT-planning committee (*IT-Planungsrat*; abbr.: IT-PLR) – was introduced in 2010 as the institutionalized meeting of the Chief Information Officers (CIO), who are mostly in the rank of state secretaries (Proske, Heine, & Gronau, 2012) of both the federal and state government. The political oversight lies in the responsibility of the round of Chiefs of State Chancellories (*Konferenz der Chefs der Staats- und Senatskanzleien*; CDSK) to whom the IT-PLR

must report. Besides different e-government laws at federal and state levels (Beckermann, 2018), the central regulative framework of recent developments is provided by the law for online access (*Online-Zugangs-Gesetz*; OZG), introduced in 2017, an agenda – initiated by the federal government – which should be coordinated federally to ensure the digitalization of the 575 administrative services until 2022. In January 2020, a new organization, the federal IT coordination (*Föderale IT-Koordinierungsstelle*; abbr.: FITKO), was introduced to organize and implement the multi-level changes. The FITKO is especially interesting as it represents a form of mixed multi-level administration with both the federal government and the Länder governments as involved stakeholders. An institutionalized shared multi-level administration in Germany (*Mischverwaltung*) is constitutionally only allowed in a few exceptions (Küchenhoff, 2010). This is setting the frame for the observation: We are looking at the institutional reforms taking place with the foundation of the FITKO, mainly focusing on the corresponding changes in legislation (amendments to the constitution in 2009 and 2017) and coordination (establishing the new organization).

In the context of this explorative research, interviews and the qualitative content analysis of the results are a feasible and rational instrument to get a deeper understanding of developments, actors' positions and the overall setting (Gläser & Laudel, 2010). To address the research question, the study is empirically grounded on a document analysis of relevant laws, regulations, and protocols[5] on the one hand and semi-structured interviews on the other hand. We conducted eleven interviews with the main policy actors involved in the creation of the FITKO. The interviews were conducted in 2019, in the German language. The interviews were recorded and transcribed. The questionnaires were prepared separately – based both on the function and the already existing knowledge from previous interviews (e.g. introducing questions for verification). The exact identities of the interview partners have been kept anonymous. The selected interview partners had to fulfill several criteria: They were all part of the decision-making process in creating the FITKO. They were part of either the IT-PLR (e.g., as CIO of one state, or as their deputy), or part of the round of Chiefs of State Chancellories (CDSK), controlling the IT-PLR politically. They all have held their positions long enough to ensure they have an overview of the creation process of the FITKO (2015-2019) and the different states are proportionally represented (in size and

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[5] Beside the relevant laws and regulations, all protocols, and additional documents of the IT-planning committee (IT-PLR) meetings 1-29 (2010-2019) are the basis for the document analysis. They can be found at: https://www.it-planungsrat.de/beschluesse/sitzungen (accessed on February 2nd, 2022).

geographically). Additionally, one member of the management of the establishment team of the FITKO was interviewed.

Table 2.1.2 - Completed interviews

No.	Level/Function	Date
1	IT-PLR office	25.01.2019
2	Federal government	19.06.2019
3	State government	26.06.2019
4	State government	05.07.2019
5	State government	17.07.2019
6	State government	23.07.2019
7	FITKO office	24.07.2019
8	State government	06.08.2019
9	State government	07.08.2019
10	State government	08.08.2019
11	State government	08.08.2019

How institutional change happens: Results

The developments can be structured in three different phases. First, the path, leading to the shared insight of needing a broader institutional change, second, the bargaining over the concrete form of the FITKO as a new institution and third, the final action of realizing and establishing the FITKO, including the definition of its role and the expectations of the involved actors.[6]

Phase 1: Identifying the necessity for a new institution

With an amendment to the German constitution in 2009 (Art. 91c and 91d GG) as part of the second federalism reform (*Föderalismusreform II*), the legislative basis for the cooperation

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[6] For detailed information about the prior developments from the 1970es to 2009, see Lühr (2021).

in the field of digital government was created, pathing the way to introduce the IT-PLR as a formal institution. About the latter, the federal government and all 16 state governments explicitly agreed on the so-called *IT-Staatsvertrag* (state treaty on information technology), defining the objectives of the cooperation. The IT-PLR was the explicit successor of two informal rounds which were replaced by the new institutional setting (interview 1, 2, 7; protocol 1): the e-government state secretaries council (*Arbeitskreis der Staatssekretäre für E-Government in Bund und Ländern*) and the coordinative committee for automatic data processing between federal levels (KoopA ADV), a committee, which existence reaches back to 1970. Now, a "clear cooperation, committee and responsibility structure was established" (Lühr*, 2020). The already existing office of the state secretary council at the federal ministry for the interior (*Bundesministerium des Innern*; BMI) was rededicated to the office of the IT-PLR. Moreover, the IT-PLR was built with a very lean organizational design caused by the bad experiences with KoopA ADV – actors involved reported very confusing responsibilities and activities at the KoopA ADV, which lead to this lean design (Interview 1, 4, 7). This shows why and how the IT-PLR was set up, following a clear line from the 1970es to 2010, not as disruptive but incremental change, including learnings from the past - a typical case for path dependencies, classified as displacement. A centralization and further cooperation can be identified (Schallbruch & Städler*, 2009, p. 621).

Following the trend of the abolishment of the rare phenomenon of joint tasks between federal and state governments in Germany in the 2000s, the introduction of the IT-PLR and the constitutional change can be described as a "renaissance of joint tasks" (Seckelmann*, 2009, p. 753–754). Still, Article 91c emphasizes the requirement for agreements on common standards and security requirements. No leadership or outstanding responsibility for the federal government can be recognized. While the rededicated office of the IT-PLR stayed at the BMI on the central level, the presidency of the IT-PLR was set up yearly rotating between one state government's CIO and the federal government's CIO, while the presidency of the predecessor was permanently in the hands of the federal government. Therefore, a slight shift towards decentralization in 2009 can be identified, explained by mistrust and suspicion about centralization among the state governments (Interview 2, 11).

After the initiation of the IT-PLR in 2010, there was a growing perception of a missing capacity to link the political level (IT-PLR) and the work on specific operative projects, organized decentrally in working groups of Länder deputies on the working level (Interview 3). The state secretaries at the IT-PLR did not have the capacity to decide on technical questions, the working level had the knowledge and capacity but did not have the legitimation to decide (Interview 7). As the IT-PLR started to work, the task of abstract coordination was

not met but got bogged down in technical details and the work of the IT-PLR was just a continuation of the usual business (state secretary council) on a different platform (Interview 3). A working group was established (*Kooperationsgruppe Strategie*) to solve this issue. Additionally, the department director's council (*Abteilungsleiter-Runde*) was established, gathering one level below the state secretaries in advance to the IT-PLR conference in form of a pre-conference to work on the topics and prepare a "green list" with consensual points and identify the political critical issues for the IT-PLR conference. Sticking with the existing structures and rules but changing the modus operandi indicates a case of conversion, which is described as the change of "the institution to new goals, functions, or purposes" (Mahoney & Thelen*,* 2010, p. 17) without changing existing rules. But still, the operative unit seemed to be missing (Interview 4, 6, 7) and a discontent of state representatives about the IT-PLR office at the BMI as too loyal to the federal level was issued (Interview 8). Furthermore, the rotating presidency did not pay off, the federal government was still seen as very dominant (interview 8) and the suspiciousness of the Länder towards the federal government to monopolizes power and competencies was still strong (Interview 2, 3, 5). This perspective was conflicting with the view of the federal government, considering the overarching issue of digital government as a federal topic, because it is not limited to a certain territory (Interview 2).

Phase 2: The creation process of the FITKO

This led to a long debate from 2013 to 2015 (protocol 12), about the set-up of a new organization named FITKO. But the following process was more complex than expected and took five more years until 2020. The first concept for the new organization was presented by the working group to the whole IT-PLR in 2014 (protocol 15). Several organizational forms of the FITKO were presented – either as part of an existing organization (as a new department), or as a new organization (either on the state or on the federal level) – with a recommendation not to set it up as a part of an existing organization (protocol 15). After another iteration, the discussion of the IT-PLR favored the FITKO as part of an existing organization (protocol 17). The explanation for this development was an external expert opinion, which analyzed the situation and concluded, that setting up the FITKO as a new organization would require not only more organizational effort but would also be a huge political process (agreement of a new state treaty with 17 parliamentary ratifications) – an effort, everyone wanted to avoid (Interview 7, 9, 11). The comparison of two documents,

the implementation planning of the FITKO from May 2015 and from August 2016, can elucidate another change of mood. According to the protocol of the 17th conference of the IT-PLR, they excluded the option of setting up an autonomous organization for the coordination. One alternative discussed was the establishment of an organizational entity as part of an existing organization of either the federal government or of one *Land* (i.e., as a department of an existing ministry or public authority). Another alternative was to establish a subordinate agency of a ministry. The *Länder* feared that the federal government would lack qualified labor force to implement such a coordination facility (Interview 3, 5). The goal was to put the federal government and *Länder* on an equal footing (Interview 4, 10). One year later, at the 19th conference of the IT-PLR in March 2016, they agreed on the preference to set up an independent institution of public law (Anstalt des öffentlichen Rechts; AöR) in shared ownership of the 17 stakeholders, located in Frankfurt, which is – especially given the originally discussed alternative of setting up a federal agency – a step towards decentralization. The most elaborate option was chosen because it was the only option which allowed decentralized competencies and balancing power relations at the same time (Interview 7, 11). But this step was only possible because it was embedded in a larger reform process.

As a coincidence, there were talks about the so-called *Neuordnung der Bund-Länder-Finanzen* (reorganization of the financial relations of federal and state governments) in the mid-2010s. As the organization of the digital transformation of the public administration was one topic among many more, the issue of the FITKO was included in these talks (Interview 9). The unique combination of a sense of urgency and the existing process of federal reorganization talks did open a window of opportunity and therefore characterizes a critical juncture for a larger reform. During the conflict of the new horizontal financial distribution mechanism (in between *Länder*), the federal government offered to calm the situation by giving more money to the vertical financial distribution – combined with some demands to the *Länder* to participate in common projects and delegate power to the federal government, one of them: the digital government legislation.

The central solution was two-fold: The introduction of an amendment of the fifth sentence in Article 91c GG in 2017 was enabling the so-called law for online access (*Online-Zugangs-Gesetz*; OZG). Now, the state governments are obligated by federal law (the OZG) to provide their services online - a "paradigmatic change" (Martini & Wiesner, 2019, p. 644). This institutional change was a clear step towards centralization of competencies – especially in granting exclusive legislative capacity for the federal government in this policy field – on the one hand and a concentration of decision-making on the other hand. Now, the power of the

federal government is introduced to detailed rules on electronic processing of procedures and IT security as well as communication standards (Martini & Wiesner, 2017, p. 6). At the same time, another state treaty (*Erster IT-Änderungsstaatsvertrag*) was initiated, introducing the FITKO as an institution of public law in shared ownership of the federal government and the state governments (protocol 21). The state governments did pay the price to get a decentralization of the operative organization (FITKO) by agreeing to centralize legislation (OZG). With the partial shift of competencies towards the FITKO, a new balance between centralization and decentralization seems to be reached (Interview 5, 6, 11). Others describe this procedure as something which had to take so much time to build up trust and make everyone ready to delegate competencies. Expectations and cultural differences had to be synchronized first (Interview 10). This struggle caused a deceleration time of approximately one year in the process to set up the FITKO (Interview 7, 11). One explanation of this decentralization at very high costs is the so-called unbundling trap (*Entflechtungsfalle*) (Benz, 2008) in contrast to the joint decision trap (Scharpf, 1988), as the independence of the state level from the federal level is only available at the high cost of informational asymmetry and therefore higher coordination costs (Seckelmann, 2009, p. 754). The theories on the joint decision trap explain this phenomenon further as a form of negative coordination: As all actors' interests have to be taken care of, the lowest common denominator is the solution of a decision-making process ("bargaining instead of problem-solving") in such a federal context (Kropp, 2010, p. 23). Another factor, pushing for a compromise was the bad digital government performance and the time running out for both the federal state and the *Länder* (interview 5). The result was a new form of shared multi-level administration (*Mischverwaltung*) which can be considered as a form of re-interlacing the inter-administrative relations and coordinating previously unrelated units, according to the Model of Bogumil and Kuhlmann (2022, p. 5).

Figure 2.1.3 - Institutional change explained with historical institutionalism
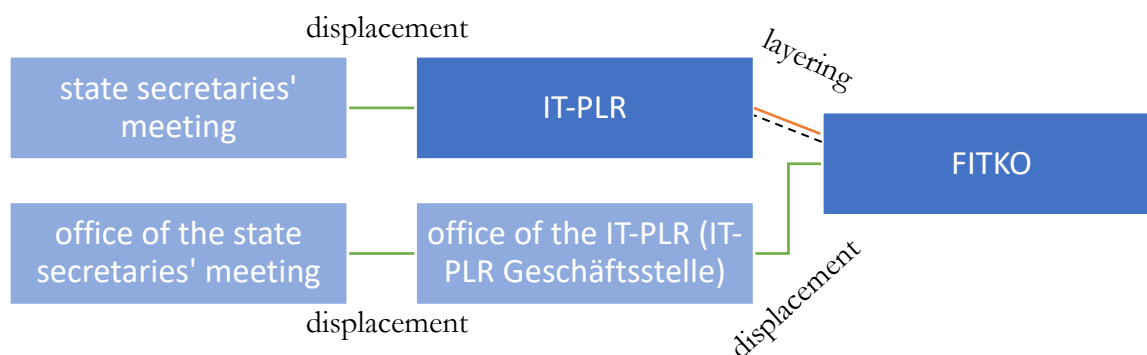
Phase 3: Agreeing on the details of the new institution

After the general idea was agreed on (protocol 25), the last years on the way to the FITKO were characterized by the struggles about the budget and a shared understanding of cooperation, concerning common standards and architecture (Interview 11). For the office of the IT-PLR, the federal government did pay a 50 percent share, in other project groups which should be moved from the federal government to the new FITKO, their share was between 17 and 45 percent. The state governments started the bargaining with the request of a 50 percent share of the federal government, the latter with the offer of 17 percent – as they had to give away the office in exchange for a more decentralized FITKO. After a two-year period of bargaining, the compromise was a 25 percent share of the federal government (Interview 7, 11). The initial plan for the FITKO included 44 full-time equivalents (FTE) and a budget of 18.8 Mio. EUR (protocol 25). In sum, 36 of the 44 FTE result from the concentration of existing decentral offices with tasks related to the coordination of digital transformation of the public administration: Beside ten FTE of the office of the IT-PLR at the BMI and twelve other FTE from the BMI (in sum 22 from the federal level), there are 14 FTE from state-level agencies (e.g., 1,5 FTE from the open data portal GovData in Hamburg). As the FITKO is described as an operative organization, complementing the IT-PLR, it is a clear case of layering, adding a new institution to an existing set without replacing something. But at the same time, the existing substructure of the IT-PLR, its office and other former agencies is merged into the FITKO – which is partly a displacement (see figure 2). Still, the FITKO is more than just a large IT-PLR office at another institutional level. So, we can identify two different forms of change in the same change process. But generally, the

developments leading to the set-up of the FITKO were described as historically grown (Interview 3, 11) and a clear path dependency can be identified.

Figure 2.1.4 - Power shifts on the vertical dimension

centralization

2017: exclusive legislative capacity for the federal government in the policy field (OZG)

Early 2010: centralizing tendencies, esp. with the IT-PLR office on federal level

2017: setting up the FITKO – not as federal agency, but as multi-stakeholder organization in Frankfurt am Main

2019: the budget for digitalization goes to the FITKO

2009: more cooperation – only as agreement with state governments; rotating IT-PLR presidency

decentralization

The FITKO is described as "the muscle" of the IT-PLR (Interview 2) or its "operative arm" (Rackwitz, Hustedt, & Hammerschmid, 2021, p. 4), as the organization which coordinates the cooperation between all federal levels not only generally but also based on specific projects as a platform for better communication and exchange of experiences. Briefly, the tasks can be described as *concentration* (of existing decentral structures), *coordination* (of multi-level and interdisciplinary projects) and *strategy building*. In the short run, the FITKO takes over the work projects of the IT-PLR and the shared responsibility for the OZG implementation (mainly the information management) in the context of implementing the OZG – initially a form of centralization –, a budget for digitalization (*Digitalisierungsbudget*) of 180 Mio. EUR, limited to the time horizon of 2020 to 2022, was created and assigned to be administrated by the FITKO. For this budget, the federal government agreed to pay a share of 35 percent after a long bargaining in which both sides demanded for a 75 percent share of the other side (Interview 6, 7, 11). This conflict was not decided by the IT-PLR but by the CDSK (Interview 6). The states expected the federal state to pay for their "desire" for

unitarity IT solutions properly (Interview 5) and the federal government expected the administration of this budget to be located on the federal level. In the end, the *Länder* agreed on the lower share of the federal government with the condition that not the BMI but the FITKO as a "neutral player" who should be responsible for the administration of the budget (Interview 8). This can be considered as the first major impact of the FITKO on the power relations between the actors in the multi-level system. And therefore, as a form of decentralization, shifting the power away from the federal level towards an inter-level organization.

Conclusion

This article contributes to the underestimated and neglected debate on the governance of digital government. We can observe a dialectic development of centralization and decentralization and a continuing trend of concentration, not only but very much because of the central policy dimension: digital transformation urges the need for concentrated action, which is a challenge for federalism as a government system. In the end, a balance of vertical power shifts can be identified (figure 2). The agreement of all participating actors (including their trust and their own interests) is key to success with shared solutions. While the institutions were "missing specific regulatory and decision-making powers" (Schliesky, 2008, p. 313) in the 2000s, both institutional reforms of 2009 and 2017 had taken these characteristics into account, as the concentration of decision-making was put into a closer and a more binding context.

An explanation was given for the institutional design of multi-level governance of digital government in the federal state exemplified by the German decentralized-federal system. The urgency and the actors' analysis of the situation play an important role if they are ready to voluntarily delegate competencies. Also, the balance between the federal levels and the impression of equal footing are quite important to carry out institutional change processes actively and to avoid blocking. Many of the developments described – especially the actions around the newly created FITKO – can be seen in a clear historical line and with certain path-dependencies. Existing inter-administrative relations led to the compromise, which is the most expensive option, taking five years longer than originally expected to create the FITKO. Accepting the high amount of interlacing from the beginning on could have helped to speed up governance processes. This can also add value to a more general level of understanding: knowing the interconnectedness between administrative levels and balancing

the interests of actors and their power relations can support the identification of critical junctures and therefore an option for change.

The latest developments show how concentration without centralization is possible. The FITKO allows the decentralization of competencies by concentrating instead of centralizing them on an intergovernmental level – an interesting example and possible way to learn from in other policy fields. Still, the FITKO has to prove its ability to act and its real power as well as its actual independence between its stakeholders. For further research, the theoretical framework could be quantitively operationalized and tested, especially after the implementation of the FITKO to measure the effectiveness of its actions to compare the new institutional design with its predecessors. Also, an examination of the surprising parallels of digitalization governance with better regulation research could be interesting. Both are characterized with no major (party-)political differences, we cannot observe any contestation, but the results of the policies are disappointing. In the long run, digital government reforms will challenge federal systems in general, because of the theoretically described and empirically substantiated contrarian paradigms of standardization and centralization on one side and decentralization on the other. The already mentioned approach of *concentration without centralization* could be key for compromises

2.2. Breaking the silos

Explaining the challenges of automated cross-organizational service delivery in complex contexts

Moritz Heuberger

Abstract

This paper examines the creation of automated cross-organizational service provision in public administration. Developing one-stop services not only within a single government unit but across different agencies and departments, even on different federal levels, is a highly complex phenomenon, especially in federal systems. The combination and automation of existing services questions pre-existing administrative practices and opens new dimensions of welfare benefits provisions. Though this paper is mainly empirical, the theoretical objective is to integrate the interdisciplinary debate on data and information sharing in the very field of Public Administration research and advancing the yet emerging debate on automated service delivery.

Conducting a single-case study, the development of cross-organizational one-stop service provision will be explained, focusing on the interaction of all involved actors from three different federal levels. Questions about challenges and barriers of cross-organizational cooperation in designing and implementing digital services can be answered by a qualitative in-depth analysis of a very recent case in Germany. The central finding is the requirement to improve the link between the legal sphere of public administration with IT-expertise and knowledge. The study illustrates the necessity of legal frameworks for data exchange on the one side and the challenge of missing digital gateways and interfaces on the other, as well as the importance of developing a common professional language between legal and tech staff in digital government projects.

Keywords: interorganizational collaboration, interagency exchange, integrated services, e-service, automated services, digital government

Introduction

Currently, the focus of digital government reforms is shifting from the mere digitization of documents and digitalization of single processes to the digital transformation of larger complexes, including cultural, organizational, and relational changes (Mergel et al., 2019). One-stop government (Kubicek and Hagen, 2001) or even no-stop government (Scholta et al., 2019) is following the idea of a seamless service delivery by government agencies for citizens or businesses without multiple registrations (once-only), contact of various agencies or the requirement of innumerable forms. One single access to receive connected services (organized around live events) at once – at least from the costumer's perspective – is the leading principle. Looking at the back office, this requires the collaboration of different agencies and the exchange of their information in the background, leading to joint-up government. While some decades ago, this was not imaginable, in the era of digital government (Dunleavy et al., 2006), services are not only available online, but can also be connected and (partly) be pulled off automatically. This approach not only allows the one-stop experience for citizens, but also encompasses the promise to save resources (i.e. time, workforce, space, etc.) for governments (Ranerup and Henriksen, 2019). Due to decoupled and individually unique processes, the organizational redesign of existing processes is required. Government agencies which were not connected before have to collaborate to introduce new processes and develop a new routine of data and information exchange. Documenting and explaining these change processes and their outcomes from a public administration perspective is not only crucial to formulate further questions for empirical research in this field, but also allows to expand and connect the existing Information Science, Public Management and Public Administration research.

This leads to the central question of this article: *How can the implementation challenges of cross-organizational one-stop service provision of public administration be explained?* This urges further questions about challenges and barriers for cross-organizational cooperation in designing and implementing certain services. To answer this question, a case study was conducted, using a qualitative analysis of explorative expert interviews in one case. The case is the German city-state (local government and federal state at the same time) Bremen which is implementing a connected service for parents in the case of a birth, called ELFE *("Einfache Leistungen für Eltern"*, meaning simplified parental support) and was introduced from 2017-2021.

The added value of this article is the introduction of an integrated theoretical framework of organizational, technical, and legal barriers to intergovernmental collaboration between

different government organizations, derived from Public Management, Public Administration, and Information Science literature. Empirical evidence from a case which includes not only collaboration of different governmental organizations but also across different government levels is challenging the existing research findings and expanding the debate.

Literature

Cross-organizational cooperation is discussed in several strands of the interdisciplinary discourse on digital government: We can identify research on (a) interagency (interorganizational/cross-boundary) information sharing (Dawes, 1996; Drake et al., 2004; Fan et al., 2014; Fedorowicz et al., 2010; Gil-Garcia et al., 2010; Graham et al., 2016; Karlsson et al., 2017; Pardo et al., 2008; Yang and Maxwell, 2011), especially with the focus on the concept of clarity of roles and responsibilities (Gil-Garcia et al., 2019; Sayogo et al., 2016), on (b) interagency data sharing (Wang, 2018; Welch et al., 2016), and finally on (c) collaborative digital government (Dawes and Pardo, 2002; Gil-Garcia et al., 2007; Juell-Skielse et al., 2017; Lips et al., 2011; Liu and Zheng, 2018; Luna-Reyes et al., 2007; Picazo-Vela et al., 2018). Though none of these strands address the phenomenon of one-stop, cross-organizational digital service provision, which can be regarded undisputedly as a blank map in literature, both in public administration and in information systems. In discussing this research gap, the following paragraphs are going to outline the phenomenon by referring to the research from the addressed three categories, being the closest to the case. While one-stop government literature often focusses on "interoperability-through-standardization" (Gouscos et al., 2007: 864), this article is focusing on the organizational challenges and questions related to classical Public Administration research therefore the debate on privacy of data will not be further addressed in detail. Within the observed project, no mention of any need to change rules appeared.

In table 1, the barriers and challenges for cross-organizational data exchange and cooperation are presented as they were identified in the literature. Aggregating the impact factors leading to restraints in introducing cross-organizational service provision in digital government, we can build three separate clusters, legal barriers, organizational barriers and technical barriers, similar to existing frameworks in comparable research contexts (Wirtz et al., 2017: 110; Zhang et al., 2014: 633).

The literature on information sharing across government agencies focusses on the communicative interaction and not the transaction (i.e., common service delivery) across organizations. Minding this deviation, we can identify trust (between the actors) as a crucial factor, influencing the readiness to share information (Gil-Garcia et al., 2010; Lips et al., 2011). When it comes to integrated processes, the spotlight lies less on individual willingness in particular situations but more about structural barriers. Nonetheless, the debate on information sharing can be included as far as it is a pre-requisite for collaborative service delivery (Gil-Garcia et al., 2009).

Looking for explanations from the perspective of electronic data interexchange (between private firms) by extracting factors that are not specific to private sector (e.g., sales, supplier relations etc.), we can identify two different variables.

Firstly, continuity, meaning prior existing alliances between organizations as supportive factors for data sharing (Hart and Saunders, 1997: 28), operationalized as the *level of use* as the diversity and depth of data sharing (number of different transaction types and the quality of the interaction and therefore trust across the collaborating organizations (ibid.).

Secondly, lack of compatibility: Attempting to share data across agency boundaries leads to the challenge of unifying their individual data storage processes and incompatible software, which causes a lack of technical interoperability and fragmented availability of information (Lips et al., 2011: 263), both trust and existing connections can be seen as important factors to bridge this gap. This should not be mixed up with the debate on inter-agency collaboration or government collaboratives – projects where agencies partnered up or started common projects (Entwistle and Martin, 2005; Kelman et al., 2013; Ranade and Hudson, 2003).

In the literature on inter-agency collaboration, lack of goal consensus could be observed as a negative, high managerial interaction across organizations as a positive effect on interagency collaboration in public sector organizations (Schalk, 2013) – in other cases this challenge is called the "diverse missions of government" (Dawes and Pardo, 2002: 7). In a broad empirical study on inter-organizational collaboration, Picazo-Vela and others (2018) found evidence for the importance of internal processes, meaning well-defined processes, well-defined objects and goals, well-defined performance indicators and the existence of external standards to guide development (Picazo-Vela et al., 2018: 699). All in all, they identified the importance of internal efficiency and effectiveness to allow an increase of productivity, reduction of costs and better service quality connected to collaborative projects (ibid.). What sounds like a trivial finding, is important to mention, because it shows the

precondition of functioning processes within a single organization for functioning processes in-between organizations.

Among other components, Hudson et al. discuss the importance of assessment of collaborative capacity (i.e. assessment of roles, boundaries, purposes and notions of progress) and building up trust as primary collaborative drivers (Hudson et al., 1999: 256).

Moreover, the identification of technical barriers – like incompatibility of software or hardware used in different organizations as well as data inconsistency, leading conflicts of data definitions – are results of existing research (Dawes, 1996).

Two intertwined constraints can be taken from Dawes and Pardo, who examined the "nature and pace of technological change" on the one hand and the "limitations on public sector ability to adapt to change" on the other hand (Dawes and Pardo, 2002: 8–9). One example is the adequate intergovernmental or interagency communication to not receive fragmented and duplicate development efforts (ibid.).

Table 2.2.1 - Barriers for cross-organizational data exchange and cooperation

Impact	Literature
Legal factors	
Missing enabling regulations and legislation	(Gil-Garcia and Sayogo, 2016; Lips et al., 2011)
Missing legal interoperability framework	(Wimmer et al., 2018)
Perceived legal barriers	(Wirtz et al., 2016)
Organizational factors	
Missing trust between organization	(Gil-Garcia et al., 2009, 2010; Hudson et al., 1999; Lips et al., 2011; Luna-Reyes et al., 2007)
Missing pre-existing connections between organizations	(Hart and Saunders, 1997; Lips et al., 2011)
Organizational self-interest	(Van De Ven et al., 1976)
Creation of dependencies and loss of autonomy	(Salancik and Pfeffer, 1978)
Lack of goal consensus	(Dawes and Pardo, 2002; Schalk, 2013)
Collaborative efforts of federalism	(Fleischer and Carstens, 2021; Kuhlmann and Heuberger, 2021; Rackwitz et al., 2021)
Low managerial interaction across organizations	(Schalk, 2013)
Missing collaborative capacity	(Hudson et al., 1999; Weiss, 1987)
No expected benefits	(Fan et al., 2014)
Technical factors	
No compatibility of software and/or hardware	(Dawes, 1996; Fan et al., 2014; Gil-Garcia and Sayogo, 2016)
Missing consistency of data	(Dawes, 1996)

Research Design and Methods

The research follows the example of an embedded, single-case study (Lipset, 1956; Yin, 2018: 52), in which a specific case within a greater context is examined in detail. As outlined before, the general case is the introduction of a digital and combined parental service delivery in the context of the online access act, whereas the specific case is the introduction of this reform in the city-state of Bremen, Germany. This specific case is in an emerging stage and can therefore also be classified as revelatory case, i.e. concerning a situation which was

"previously inaccessible" – or non-existing and thereby "worth conducting because the descriptive information will be revelatory" (Yin, 2018: 50).

Concerning the methodological side of the case study, we are using qualitative content analysis (Mayring, 2015), which is used both for documents and interviews to ensure triangulation (Denzin, 2012; Flick, 2018), allowing multiple perspectives on the phenomenon for the means of validity and reliability.

The content analysis itself is based on two levels and can be found in the annex:

1. Valence and intensity analysis, i.e., how strongly something is emphasized either in documents or by interviewees
2. Contingency analysis, i.e., identifying evidence for the appearance of certain associations between theoretical expectations and observed phenomena

A semi-structured interview protocol was utilized on the base of recording and creating structured protocols of the interviews. After conducting the interviews, two types of coding were applied, factual coding and thematic coding. This was done to ensure the systematic extraction of information and therefore to allow a high degree of replicability of the study (Flick, 2018):

- Factual coding is defined as holding interview data against other sources to ensure the accuracy of key facts and the change history. If a certain fact was mentioned by one of the interviewees and their story was deviant compared to earlier interviews, we checked the facts again in further interviews and by expanding the range of document research until at least two independent sources had a consistency about an information.
- Thematic coding leads to clustering observations, opinions, and perceptions from the interview data according to the framework as well as coding of already existing or proposed reforms from the interviews. In this case, color-coding of the protocols was applied.

The case of ELFE

The reasons for the case selection are two-fold: The already mentioned construction of a city-state as both local and state government allows to observe intergovernmental cooperation between government levels and the scale is smaller and thus a thorough observation more feasible. This is relevant because births are registered on local level at the

registry office and there is no exchange of this information neither in between local governments nor between local and state or even federal level. Birth registries stay on local level and only the birth town of a person is responsible for their data sheet – until their death. If they need a copy of their birth certificate (e.g., for wedding/childbirth), they have to request it from the registry office of the local government of their birth town. This procedure is vastly different to unitary countries and therefore especially interesting to gain more knowledge of the specific barriers in federal countries.

The second argument for the case-selection is the character of ELFE, which is known as a flagship project in German digital government debates in the context of OZG implementation. Examining barriers at one of the showcase projects allows the assumption that these barriers might intensify in other projects even more.

The acronym ELFE stands for *Einfache Leistungen für Eltern*, meaning 'easy [accessible] services for parents', which is a project both for digitizing and, at the same time, combining different administrative services for parents in the case of the birth of a child. As it's not only the digitization or the combination of the digital processes (digitalization) but more the redrafting of different processes, encompassing organizational and relational changes, this is a clear case for the categorization of digital transformation (Mergel et al., 2019: 12).

The combined processes are the birth registration and birth certification ('Geburtsmeldung' and 'Geburtsurkunde'), the application for child support ('Elterngeldantrag') and the application for parental allowance ('Elterngeld'), which are four different processes with four different stops for the parents so far. The idea behind ELFE is a single application via a smartphone application and the identification of both parents with their electronic ID-card (eID).

Table 2.2.2 - Overview of the interviews

Role	Abbreviation
Manager family benefits office (*Familienkasse*)	ELFE01
Project Coordinator	ELFE02
Manager registry office (*Standesamt*)	ELFE03
Administrator registry office	ELFE04
Manager parental benefits office (*Elterngeldstelle*)	ELFE05
Staff council representative	ELFE06
Staff council representative at the parental benefits office	ELFE07
Staff council representative at the registry office	ELFE08

The project is coordinated by the state government of Bremen in Germany and scaled up with support of the federal ministry of the interior for the whole republic in line of the online access act ("OZG – Onlinezugangsgesetz"). It allows different government agencies on different federal levels to exchange necessary data to allow a complete only one-stop delivery of the above-mentioned services. This leads to the selection of candidates for expert-interviews, following the definition of experts as persons with in-depth knowledge about social contexts, allowing a reconstruction of social situations and processes (Gläser and Laudel, 2010). Therefore, involved public officials from all mentioned authorities were included in the sample, both from staff side and from management side to gather a more complete picture of both the barriers with the introduction on management and the introduction on street-level.

Findings

First, we will explain, based on the data from both the interviews and the document analysis, which change of service provision is occurring and how the organizational and procedural structures have changed. In a second step, we will identify the process of change itself, highlighting the involved actors and identifying drivers and barriers of the change process, which can thereafter be analyzed with the given theoretical framework, which was deducted from the literature.

Due to the described combination of applications, multiple actors – as shown in figure 1 – are involved, both in the service provision (including data exchange, verification of information, service activation and finally transactions) and in the implementation process of the reform.

Figure 2.2.5 - Information exchange before the reform
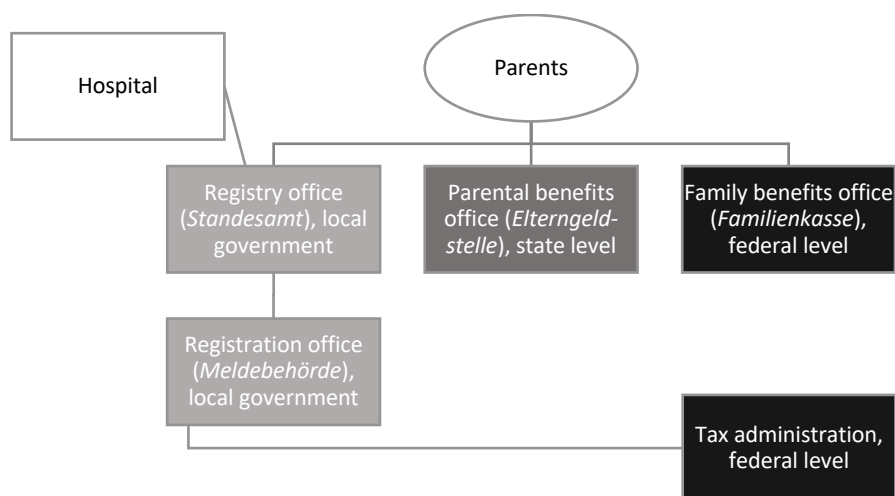
In the original process – without the reform –, the parents must contact three different offices in a row. First, they need the birth certificate from the registry office (*Standesamt*; RO), which is both necessary for the application for parental benefits and child benefit. For the latter, the tax number of the child is necessary, which is created by the tax administration (which is getting informed by the registration office, which receives the birth information from the RO) and is sent to the parents by post. Additionally, the parents need to submit their own birth certificates (or their marriage certificate, if available) and copies of their valid passports to the RO and their proof of income to the child benefit office. Additionally, the hospital has to submit information concerning the birth to the RO. All in all, the parents have to submit three different applications in person or via mail in a certain order and with additional documents attached.

Figure 2.2.6 - Information exchange after the reform, new actors in red
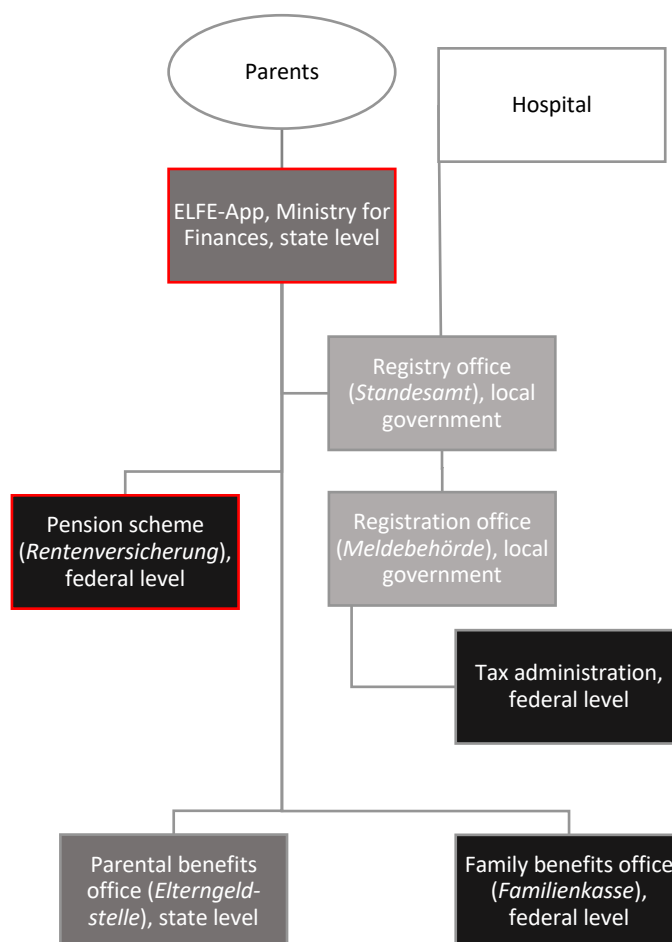
Introducing the ELFE-application and the organizational, technical, and legal framework in the background, the parents must submit their data once-only, starting with an authentication through their passports (eID) via their smartphone (*AusweisApp2* for Android and iOS). The registration requires the permit of both parents to allow the different agencies to exchange all necessary data in the background. Their permit to use the authentication at the beginning of the process each time as replacement for signatures on the different forms. In the ideal case (figure 2), the parents submit all their information to the application, which distributes the application-forms to the different agencies. The RO creates the birth certificate and submits this information not only to the registration office (*Meldebehörde*), but also to the family benefits office (*Familienkasse*; FBO) and to the parental benefits office (*Elterngeldstelle*; PBO). The latter still needs to receive proof of income from the parents but collects it automatically via the pension insurance from the parents' employers (this is one of the

beforementioned cases that requires the parents' acceptance of data exchange between organizations). While the tax administration is still sending a letter to the parents with the tax number of the child, the parents do not have to forward it to the child benefit office anymore, because this exchange is also taking place in the background. The only crucial point, that still needs to be added, is the marriage certificate (respectively both birth certificates) of the parents. If the parents have registered their marriage at the very same RO after 2009, their certificate is already available as digital version and therefore can be integrated in the process. That is why the current state of ELFE is limited to this case: childbirth from couples, living in Bremen, both with German citizenship, married after 2009 in Bremen. Certificates from before are not digitized yet and a (digital) transfer of certificates across the (over 4.000) ROs in Germany is not possible yet. In this case, the parents must apply for a transcript of their birth certificates at the RO of their birth (and pay approximately 30-50€ each), receive the paper transcript via mail and must send it via mail (or in personal contact) to the RO of the child. A data exchange between ROs (on local level) neither exists legally nor technically.

The application for the birth certificate at the RO is the first step of the project (within the described boundaries), launched as a pilot in October 2020. While the information from the hospital is still arriving via mail due to a missing interface, the information from the parents is arriving online to be processed by the software of the RO. But the transfer within the very same software from the inbox to the field that creates a new birth certificate is not yet operating. Simple copy and paste is not possible, because the copy-function is disabled, due to data protection regulations. Thus, the received information must be printed out and typed manually back to the software. Even if this would work, it would still be printed out, because the file management of the office is still in paper form.

After the launch of the digital application for birth certificates in 2020, the application for parental benefits (*Elterngeld*) is going to be added to the pilot in a second step. Although it has been completed form a technical perspective, the retrieval of income data from the pension insurance (*Rentenkasse*) on federal level is not integrated yet but is scheduled before the implementation.

Receiving paper-based applications, usually only half of the applications are complete. Thus, parents must be contacted to provide any missing information, so that it can be added to complement the application subsequently. This cumbersome, time-consuming data completion can be improved by utilizing the online application for parental benefits, currently being tested in a different project. It incorporates a validation of the provided data: Incomplete or implausible applications cannot be submitted. Thus, a substantial amount of

work for the employees at the PBO can be saved and the application process is significantly faster. This new procedure imports the parents' application data of the PBO as a first step, subsequently an officer runs a quick check of the data, followed by an automatic generation of the allowance letter, which is printed and sent out to the parents as a last step.

Beside the data from the application, several other documents are needed for the decision of parental benefits allowance. First, the birth certificate, which must be submitted by the parents (who receive it from the RO). Within ELFE, the birth certificate is replaced by a confirmation of the birth by the RO, automatically sent to the PBO online over an interface, including the check of the registered home address of the parents with the submitted data by them.

One part of parental benefits (*Mutterschaftsgeld*) must be covered by the health insurance of the mother. Until now, the parents must submit a certificate of insurance on paper to the PBO. In order to ensure a fully digital process for the parents, despite the fact that the implementation of a secure digital upload could not be completed yet, the PBO checks in with the insurance to be provided by the necessary data. This leads to significant increase of work at the PBO to reduce the parents' effort.

Because the parental benefit payment depends on the parents' salaries, the PBO requires recent salary statements to calculate the amount. Instead of requesting the hard copy, in ELFE the PBO receives permission of the parents to contact the pension insurance (on federal level), which can access recent salary statements from the parents' employers and submits them to the PBO. This lack of interface is – as mentioned before – the current limitation to implement the parental benefits application to the ELFE pilot.

Beside the birth certificate and parental benefits, the application for child support completes the combined application for parents within ELFE. While the birth certificate is a local government's and parental benefit is a state government's service, and Bremen as a city state includes both levels at once, child support is a federal service, provided by the FBO.

The application for child support (*Kindergeld*) consists of two components: The parents must proof their identity, which is included with their eID-authentication, and they must complete an entitlement determination (*Berechtigtenbestimmung*), accepting the payment of the child support to the selected other parent. Both the tax number of the parents and the child are needed and automatically synchronized with the tax authorities. If the entitlement determination would be replaced with a standardized solution (e.g., setting a defined default

recipient, that can be adjusted by the parents, if desired), the whole process could be automated, and the parents would only need to provide their bank account information to the application and receive child support automatically. But the status quo is far from this: the digitally submitted information from Bremen cannot be processed digitally at the (federal) FBO, due to the lack of an interface. Respondents reported that the reason is legal uncertainty and disproportionate costs (for just one piloting case), which for the time being leads to a simulated digital process. The implementation of child support to the ELFE-process is technically almost fully prepared but not integrated yet, because the approval of the trial operation by the federal ministries (especially the Ministry for Finances) is still missing.

Correspondence from parents to the three agencies mentioned above is concentrated unilaterally to one online application by the parents. The back channel (agencies to parents) remained unchanged and continues to be organized via hard copies (sending out the official notifications and decisions), because the project's aim was primarily to relieve parents and not the government and because legal and technical restraints connected with the introduction of a digital back channel would impede the already sufficiently difficult implementation.

Describing the management of the change process, the project coordination within the state's Ministry of Finances is the central actor, along with the co-coordinator at the state's Ministry for Social Welfare. Initially, there were workshops with all stakeholders, steered by the ministry of finances project coordination team. All mentioned agencies were involved and the government's IT-supplier DATAPORT joined as well (which conducted interviews with citizens to ensure the user-friendliness of the planned application). At these workshops, the representatives (leadership level) discussed how the process should and could be designed. The head of the federal FBO aimed to combine applications with a cooperation-partner – with the goal to de-bureaucratize the process, not to digitalize it in the first way. He discovered the initiative in Bremen and contacted them in an early phase. Thus, the local representative of the FBO joined to the initial workshops.

Initially, the workshops were held to reflect on the authorities' own processes. The goal was not to digitalize analogue processes 1:1, but to question the existing processes. These reconsiderations were time consuming and required the ability for critical self-reflection and taking the customer's expectations into account. In the beginning, the communication across authorities was a learning process, how to address issues and to gain the ability to ask about incomprehension (e.g., statements from lawyers or IT specialists).

ELFE is not described as one project, but as many projects that are processed in an agile manner, since imponderables and corresponding adjustments were addressed again and again during the process. On a technical level, there is a close exchange between Dataport, the IT-supplier of Bremen, and the pension scheme. There is also a close exchange with the federal FBO and the Federal Ministry of Family Affairs, to align on necessary legal adjustments on the federal level to allow cross-organizational cooperation. The exchange with various federal ministries was extended during the actual legislative process. A federal law was passed in late 2020 by the Bundestag, the German federal parliament (law on the digitalization of administrative procedures in the granting of family benefits).[7]

In the case of exchange with the pension insurance, the development could be co-financed by the state (although it is a federal authority) because it serves the purpose of the parental benefit (service delivery on state level). Though this required legal adjustments (SGB4 §198a), we can observe a case of successful cost-sharing across federal levels.

The (non-existing) data exchange between agencies and across federal levels was a central point of critique. The already existing, limited, data exchange of the federal FBO with the state agencies is regulated by an administrative cooperation agreement (*Verwaltungskooperationsabkommen*).

Between the state level authorities, a weekly exchange of the project coordinators is furthermore extended by bilateral informal exchange. Three times a year, a jour-fixe on digital administration with the project coordination and the staff representative council created the feeling of being involved by the associated actors. A monthly IT-council (meeting of all leading IT-officers of the different ministries on state level in Bremen) discussed current (cross-organizational) projects, joined by staff council representatives. Three times a year, a so-called transformation council was introduced: A meeting of all heads of central departments of the different ministries on state level in Bremen, to discuss current (cross-organizational) projects.

On a management level, only marginal changes were made. The creation of a 50% post (0.5 FTE) for a project-coordinator on-site, funded centrally by the state government, was created at the PBO. This followed the policy of employing relieving forces (*Entlasterkräfte*) on-site, to allow employees to reduce their everyday tasks, already practiced in Bremen. Hiring new

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[7] https://dserver.bundestag.de/btd/19/219/1921987.pdf (accessed on March 28th, 2022).

employees not for the transformation, but for existing jobs, allowed experienced employees to handle the transformation part-time. This can be considered as an answer to the often-mentioned complaint of the digital transformation effort as a supplementary task, overloading employees, who are already running on full capacity (Baldwin et al., 2012).

Looking at the legal hurdles (annex), the lack of numerous legal adjustments seems to limit the successful implementation. Paper requirements (1) are only one inheritance from the analogue past, another is the requirement of one process to double check an application by two officials (2) – a rule, which was useful in times when humans checked the form to avoid manual mistakes. But two different officials, checking an application which was already checked for completeness and plausibility by the software, is a very generous use of human resources. Also, on the legal side, missing requirements of digitizing existing data on paper (3) and missing regulations to exchange data between authorities and federal levels – apart from the above-mentioned exceptions – can be addressed as further barriers for the cross-organizational service delivery.

Switching to the analysis of mentioned organizational barriers, only one factor is directly linked to the project: Some interviewees were questioning the feasibility of the project. They criticized that scaling the project to more than a mere pilot, would not be possible (5). Other limitations were rooted in federalism: It is not permissible for states to receive and forward applications to the appropriate federal agency, which are outside of state jurisdiction, but federal jurisdiction – which child support is (6). But also lack of trust between authorities was mentioned: An information sheet of the authentication process (reading the eID) is attached to the applications sent to the different authorities. Which is – according to the FSO – unnecessary. The information that the identity was verified and confirmed, would be enough for all cooperating authorities, but not for the RO. They insist to include this information sheet, as they are concerned otherwise the documents would not be legally secure in court. This illustrates missing trust (7). To avoid mistrust, it was focused on communication, alignment of all parties and taking all perspectives and stakeholders' point of view into account to create a common understanding. Especially the exchange between legal advisors and IT-experts and their different understandings (data protection and legality vs. pragmatism) were a source of conflict (8). The project could have been completed a year earlier without this effort, but the added value of reflecting all stakeholder's perspectives should not be underestimated, because it was possible to involve everyone, which reduced employees' resistance and fostered the acceptance of additional effort.

On the side of technical barriers, two well-known and often-discussed problems (Brugger, 2018; Nationaler Normenkontrollrat, 2019: 12; Wegrich, 2021) were addressed: There is neither a central service account for citizens (and companies) to log-in and save data (10), nor a unique identifier such as an ID-number for every citizen to identify them across agencies accurately (11). An analogue finding to the missing legal data exchange allowances are the missing digital gateways and interfaces (12). Here, the exchange would be authorized, but there is no technical solution yet. Very similar is the lack of data exchange standards to allow the exchange between authorities and their different software (13). The dilemma: Developing technical solutions for the pilot project is economically unjustifiable – with no successful pilot, the scalability is on the brink.

Conclusion and Discussion

To reach back to the goal of this contribution, explaining the implementation challenges of cross-organizational one-stop service provision in public administration is manifold, but the empirical work showed clearly certain patterns and factors which impede a faster, easier, and more successful implementation of those kinds of governmental services. We must take into account the special preconditions of German federalism, though some results are limited to be generalized across government typologies. Also, as this is a qualitative study, we can only give first implications, which factors may play an important role. The empirical examination should follow in further quantitative research. Nonetheless, we identified a series of legal limitations, confirming and expanding the findings, presented earlier (Gil-Garcia and Sayogo, 2016; Lips et al., 2011; Wimmer et al., 2018; Wirtz et al., 2016). Missing enabling legal frameworks for data exchange and limiting regulations as relicts from the analogue time, limit the technical and managerial possibilities to implement new forms of cooperation and collaborative service provision with other authorities. A special role plays the German federalism, which aggravates the situation as laws must be changed on different federal levels for the same purpose – a finding which should be compared in further research with other federal systems. This increases the involved actors and hence decreases the probability of feasible solutions in manageable time. Also, the missing trust – partly because of different understandings and different professional "languages" – is something, where we can confirm the discussed literature. This can be described as missing collaborative capacity (Hudson et al., 1999; Weiss, 1987), but rooting in missing pre-existing connections between the involved authorities (Hart and Saunders, 1997; Lips et al., 2011). Finally, a row of technical barriers

could be identified. Missing compatibility (Dawes, 1996; Fan et al., 2014; Gil-Garcia and Sayogo, 2016) in form of missing digital gateways and interfaces as well as missing standards for data exchange are central for the existing limitations with close intertwining with the legal barriers. For some forms of cooperation, the legal regulations are missing, others are "allowed", but technically not possible (yet). Streamlining the possibilities (technically and legally) and connecting those two worlds – also on a personal level between legal advisors and IT-specialists, finding a common understanding – may be one of the most important findings and fostering those connections may be one way to further develop cross-organizational service delivery in public administration. With this learning in mind, digital government projects focusing on inter-organizational collaboration should invest time and money early on into workshops to bring professionals from the involved organizations together – across different disciplines – to create a common understanding and to develop a shared language.

2.3.   The digital transformation going local

Implementation, impacts, and constraints from a German perspective

Sabine Kuhlmann and Moritz Heuberger

Abstract

Digital government constitutes the most important trend of post-NPM reforms at the local level. Based on the results of a research project on local one-stop shops, this article analyzes the current state of the digitalization in German local authorities, the hurdles of implementation as well as the impact on staff members and citizens, providing explanations and revealing general interrelations between institutional changes, impacts, and context factors of the digital transformation.

The digital transformation of public administration is expected to fundamentally reshape the institutional setting of local service delivery, administration, and governance in Europe. Against this background, it is a cause for concern and criticism that the actual state of implementation, the impacts, and the hurdles faced at the local level of government have only scarcely been studied in public administration. The results of this study reveal several unintended and negative impacts of digital government reforms on public employees and citizens. This article provides policymakers and managers with guiding principles for the implementation of digital change in organizations.

Introduction

The effectiveness and quality of public service provision depend largely on the capacity of local authorities to adopt administrative structures and processes to fast changing environments and increasing expectations of local communities. Local governments all over Europe have sought to face these challenges by intensifying their reform activities, especially since this level of government has been massively affected by various waves of crises, such as the global financial crisis, austerity policies, refugee crisis and the most recent corona crisis. The reforms involve a variety of trajectories ranging from New Public Management (NPM) modernization to re-organization of service delivery between the local public, private and non-profit sectors, functional re-scaling, territorial consolidation, and inter-local cooperation (Bouckaert and Kuhlmann, 2016). However, over the years, many local governments have significantly shifted away from NPM-type reforms and moved to 'something different' which some commentators have labelled 'post-NPM' (see Halligan, 2010; Kuhlmann and Bogumil, 2019). The digital transformation constitutes the most important trend of post-NPM reforms (Dunleavy et al., 2006). It can be expected to fundamentally reshape the institutional setting of local service delivery, administration, and governance in Europe. Although e-government and e-administration have been progressively advancing since the 1990s, the digitalization of local service delivery has reached a new magnitude and quality as a major reform movement since the 2000s, in many countries. Well beyond the mere conversion of analogue data into digital formats, new models of organization (Heintze and Bretschneider, 2000; Vonk et al., 2007), process reengineering (Eppel and Lips, 2016; Wimmer and Tambouris, 2002), and the digital upskilling of staff members (Hansen and Nørup, 2017; Tummers and Rocco, 2015) are meant to bring about a far-reaching transformation in the interactions between citizens and local authorities as well as within the local administrations (Barbosa et al., 2013; Berger et al., 2016; Heuermann, 2018).

Against this background, it is cause for concern and criticism that the actual state of implementation, the impacts, and hurdles of the digital service provision at the local level of government have not been hitherto in the centre of interest in public administration research with some rare exceptions (Budding et al., 2018; Jacobsen, 2018; Li and Feeney, 2014; Moon, 2002; Nasi et al., 2011; Norris and Reddick, 2013). The studies available so far predominantly focus on information provision and use of social media (Agostino et al., 2017; Brainard and Edlins, 2015; Martín et al., 2015) or on local government websites (Feeney and Brown, 2017), whereas local service provision, administrative procedures and the impacts on employees have been rather neglected, while recent comparative studies on local public sector reforms (see Kuhlmann and Bouckaert, 2016; Schwab et al., 2017) are missing to address the digital

transformation properly. Looking at pertinent indices on digital service provision (Boudreau and Bernier, 2017; Eppel and Lips, 2016; Janssen et al., 2018; Weerakkody et al., 2016) as well as investigations reported by the OECD (OECD, 2014, 2016) and World Bank (World Bank Group, 2019: 33–37), it can be stated, that they are dealing almost exclusively with central government and national administrative levels. A pressing need remains to assess how far the digital transformation has changed local service delivery, how it has affected staff members and citizens, and why it has been more rapidly advancing in some institutional contexts than in others.

This article contributes to filling these gaps in local public sector research by analyzing the current state of the digitalization at the local level of government in Germany, the hurdles of implementation as well as its impact on staff members and citizens.

Against this background, this article explores the current state and impact of digitalization in German local one-stop shops, concentrating on staff members and citizens. It provides relevant explanations of the digital progress in Germany by scrutinizing pertinent hurdles and drivers and by revealing the interrelations between institutional changes, impacts, and context factors of the digital transformation. These patterns and relations between key variables of the transformational process (institutional changes, impacts on staff and citizens, context factors) are generally relevant to local governments facing the challenges of digital reforms and thus seeking to optimize various components and measures of the implementation process. Focusing on digitalization reforms in local one-stop shops, the following questions will be addressed:

- Which institutional changes have resulted from the implementation of new digital tools and which level of digital maturity has been achieved?

- How has the digitalization affected staff members and citizens so far, also looking at age stratification?

- What are major explanatory factors for the achieved results?

The study argues that digitalization has been making progress but with little significant results in work relief, efficiency gains or simplification of processes. Instead, a rather increasing workload and the intensification of work for employees can be observed. According to the citizens, the employees, and the managers alike, the online service offer of local governments still presents many gaps and weaknesses, impairing its usability. The study concludes that the digitalization of public administration in Germany has not met the citizens' expectations yet.

Some areas even showed changes for the worse. These results can be explained in light of contextual factors, such as legal, technical and financial constraints as well as governance problems in the federal system.

State of Research and Analytical Framework

The "German Case" from an International Perspective

Comparative data revealed that the state of digital governance in the public sector and the pace of digital transformation are fairly uneven across countries. Whereas some countries are quite advanced, others have shown less progress or even reluctance to the digitalization reform movement (Ma and Zheng, 2019: 201; Melitski and Calista, 2016). Comparing the status quo of digital public services in Europe, Germany ranks only 21st out of 28 countries (European Commission, 2019a). Missing, unsuitable and/or unknown electronic services have resulted in comparatively low user rates in Germany: The use of e-government offers is not progressing significantly, 48% of citizens used e-services in the last 12 months vs. 45% in 2012 (Initiative D21, 2019: 10). In Germany, the state of digitalization in the public sector is well behind the far-reaching hopes associated with this modernization theme (Fromm et al., 2015).

In 2019, 19% of all local government services were available online, which is an increase of only three per cent compared to 2017 (Opiela et al., 2019: 27). Especially the interoperability between local governments is regarded insufficient which also has to do with the high degree of (organizational) local autonomy in the highly decentralized federal system of Germany (Beck et al., 2017: 9) and thus relates to organizational challenges rather than technological issues (Lenk, 2018: 220).

Digitalization as an Institutional Policy

From a public policy perspective, the digitalization of administrative processes and public service delivery can be conceived as an institutional policy or "polity policy" (Wollmann, 2004: 3) directed at remoulding the procedures and organizational structures of public institutions. This conceptualization of the digital transformation as an institutional policy takes the critique into account put forward towards previous e-government studies which were predominantly concentrated on the technological perspective. In this technological approach, the importance of institutional and political aspects as salient factors for explaining implementation processes and success rates were considered. (Savoldelli et al., 2014: 68). To

assess the impacts and effects of this type of public policy – in contrast to ("normal") sectoral policies – a more complex analytical framework must be applied (Kuhlmann and Wayenberg, 2016: 239; Kuhlmann and Wollmann, 2011). As with any type of impact assessment, and against the backdrop of the conceptual and empirical hurdles, it is necessary to specify suitable assessment criteria and indicators when exploring the impacts of institutional policies. In our analysis, we apply a three steps-model of impact assessment drawing on Kuhlmann and Wayenberg (2016: 239; Kuhlmann and Wollmann, 2011; see also Pollitt and Bouckaert, 2017; Reiter et al., 2010). In the first step, we examine the institutional changes which have resulted from the implementation of digital tools and assess the level of digital maturity with regard to the information, communication, and transaction functions combining the front office (e-government) and the back office (e-administration) perspectives. The objective of the second step is to find out how these institutional and procedural changes affected the staff situation and the administrative procedures in local one-stop shops in terms of processing times and working conditions. Finally, we assess citizens' reactions to the local digitalization reforms, focusing on the use or non-use of new electronic service offers and possible gaps between citizens' expectations and the reality of digital service provision. This step is meant to reveal the impact of the reforms outside the administrative organization on the part of citizens (see figure 1).

Figure 2.3.1 - Assessing impacts of digitalization in the local public sector
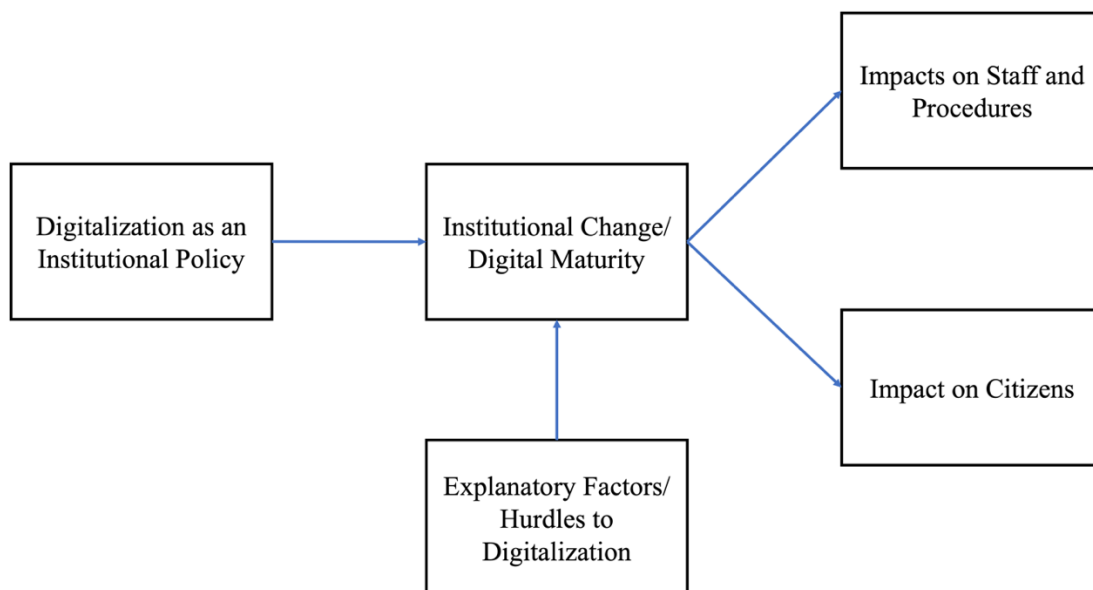
In the *first step* of our assessment, we analyze the institutional changes within local one-stop shops driven by digitalization so far. The transformational power of digital innovations within organizations can reach different levels regarding the complexity and depth of value added of new digital tools, also called levels of digital maturity (Coursey and Norris, 2008: 524; Fountain, 2001; Layne and Lee, 2001; Wescott, 2001). We assume that the degree of digital transformation (digital maturity) is lowest if local one-stop shops make only use of electronic formats to provide information for the clients, e.g. on websites, social media or apps for smartphones (information function). It is higher if the one-stop shops reach out to their clients, for instance by answering inquiries or by holding preliminary discussions on administrative acts via e-mail, which is the (two-way) communication function. Finally, in the case of an electronic transaction function which enables clients to finalize administrative practices, ideally without media discontinuities, the digital maturity can be considered most complex and advanced (Budding et al., 2018; Layne and Lee, 2001; Moon, 2002). However, the impacts on citizens and staff (see further below) and the combination of both have been largely understudied in e-government research regarding the local public sector although empirical findings suggest that the success of the digital transformation is positively related to citizen satisfaction (Ma and Zheng, 2019).

Regarding the *second step* of impact assessment, we concentrate on the staff situation, particularly working conditions, job pressures and reliefs, and changes in the administrative procedures, specifically processing times. Our assessment will be based on the staff's attitudes towards digitalization and their perceptions of possible reliefs or pressures resulting from digitalization. From previous studies we know that the introduction of new technologies results in rather ambiguous impacts on employees. On the one hand, it often leads to problems of acceptance and satisfaction or even technophobia on the part of employees. Sources of these problems are varied and reach from dissatisfaction with the functioning of new technical tools to lack of resources and organizational problems related to the implementation of new technologies (Dukic et al., 2017: 535). Furthermore, it was found that resistance to change and critical attitudes towards the digital transformation can also be caused by employees' fear or experience of higher work load, losing control of professional autonomy, worsening job conditions, and increasing uncertainty or even being replaced by computers (Baldwin et al., 2012; Meijer, 2015). Therefore, the digital transformation might be seen as threatening and the perceived usefulness of digital tools as low (Dukic et al., 2017), which then results in non-acceptance of and resistance to change (Coursey and Norris, 2008; Savoldelli et al., 2014) On the other hand, empirical findings suggest that public employees also appreciate the advantages of digital communication with

citizens, specifically the speed and ease of use of digital tools (Berger et al., 2016). Taking these mixed findings into account, our study will shed light on the actual impacts of digital changes on the local employees' day-to-day work, their working conditions and possible reliefs or new burdens.

The citizens' reactions, specifically the use and non-use of new digital service offers will be in the centre of the *third step* of impact assessment. To identify possible explanations for our findings, we compare the citizens' expectations regarding digital service provision with their attitude towards the actual service offers. Assuming that good functionality improves the usage of e-services (Zheng, 2017) we examine the citizens' assessments of e-service functionality and usability. Previous research has revealed a conspicuous reluctance of citizens to visit government websites and use e-services, specifically if these are more complex and advanced (e.g. involving transactions; see Gauld et al., 2010a: 184). However, if citizens are encouraged to use e-services (i.e. the up-sides of e-services were communicated) they are also more inclined to appreciate the resulting benefits, such as time-saving and ease of use (Faulkner et al., 2019). Furthermore, existing studies suggest that citizens' satisfaction with e-services is positively associated with their trust in government (Welch et al., 2005: 387). While there is a huge amount of literature about factors, influencing the intention to use a service by the citizens (see Rana et al., 2012), we focus on two main factors outlined in the technology acceptance model (TAM): the perceived usefulness on the one hand and the perceived usability on the other (Davis, 1989; Rufín et al., 2012). We analyze whether digital services can be easily used without barriers (usability) and to what extent citizens consider digital services as something with a value added (i.e., saving time or money). Hence, it will be explored which services citizens request, what their motivation is to use (more) digital services or rather to refuse usage, and how their expectations compare to reality. These findings will then be related to step one and two of the models in order to provide explanations for citizens' attitudes, taking age stratification into account (Helbig et al., 2009).

Finally, we will refer to contextual factors of the digital transformation, which help to address the "why" question of this study and to reveal causes for the (limited) degree of digital maturity as well as for the (critical) assessments by employees and citizens. In pertinent studies, different factors have been identified which constrain the progress and success of digitalization projects in the public sector (Meijer, 2015; Savoldelli et al., 2014; Scholl and Klischewski, 2007), ranging from budgetary barriers, such as austerity measures and cutback

policies, over privacy provisions, hard- and software problems and administrative structures to lack of skills, digital divides, and resistance to change.

Methods and Data Base

To answer the research questions outlined further above, this study refers to a database which combines qualitative and quantitative survey methods to examine the three major variables (institutional changes, impacts, explanatory factors) and their interactions. Besides in-depth case studies with experts' interviews in three selected cities (Bochum, Mannheim, Karlsruhe), three surveys were conducted in 2018 (for details see table 2.3.1):

1. a survey across all German municipalities with more than 15,000 inhabitants (721 cities overall), labelled as "city survey", which was addressed to mayors and staff representatives

2. a citizen survey in the three case study cities (Bochum, Mannheim, Karlsruhe)

3. a staff survey in two of the three case study cities (Mannheim had to be excluded here due to concerns expressed by the staff council).

The respondents of the city survey were staff council representatives (N=746; response rate: 35.3%) and mayors (N=721; response rate: 30.7%). Table 1 sums up the underlying data from the quantitative surveys.

Table 2.3.1 - Data basis of the surveys

	Target group	Sample	Respondents
City survey (all German cities >15, 000 inhab.)	mayors	N = 721	n = 221; 30,7%
	staff councils	N = 746	n = 263; 35,3%
Citizen survey (in the three case study cities)	Karlsruhe	Random sample: 6,000	n = 1171; 19,5%
	Bochum	Random sample: 2,000	n = 418; 21%
	Mannheim	Survey at the local one-stop shop	n = 201
Staff survey (in two of the three case study cities)	staff in local one stop-shop, Bochum	N = 75	n = 40; 53,3%
	staff in local one stop-shop, Karlsruhe	N = 135	n = 70; 51,9%

The case study cities (Bochum, Mannheim, Karlsruhe) were selected because they are among the cities in Germany with an advanced level of digitalization. Furthermore, as shown in the literature, the size of a municipality matters – rather than other institutional factors – when it comes to determinants for successful adoption (Manoharan, 2013: 169), though all cities belong to the same size category (large district-free cities) in order to control organizational constraints. In Bochum and Karlsruhe, the research team polled a random sample of respectively 2,000 and 6,000 citizens over 18, who had availed themselves of the services of local one-stop shops in the last three years, with a response rate of 20%. In Mannheim, instead, 200 citizens were polled right after having been at the local one-stop shop. The use of various surveys and case studies allows accounting for multiple perspectives (Enticott, 2004). Through the different views represented we could get a realistic picture of the digitalization of local one-stop shops and validate our results.

Assessing Impacts of Digitalization in Local Governments

State of Implementation and Institutional Changes: Step 1

As our survey findings show, local governments almost nationwide fulfil the information function, namely informing on the services provided by the local one-stop shops. However,

the interaction and the partly digital implementation of administrative services (through emails, forms, etc.) is quite rare and the complete online processing of services is barely possible. For all the services listed, the information is rather comprehensive, and it can be found mainly on city websites. Yet, the values of the communication function, and thus interactions with the local one-stop shop via emails and front-ends, are considerably lower than those for the information function. Not even one single service reaches up to 50%. The ability to fully finalize administrative services online is overall extremely weak and complete online processing of services can be carried out in no more than 13% of the municipalities (and only regarding criminal records). Hence, the degree of implementation and the level of digital maturity must be assessed as rather low overall. The current state of digital "immaturity" can therefore be regarded as a partial implementation failure.

Table 2.3.2 - Digital maturity in German local one-stop shops

Service	Information available online	Partially processed online (forms, emails)	Fully processed online	N
Passports	75%	25%	5%	210
Certificates (birth / marriage)	71%	25%	9%	119
Criminal record	71%	27%	13%	188
Registration of residency	61%	36%	7%	197
Authentication of certificates	89%	10%	3%	149
Dog tax registration	71%	33%	6%	122
Residents parking perming	76%	18%	9%	103
Parking permit for people with disabilities	80%	22%	1%	106
Housing benefits	76%	22%	4%	78
Vehicle registration (only county-free cities)	75%	24%	7%	68

City survey (mayors). Question: "Which services of your local one-stop shop are available online and to what extent?"; 10 most important services offered

Although most of the services listed above could in theory be fully processed online or even automated (e.g., vehicle registration), there are many hurdles, including legal constraints (such as signing passports in person) and lacking harmonization that prevent the possibility of full electronic processing or automation.

Impacts on staff: Step 2

While from the citizen's point of view it appears necessary to expand the online offer of digital administration services (see further below), the administrative staff takes a rather critical stance. Advancing digitalization entails also dysfunctional, unintended impacts for the staff, such as excessive demand or congestion, leading to scepticism and mistrust towards digital innovations. Especially for the communication function (email traffic), our findings underline that digitalization might bring along unintended extra strain in local one-stop shops, overshadowing the positive impacts. The results of our staff survey show that most of the employees do not perceive digitalization as a relief, rather they link it to increased workloads. 82% of the staff polled laments emails have to be dealt with in the back office, adding up to the workload. If we distinguish our results into positive (functional) and negative (dysfunctional) impacts, we notice that the respondents generally agree (fully or rather) more widely on the negative impacts of digitalization than on the positive.

Table 2.3.3 - Positive and negative impacts of digitalization on staff

Perceived impacts of digitalization by staff	Fully & quite relevant	Rather not & not at all relevant	n
Rather positive impacts			
Increased transparency in processing status	67.2%	32.8%	64
Usual opening hours and workdays less relevant	65.7%	34.4%	67
Overall time reduction in procedures	62.3%	37.7%	69
Simplified administrative procedures	61.2%	38.8%	67
Reduced workload	38.8%	61.2%	67
Rather negative impacts			
Constant availability	86.9%	13%	69
Technical problems	84%	15.9%	69
Problems with software and service providers	77.6%	22.4%	67
Additional processing time per case	76.4%	23.5%	68
Feeling of being controlled	72.3%	27.7%	65
Shifting working time from front to back office	67.7%	32.4%	68

Staff survey

All groups surveyed largely agree that thanks to these new systems, the flow of clients could be managed better, the work atmosphere improved, and the level of satisfaction increased, waiting times could be reduced, waiting areas are less overcrowded and complaints are no longer as frequent. Positive effects notwithstanding, the staff provided several highly critical

evaluations of the impacts of digitalization. In addition, no significant increase in the amount of transactions finalized per time unit could be recorded. Another negative effect is the feeling of being controlled by digital features (72% agreed in the polls). There is, for instance, a fear of future job loss, if performance controls are introduced and bad performance figures are penalized. Most of the staff recognizes that an increase in workload (61%) and in processing time per case (76%) derives from the digitalization. A possible reason for this observation could be that technical issues (a negative effect of digitalization for 84% of the respondents) and software complexity (lamented by 78% of the employees) worsens pre-existing problems.

Relating the findings of step 2 back to our results from step 1 of the impact assessment we can conclude that the low degree of digital maturity in local governments, which is basically limited to the information and communication functions largely leaving aside the transaction function, provides one of the major reasons for the sobering assessments of surveyed staff members

Impacts on citizens: Step 3

For assessing the impacts of digitalization on citizens we draw on two criteria:

(1) the acceptance and use of local online offers by citizens, including reasons for possible non-use

(2) the fit (or misfit) between citizens' expectations and reality regarding local e-service delivery.

Despite having the chance, only 10% of citizens opt for electronic ways to contact with the local one-stop shops, which points to a rather low level of acceptance and use. However, regarding the information function (local websites) our findings reveal that citizens are quite positive in their assessments. About half (55%) of the citizens polled believes the clarity of the local one-stop shops' websites is good or rather good, whereas only one third (33%) considers it to be rather poor or poor. Overall, only 8% declared to have had trouble retrieving the relevant information to turn to the competent local authority.

When asking citizens about the reasons for their willingness or unwillingness to make use of the online offer at present, we discovered that a significant part of them (39%) prefer personal contact in general, while the majority (61%) is open for online options. Almost half of the citizens polled (49%) affirms non-usage is because they would rather not have to renounce to a personal consultation (vs. 51% who would still renounce), whereas 25%

lament online practice applications are too complex (vs. 75% do not share this view; see figure 2.3.2).

Figure 2.3.2 - Reasons for citizens not to use local online services
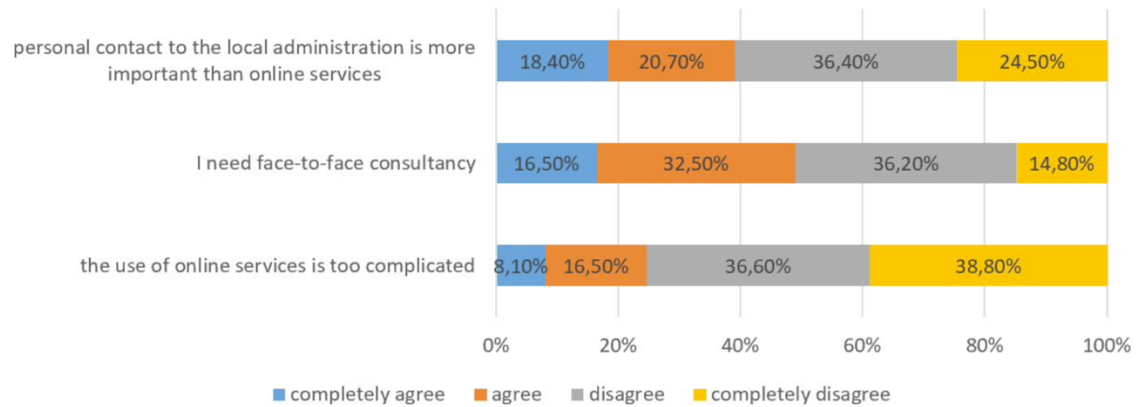
Citizen survey

Having a closer look to the reasons for use and non-use of local e-services, a considerable generational divide becomes apparent. Only 8% of the respondents aged between 18 and 29 considers personal contact to the local administration to be more important than online practices. In contrast, almost twice as many from the 30 to 49 age group and a good 34% of the over 50 agrees with this statement. A similar situation can be observed for the statement "I need personal consulting" (see figure 2.3.3).

Figure 2.3.3 - Reasons against expanding the online offer across age groups

Citizen survey; values for the category "very important"

Linking up our findings of step 3 to steps 1 and 2 of our analysis, it turns out, again, that the low maturity level and the bad implementation of local e-services (step 1) are major reasons for the limited use by citizens and their low satisfaction with these services, which corresponds to the employees' perceptions revealed in step 2 of our impact assessment. As administrative services can only rarely be finalized online and the maximum share of German municipalities offering an online service fully digitally amounts to only 13% (regarding criminal records) it comes as no surprise that no more than 10% of the citizens use digital contacts to their local one-stop shop, whereas 90% remain with analogue contact formats. The same applies to the fairly high percentage of citizens who still need personal consultation and who assess online applications as too complex.

Explanatory factors and hurdles to the digital transformation in German local government

In this section we want to provide some explanations for the limited success of the digital transformation in Germany so far, specifically focussing on the local level of government. For this purpose we draw on the literature on barriers of e-government (Hansen et al., 2018; Scholl and Klischewski, 2007), and relate the major arguments to our empirical case.

Governance constraints: From previous research we know that the design and governance structure of institutional reforms plays an important role for their implementation and impact, which of course also applies to digitalization projects in local governments. Therefore, the patterns of governance in the multilevel system as well as within local governments must be considered when explaining digitalization processes and outcomes. In Germany, policymaking regarding digitalization is institutionally embedded in a highly decentralized federal structure and characterized by a multitude of sub-national units involved in decision-making who possess a large degree of autonomy (municipalities, counties) or even enjoy the constitutional quality of states (Länder) with their own legislatures, administrations, and judiciaries. The assets and functionalities of such a decentralized system notwithstanding, for the digital transformation several problems and hurdles arise because there is not one single instance of unilateral decision-making and enforcement, but numerous entities with their own rights and powers. In order to ensure a coherent implementation of digital services across the country, an equal treatment of citizens and a homogeneous processing of cases, these actors in the multilevel system need to agree upon joint measures, uniform standards, and shared solutions. A certain degree of standardization, IT-consolidation, and harmonization across administrative levels and units is indispensable (Nograšek and Vintar, 2014). Otherwise, the necessary change management

is not possible, and the issue is not so much about local governments' failure but about their disability to undertake the institutional changes needed to digitally transform their administrations. However, this poses enormous challenges within the German multi-layered system. Many veto players are at place and digital reforms therefore require a high degree of vertical and horizontal coordination, collaboration, negotiation, and transactions-costs (Bekkers and Homburg, 2007: 20; Ben and Schuppan, 2014). There is also a problem with fragmented and non-transparent responsibilities regarding digitalization policies on the federal level and partly also at the Länder level (Nationaler Normenkontrollrat, 2018). Finally, oftentimes the political support and leadership regarding digitalization projects at the local level is rather limited (Coursey and Norris, 2008: 530; Meijer, 2015: 199; Savoldelli et al., 2014: 69; Torres et al., 2005: 541) As our case studies have revealed, on the political side of the local councils, there is hardly any pressure to act and a general lack of strategic orientation or targets regarding the digital transformation. The sporadic e-government initiatives that come about are implemented rather incrementally and powerful advocacy coalitions to push for digitalization are largely lacking. Instead, rather sporadic political preferences and contingent individual decisions determine whether budgets for digitalization are made available or not.

Legal constraints: Another fundamental issue lies within administrative procedural law and legal provisions which frequently require the personal contact and/or the written form. This implies that at some point in the administrative operation a certain form of authentication is required, which usually results in media discontinuities. For example, to apply for a passport it is necessary to come in person to sign. In the event of a residence registration, which entails a change of address, the new address must be entered in the passport directly on site. Legal obstacles also include data protection regulations, non-disclosure of personal information and obligations of document storage. Furthermore, there are major legal obstacles regarding data exchange between various administrative units which appears necessary however to realize the so called "once only" principle according to which the citizen is requested to enter his/her date only once and the data exchange with other relevant units is than processed by the respective authorities, e.g. using inter-connected digital registries, ideally without intervention of the citizen. This principle has not been implementable so far because the German privacy legislation provides that data must only be used for the purposes it has originally been collected.

Technological and usability constraints: Further barriers to the digital progress in municipalities can be found in the technological conditions, specifically regarding the interface to citizens and the inclusion of some basic online components in digital applications, such as the e-payment function, which is a fundamental prerequisite for user-friendliness. So far, most administrative operations at the local level are charged without an immediate payment. Thus, the integration of these components into digital applications and the processing without media discontinuities often does not work (see further above). In general, e-services are most frequently not developed from a citizen or demand-oriented perspective, but from a supply- and administration-oriented view, which is also mirrored in a rather legalistic and bureaucratic language used for online communication with citizens. Citizen-centricity in online service provision has been barely perceivable on the part of public authorities so far. The complete failure of the electronic ID card in Germany is another typical example in this regard. This card is poorly accepted and rarely applied by the citizens because it implies significant usability problems.

Resource-related constraints: Finally, the resource base of local governments, particularly the financing of digital projects, the availability of IT experts and the digital skills of staff members, are important explanatory factors of digital progress and reform impacts (Coursey and Norris, 2008: 528; Meijer, 2015: 199; Moon, 2002: 292–230; Norris and Moon, 2005: 71; Savoldelli et al., 2014: 66–67). Furthermore, the municipal sector cannot compete with the salaries paid for IT professionals in the private sector (Coursey and Norris, 2008: 529). Consequently, there is a serious shortage of professionally qualified staff and know-how for more sophisticated digitalization projects as well as to promote those e-services that have already been implemented, for example through marketing concepts. Additional bottlenecks are lacking leadership and weak management skills regarding reform implementation, change management, and process re-engineering.

Conclusion

In summary, our study shows that the digital transformation has faced major hurdles and drawbacks in Germany. Overall, there is a conspicuous gap in the implementation of new technologies resulting in a current state of digital immaturity at the local level of government (step 1 of our impact assessment). This in turn has created several unintended and negative impacts for public employees (step 2) and citizens (step 3). Although local one-stop shops are key for the digitalization of the administration at the local level, the digital transformation has not made much progress and is basically limited to the information function of e-

government, while online communication with local governments is much less advanced and the transaction function, including the finalization of procedures without media discontinuities, is virtually non-existent. One consequence of the digital immaturity is that the work relief that should have come along with digitalization did not actually happen from the employees' point of view. On the contrary, they often report more stress, higher workloads, additional time to process each case, more demanding procedures, and higher burdens due to permanent availability to managers via email as impacts of digitalization approaches.

On the part of the citizens, we have observed that the current digital immaturity at the local level of government has entailed a wide-spread non-use of e-services on the part of citizens. This cannot be explained by a general rejection of digital services by citizens, quite on the contrary. Although there is a notable generational divide regarding digital government, which partially explains the different frequencies of IT-interaction with local government according to age groups, the vast majority of citizens is in general interested in strengthening their use of e-services and would prefer much more digital interaction with public authorities were they just as easy to handle as with commercial providers. However, as the digital offers by local governments are limited and the maturity of e-services hitherto available is low, citizens rather rely on classic access channels like personal contact and analogue techniques. The limited positive impact of the digitalization on citizens is also mirrored by the considerable misfit between citizens' expectations, demands and requests on the one hand and the reality of e-service delivery on the other.

Our analysis provides several explanatory factors for the current state of implementation and the impacts measurable so far which could inspire further (comparative) research and political decision-making regarding digital policies. For one, the decentralized features and fragmented structure of the German administrative system constitute particular challenges for digital policies, as these require a certain degree of standardization, IT consolidation, and harmonization across levels and jurisdictions to guarantee for equal treatment of citizens, uniform quality standards, and efficient use of resources. Otherwise, several individual solutions might bring along the risk for fragmentation, confusion, and incompatibility. In such case, the digital offer would look more like a patchwork, than like user-friendly services (Nationaler Normenkontrollrat, 2017: 35). Future comparative research should therefore systematically study the governance contexts in various countries to find out whether and under which circumstances governance contexts hamper or promote the advancement of

the digital transformation. One hypothesis drawn from the German case is that policymakers in fragmented (federal or highly decentralized) multi-level systems are facing greater challenges when it comes to coordinating, managing, and implementing digitalization-related policies when compared with unitary and more centralized systems. At the same time, one could expect that it might be easier in decentralized contexts to integrate the expertise and experiences of sub-national actors, municipalities and local practitioners into the conception and implementation of new digital formats and thus to account for their functionality and user-friendliness. In Germany, this could be of particular relevance since the majority of the 575 services listed in the national plan (around 76%) are under the responsibility of the *Länder* and municipalities (i.e. birth certificates, registration of vehicles, registration and certificates of residence, registry, ID cards, residence permits and cards, building and preliminary building permits, parental benefits, driving licences, etc.). However, this possible hypothesis of more functionality and usability of digital services as a result of decentralized structures and citizen proximity has not materialized hitherto in Germany, which also provides avenues for further research.

Finally, legal and resource-related constraints have been revealed as explanations for the slow advancement of the digital transformation and the usability problems arising in the government-to-citizen interaction. Specifically, when it comes to automatable services which do not require discretion or human judgement legal impediments are critical for the success of the digital transformation. Against this background, future research should investigate the nature of these impediments more systematically in order for researchers to be able to advise decision-makers on key changes to move forward. From a cross-countries comparative perspective, too, research is requested to scrutinize the legal, procedural and resource-related conditions in various county contexts and regions to identify causal relations between legal and resource-related constraints on the one hand and the impacts of digitalization on the other. In Germany, for instance, a review of 3,000 written form requirements under federal law (so-called "regulatory screening") was conducted to identify unnecessary written-form requirements in the law. Only 21% of the screened legislation, basically including simple cases with limited relevance for citizens and companies, were approved for dismantling (Nationaler Normenkontrollrat, 2017: 35) and thus this attempt was of rather limited success. From this the hypothesis could be drawn that in legalist countries with a pronounced rule-of law culture and a classic-bureaucratic administrative tradition (see Kuhlmann and Wollmann, 2019: 71–74) the legal framework constitutes a heavier constraint for the digital progress than in countries with a public interest culture and a less legalistic tradition.

Therefore, future comparative research should explore to what extent various legal constraints, such as written form requirements, physical presence obligations, data sharing restrictions etc., inhibit the digital progress in different countries. Furthermore, research should explore the effectiveness of the various regulatory approaches used for creating user-friendly e-services, in particular e.g., involving transactions; see in regard to the "once-only principle". More systematic research and learning from other countries is needed to gain these comparative insights and to reveal how different countries have reconciled the peculiarities of their legal system and administrative tradition with the new challenges of the digital transformation.

2.4.   Challenges of digital service provision for local governments

Comparing citizens' expectations and their Experiences of digital service provision with the focus on German One Stop-Shops

Moritz Heuberger and Christian Schwab

Abstract

This Chapter analyses citizens' perspectives on digitally provided services at local government level. We examine citizens' expectations, their actual usage, and their satisfaction with existing e-services, using the German local government as an example. The analysis includes the role of demographic factors in e-service use, referring to the debate on digital divide. Based on a secondary analysis of several data samples, an empirically grounded analysis allows not only a descriptive but also an analytical approach to explain the citizens' perspective on the digital transformation of public administration.

Keywords: digital government; e-government; e-services; local government; citizen-centered; digital divide

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[8] Due to the regulations of the publisher, this chapter is written in British English – in contrast to American English in the rest of the work.

Introduction

This article analyses citizens' perspectives on digitally provided services at a local government level. We will examine citizens' expectations, their actual usage, and their satisfaction with existing 'e-services', using the German local government as an example. Based on a secondary analysis of several large data samples, an empirically grounded analysis allows not only a descriptive but also an analytical approach to explain the status quo of the digital transformation.[9]

Focusing on the citizens' perspective regarding local government service provision, the case will include both a local government perspective, as well as a primary focus on citizen interaction. To allow for the observation of the progress in making, there will be careful consideration in terms of the ongoing development of digital transformation of service provision, and not an emphasis on an already completed transformation. In Germany, regular citizen-state interaction is widely organised on a local level[10] (Hunnius et al., 2015), organizing a large share of service provision in one-stop shops for citizens (*Bürgerämter*). This has been implemented in 58 per cent of all local governments as well as in more than 80 per cent of cities with over 50 000 residents (Kuhlmann and Wollmann, 2019: 269). At the same time, Germany ranks 24th (out of 28) in the European ranking on digital public services (European Commission, 2019b). This clearly shows that there is still a long way to go and an urgent challenge for the future of local governments. Another reason for the selection of explicitly German local governments is their high degree of autonomy (Ladner et al., 2019), which allows to further isolate local administration with a comparably low degree of influence from the state or federal government in regards to their digital transformation processes. There is a lot of literature discussion on the role of local one-stop shops (Askim et al., 2011; Fobe, 1999; Grunow, 1988), but almost none on the digital transformation of local one-stop shops. A step in closing this gap is provided in this chapter.

This article aims to conceptualise the citizens' view on the digital provision of very common services of citizen-state-interactions – which are happening, at least in Germany, mostly on a local level. This concept will be deducted from the citizens' perspective on the digital

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[9] This article is related to a study conducted in cooperation with the German Hans-Böckler foundation, examining the status-quo in German local one-stop shops (Bogumil et al., 2019).

[10] Especially the most-used services concerning childcare, birth, migration, marriage, social welfare are organised on local level (Hunnius et al., 2015). Larger services not provided by the local governments are tax administration and distribution of unemployment assistance.

service delivery of public administration, in particular analysing the discrepancy between their expectation and the perceived reality. That means that the concept consists of three different dimensions and their interrelation: the citizens' expectation of, their actual use of, and their satisfaction with digital government service provision on a local level.

Our research is based on secondary data analysis, combining data from multiple, independent sources[11], all conducted in the years 2018 and 2019. The central goal of this Chapter is to explore how the **citizens' perspective** (as users of administrative services) on the **digital service provision of local public administration** can be examined. Taking this into account, the Chapter elaborates on the following *dimensions:*

(1) What is the **expectation** of citizens, concerning the digitalisation of services provided by their local government?

(2) What? is the quantified **use** of these digital public services?

(3) How **satisfied** are citizens with the digital public services provided by their local government?

In public administration research, the question of how (digital) technology changes and shapes communication and organisations is a wide field, reaching back to the late 1980's (Bretschneider, 1990), this will be included with the discussion on the differentiation of development stages, starting with the early 'e-government' research (Layne and Lee, 2001). Following this conceptional discussion, governments can have different evolutionary stages of e-government development: catalogue (online information), transaction (online services), vertical integration (local systems linked with higher-level systems) and horizontal integration (systems linked with the ones of other domains) (Layne and Lee, 2001). In the following, we will focus on the second stage, looking at the service provision at the transactional stage. When it comes to the differentiation between the depth of digital change (digitisation/digitalisation/digital transformation) (Mergel et al., 2019), we are discussing the

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[11] Two samples are taken from datasets of online surveys conducted by the private opinion research institute Civey, kindly provided for this article ("Civey 1602", n= 5,041; "Civey 1334", n = 5,043). The used samples contain both a standard error of 2.5%. The third dataset is taken from the citizen-survey (via mail) in the city of Karlsruhe in 2018 with a random sample of 6,000 citizens and a response rate of 20 per cent (Schwab et al., 2019: 17–20) with n = 1,054-1,900. The fourth dataset was provided by the German Federal Statistical Office (Statistisches Bundesamt) about the satisfaction of citizens with the use of public service delivery ("Lebenslagenbefragung 2018"; n = 8,761), which is a CATI-survey from the year 2018.

field of digitalization. Although there are numerous research branches and disciplines involved, the citizen contact on local level is yet rather unexplored (Barbosa et al., 2013; James, 2011; Norris and Moon, 2005). Getting to know this specific aspect is of huge importance, because the 'public value' generated by digital government is mainly understood as the "ability […] to provide improved efficiency in government, improved services to citizens and most importantly the consideration of, social values such as inclusion, democracy, transparency, and participation" (Twizeyimana and Andersson, 2019: 168). Therefore, we'll discuss the citizens as users of digital government services in the chapter, though there are also other alternative perspectives available (e.g. as policymakers) and public employees, who can be seen as costumers of e-services as well. This means, that it is required to narrow the view, enabling us to focus on a certain aspect: *the citizens' user-experience with digital administrative services.*

Early – and some recent – local e-Government research into digital service provision is limited in information provision such as government website usability (Feeney and Brown, 2017; Weare et al., 1999; Wong and Welch, 2004). Moreover, the actual online provision of local government services, referred to as "e-service", is mostly discussed in the context of performance and effectiveness of the service provision (Asgarkhani, 2005; James, 2011) or in the context of implementation of new services (Bolívar, 2017; Budding et al., 2018; Jacobsen, 2018; Li and Feeney, 2014; Nasi et al., 2011). In this chapter, the following discussion will be limited to the existing research about local e-service provision from the citizens' perspective, divided into the three dimensions.

Expectation

The quality of e-services can be described as how the service expectation from the clients (citizens) corresponds with the actually provided services (Sá et al., 2016: 150) – which is why mapping the expectation is the first concern in this Chapter. As recent studies show, there is a gap between citizens' expectations and the administrations' reality, concerning digital service provision. To know the expectations of the citizens we first need to define expectation as the operationalised demand of e-services, as well as, the importance/urgency they attribute to the provision of e-services. The first dataset gives an impression of the demand: It shows a tendency for the high demand of more online administration services (74,9% yes or definitely yes).

Figure 2.4.1 - High demand for more online access to local administration services
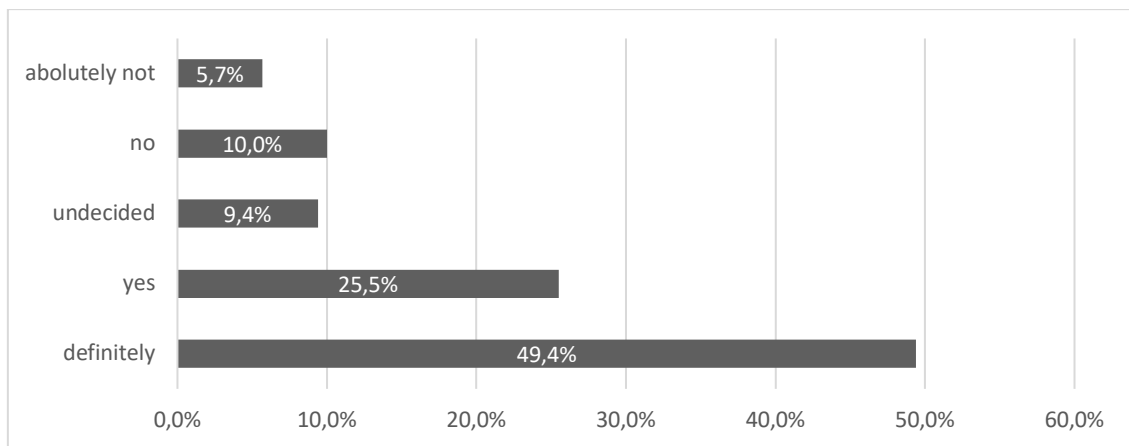
Dataset 1: n = 5,041; Civey 1602; question: "Would you like to access more local administration services online?"; standard error = 2,5%

Analysing this data sample by age (figure 2), a clear correlation between the higher expectations of the younger generations can be clearly seen. Also, with a higher education, citizens tend to have more expectations (77,2% compared to 63,4% with a lower education).

Figure 2.4.2 - Digital divide in demand for online access
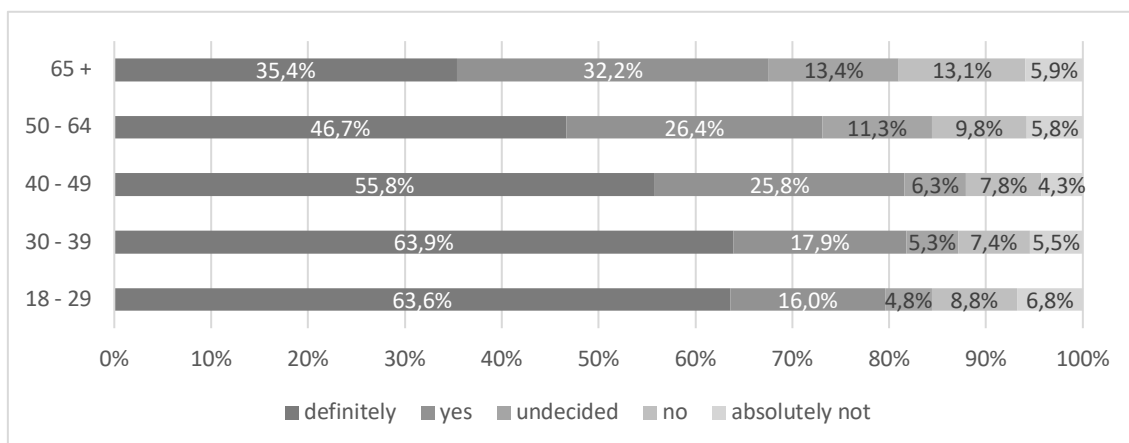
Dataset 1: n = 5,041; Civey 1602; question: "Would you like to access more local administration services online?"; sorted by age; standard error = 2,5%

Proceeding with the data of the citizen-survey, conducted at the city of Karlsruhe, the general public were directly asked about their expectations towards online access to their local one-stop shop – combined with a follow up question relating to their actual experience using these services. The answers show a small gap (of 10 percentage points) concerning online information provision (see figure 3) but a rather huge gap between expectation and reality when it comes to actual online service provision. Four out of five citizens expect to access the one-stop shop's services online – whereas only 55 percent were actually able to access their requested services online. The reason for this gap may lie in the small number of available online services provided by the one-stop shops.

Figure 2.4.3 - Importance of local e-service provision from the citizens' perspective
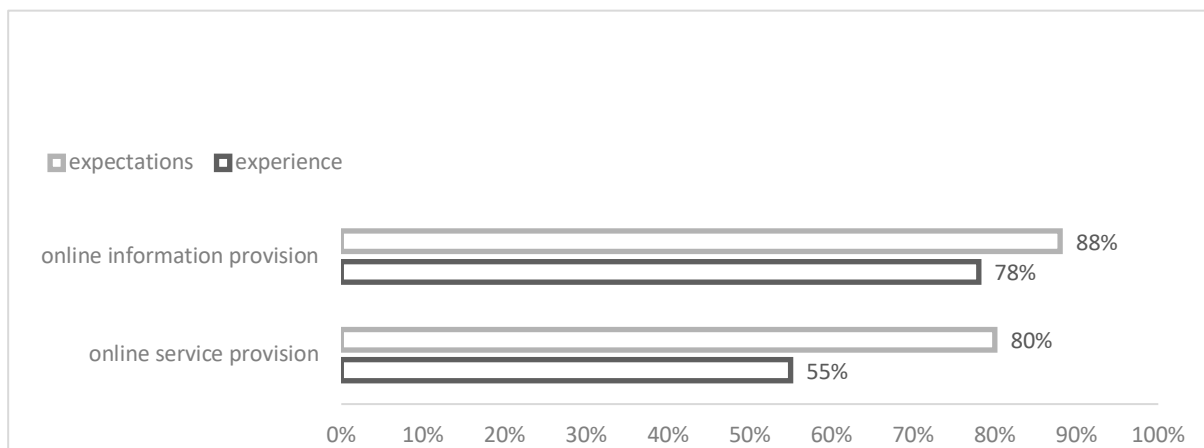
Dataset 3: n = 1,054 – 1,900, citizen-survey in Karlsruhe; see (Schwab et al., 2019: 41).

Another interesting insight comes from the same dataset: Sorting through the answers of Karlsruhe citizens by age and considering the reasons these citizens felt they needed more digital services by their municipality, (figure 4) we can observe a highlight for all age-groups, but very strongly in the <30-group, stating the need to save time as a strong cause. Cost savings are slightly more important for the 30-49 year olds, while almost the same amount of citizens – in the younger generation even more – the consideration of the cost of administration is a big factor when accessing these e-services.

Figure 2.4.4 - Reasons for more e-services, compared by age
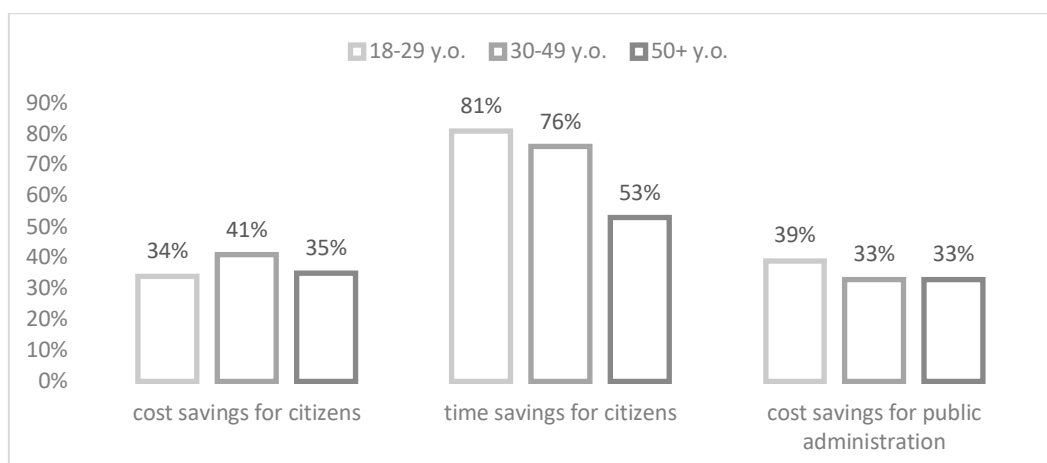
Dataset 3: n = 1,102 – 1,115; share of the answer "very important" (Lickert-scale with five options) displayed only; citizen-survey in Karlsruhe; see (Schwab et al., 2019: 44).

Use

A barrier in digital service use by citizens was found in the missing opportunity of consultation, whereas the missing personal contact is not identified as a problem (Barth and Veit, 2011: 9). They also found out in qualitative interviews, that saving time is a main driver of citizens to use digital administration services (Barth and Veit, 2011: 8). There is very little research in Germany on this particular topic, however a study into the use of digital services of the federal employment agency (Heidemann et al., 2013) revealed that the agency as an organisation and it's employees both underestimate the willingness among citizens to use e-services due to a huge gap between the self-assessment of citizens (73% willing to use digital services) and the assessment of the employees (27% believed citizens would be willing to use digital services) (Heidemann et al., 2013: 6). According to the findings of that study two further reasons stated were that citizens lack information about e-services (Heidemann et al., 2013: 5–6) and – as already described - bad usability puts off citizens' from using e-services (Heidemann et al., 2013: 6).

The operationalisation of the second dimension is not very complicated, because the actual use of e-services can be measured directly. For this aspect, we are using dataset 4 (n = 8,761). Here, the question "do you use digital contact with public administration", addressed to the target population of all German citizens, is not focussed on local public administration only, but is generalisable as we made clear earlier, for the large share of citizen-state interaction in

Germany is happening on a local level. In the so called "catalogue of services of public administration" (*Leistungskatalog*), all provided services of German public administration are listed. Of all 2,369 services, only 358 are provided by the federal government (Stocksmeier and Hunnius, 2018). This shows the already mentioned focus on local level of service provision of public administration in Germany. This allows projected tendencies in the answers to this question on local level, neglecting the answers concerning federal state service provision. Only 33,42% of people interviewed answered "yes" to the question if they use digital contact, which shows, that only one third are actually using digital administrative services. To get a closer look at the data, a logistic regression was made with the dependent variable "use of digital administrative services" and the independent variables[12]: age, gender, education, region.

Table 2.4.1 - The effect of demographic variables on the use of e-services

effect	odds ratio	95% conf. interv.	
age	0.994	0.992	0.996
gender	0.834	0.781	0.891
no school grad.	0.030	0.004	0.239
high school dipl.	1.156	1.002	1.333
high school grad.	1.245	1.072	1.445
university grad.	1.216	1.060	1.394
income1	1.200	1.086	1.325
income2	1.435	1.299	1.584
region	1.154	1.076	1.239

Dataset 4: n = 8,761; results of a logistic regression with the dependent variable "use of digital administrative services" and the independent variables in the left column.

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[12] The effect is significant, if the confidence interval does not contain 1 – which is the case in all of the variables. The logistic regression was made with the following dummy variables (yes/no), which means an odds ratio higher than 1 equals an overrepresentation and a lower result than 1 equals an underrepresentation of the respective socio-demographic group in users of digital services:

- Age: population older than 60 years
- Gender: female population
- Education, 4 dummies: "with no school graduation", "high school diploma" (Realschulabschluss), "high school graduation" (Hochschulreife), "university graduation" (Hoschschulabschluss), reference: vocational extension certificate (Hauptschulabschluss)
- Income, 2 dummies: "income1" (1500€-3000€ monthly household income), "income2" (over 3000€ monthly household income), reference: (monthly household income lower than 1500€)
- Region: inhabitant of an urban area

The results show that a younger demographic tend to use digital administrative services more often than older ones and women not as often as men (figure 5). Education is a positive factor in the sense that generally a higher education leads to higher use and the same applies to monthly household income – a higher income results in a higher use of digital services. Finally, people in rural areas tend to use the services not as often as their city-counterparts. These results support already existing findings in which a 'digital divide' was found: older age, and lower education were associated with lower digital administration service use (Gauld et al., 2010b: 184–185). However, the findings were contradictory to other findings by the same authors, revealing that income and gender were both not statistically significant predictors of digital service use (ibid.).

Known as the 'Digital Divide', access to information technologies, including digital government services is distributed unevenly, leaving certain groups behind, especially people with disabilities, those living in rural populations and people with low socioeconomic status (Chang et al., 2004: 449; Hsieh et al., 2008). Digital divide is also a question of gender justice, as women often have lower access to information and communication technology (Brännström, 2012; Hilbert, 2011). Also age is a critical factor when it comes to technology adoption – also in the field of e-services – as generally older people prefer face to face contact with local government staff (Choudrie et al., 2013). A survey conducted with citizens in London showed a reason for older members of the public not accessing these services, was due to "difficulty of finding information on the websites" (Choudrie et al., 2013: 428). A study into Dutch municipalities shows that a larger population and higher population density are positive and a larger share of older population (65 years and older) is a negative predictor for e-service delivery (Budding et al., 2018: 709). Though this is an insight into the supply of these services, we can also use these findings to proceed with the exploration of the demand as well, using the hypothesis that demographic characteristics may play a role in explaining the use or non-use as well as the expectation regarding e-services. This leads us to focus on the demographic characteristics in all three sub questions: we want to know if there are specific expectations and usage-rates as well as how satisfied they were according to the age of citizens. Keeping disparities in mind when analysing expectation, use and satisfaction is important because talking about these advantages of digital government depends on the even distribution of these benefits (Helbig et al., 2009).

Satisfaction

Citizens's satisfaction with e-services is directly linked to the performance of the respective services (James, 2011). According to Davis (1989), the Technology Acceptance Model (TAM) describes easy usability of a service as an important factor in the actual usage of a service. Furthermore, there is empirical evidence to show that system quality, user satisfaction and routine/dependency?, influence the citizens' usage intention of digital services in public administration, to result in higher user satisfaction (Veeramootoo et al., 2018: 167–170). If a public service is easy to use, the online use is consistent with the way people used these government services before, and the service as well as the service provider seem trustworthy, then the use of a service will be high – according to the findings of Carter and Bélanger (2005), supported by others (Akram and Malik, 2012: 64). The citizens satisfaction also plays a role in government staff's adoption of digital services (Berger et al., 2016: 267). This means, that extended knowledge about citizens' satisfaction can help to improve the supply of these too.

Looking at the satisfaction of citizens with the online services of their local government, dataset 2 shows a rather low degree of satisfaction, as 22,5% are (highly) satisfied, while 40,4% are (highly) dissatisfied (figure 6).

Figure 2.4.5 - Citizens' satisfaction with digital local public services
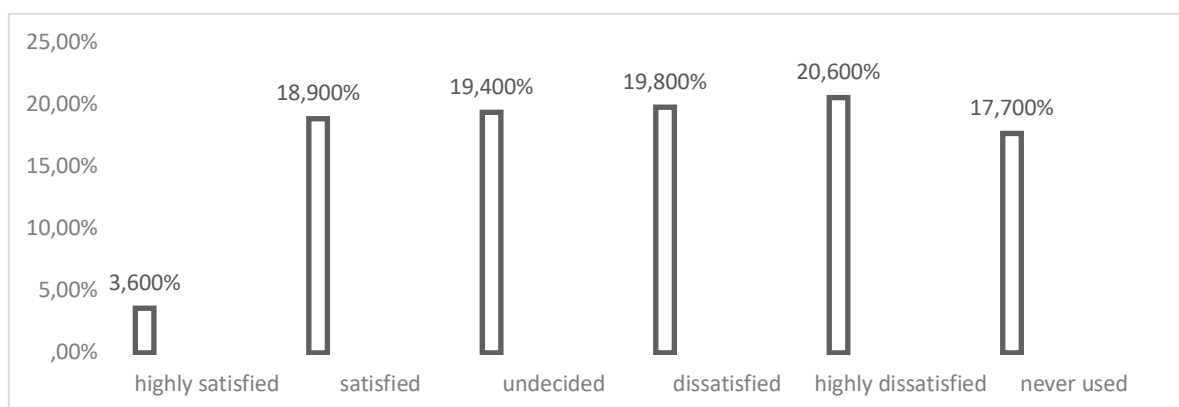
Dataset 2: n = 5,043; Civey 1334; question: "How satisfied are you with the recent online supply of your local government's service provision?"; standard error = 2,5%

Analysing the data with a focus on age shows a tendency towards less satisfaction of younger users over all age groups. While the 60+ year-olds have a (high) satisfaction of 28,0% (in contrast to 30,3% (highly) dissatisfied), the 18-29-year-olds are much less satisfied (14,9%

versus 50,4%). Concerning education and population density we cannot identify any significant differences. The (high) dissatisfaction of men (44,1%) tends to be higher than the one of women (36,8%). Also, the difference of (high) dissatisfaction according to low purchase power – comparable to low income - is remarkable: the low purchase power group shows higher dissatisfaction (45,4%) than the group of very high purchase power (32%).

Socio-economic factors seem to play an important role in explaining not only the frequency of use, but also the satisfaction of citizens when accessing online services of their local administration. This once more shows us the importance of the debate on digital divide and the urgency for an awareness and understanding of public administration in this particular topic. It is therefore imperative that the digital transformation of service provision considers these gaps both in service design and in service provision, or otherwise this then results in an unequal provision or an unequal accessibility. It's important to note this would contradict the Weberian ideals of public administration that states all services should be provided neutrally without discrimination.

Conclusion and outlook

This article discussed the digital transformation of local public administration services from a citizens' perspective, taking into account three different dimensions: (1) the citizens' expectations, (2) their actual use and (3) their satisfaction. The development in the field of digital administration has a high relevance for the future of local government, not only because a large share of citizen-state interaction happens at local level, but also as the demographic changes, a younger generation generally have a stronger demand for using digital services. This study was designed as a case study, examining the service provision of local one-stop shops in Germany.

Regarding the expectations, we can generally observe a strong demand for online services, but this varies remarkably depending on the age. Younger citizens tend to have higher expectations and their higher demand can be explained by the need and desire to save time (compared to analogue in-person services).

A similar picture, but with even more divides – can be observed when we look at the actual use of e-services by citizens. Being young increases the probability of use, the same effect can be seen for male citizens. Also, a higher education and a higher income are both indicators for greater use as well as those citizens who live in an urban region.

Focusing on the third dimension, we can see that the citizens' satisfaction with local governments' e-services is low. Here, too, age plays an important role: younger citizens are less satisfied than older ones and men are more dissatisfied than women. An interesting result in regard to satisfaction, show us that it is in fact citizens with lower income who are less satisfied with the existing e-services compared to citizens with a higher income.

The results show that there are considerable divides in all three dimensions which need to be addressed by policymakers, public administration practitioners and PA science. With a dystopian outlook, these divides may lead to an uneven service-infrastructure. The multiple digital divides may induce severe legitimacy problems for public administration and its service delivery. Taking into account the service design and the technical solutions, we should address all demographic groups equally and find specific answers for specific needs (e.g., elderly people may need easier access, younger people may have higher expectations concerning the complexity of services).

The status quo in German local one-stop shops is in a rather bad shape: There is not only a gap between expectations and actual use, but also a low satisfaction rate in the number of e-services available. There are a multitude of reasons for this, but an obvious one is that the German federalist system, meaning that no general governance of digital transformation of public administration is possible, but relatively independent states and independent local governments struggle for their own solutions. In the last years, many local governments realised, that they have to cooperate – at least at the level of technical questions – and inter-municipal cooperation is evolving. Also, the so-called online-access law (*Onlinezugangsgesetz*; OZG) was passed by the federal parliament in 2017 – based on a constitutional change –, allowing the federal government to set standards in data exchange and IT-security, as well as creating the basis for cooperative development of e-services across federal levels. A more positive outlook for the future shows us that as standardisation and cooperation increases, better service provision of local governments may be evolving in preparation for the next generation of young and expectant citizens.

3. Conclusion

The concluding chapter's goal is to give an overview of the overarching findings from the research articles, allowing to put them into the context to answer of the original research question. Furthermore, practical implications from the research are drawn and the limitations of this dissertation are discussed, including an outlook on potential future research.

3.1.   Discussion of the Results

Connecting the four articles, this dissertation project is searching for answers to explain coordination challenges of the digital transformation of public administration, considering the specific challenges in a federal context. This work delivers a crossover of both theory generation – which would be primarily expected in explorative and descriptive research (Toshkov, 2016: 38) – and theory application. For the latter, I used existing theoretical approaches to explain empirically observed phenomena as for example the institutional changes in the first article. Shifting from macro to micro level, the results of the articles deliver several explanatory approaches.

Differentiating between two dimensions of digital government literature, the tool dimension on the one hand and the governance dimension on the other, is one contribution of this work. Theoretical approaches to explain the governance dimension, used in the first article, reach from federalism research (Benz, 2019; Kropp, 2010) to neo-institutional approaches such as historical institutionalism (Mahoney et al., 2009; Thelen, 1999), enables to elaborate certain developments and patterns in institutional reform processes of the last 13 years. Inter-administrative relations (Bogumil and Kuhlmann, 2022) and the joint-decision trap (Scharpf, 1988) lead to bargaining processes between the involved actors, retarding decision-making processes and blocking solutions, resulting in compromises of the lowest common denominator. This can be observed with the institutional reform process from 2013 to 2020, introducing the FITKO as new organization for multi-level coordination in the field of digital government in Germany. The change processes can be described as incremental change, strongly oriented towards historical paths, and requiring critical junctures to allow larger change at all. At the same time finely balanced vertical power shifts between centralization and decentralization arise, reconfiguring the playing field of federal government and state governments. This policy field of digital government can be embedded in the polity policy

concept— with the administrative structures itself as recipient of reforms. This policy field is a difficult challenge for federal countries in particular, as digital tools tend towards more standardization and centralization. The compromise of creating the FITKO as a shared multi-level agency with all 16 state governments and the federal government as stakeholders allows concentration without centralization and may be an example for a successful merger between digital government policy and the preferences of federal states. The several extra-rounds of bargaining about the structure and form of the FITKO led to a solution which emerged not only from negative coordination but a form of positive coordination which included a multitude of interests. This process was taking time and it was expensive, but the solution is feasible and receives generally good feedback from all actors. This generalization can be drawn from the first case study: concentration – needed for digital government – does not necessarily mean centralization. Moreover, a finely balanced interplay of centralization and decentralization, as costly as it may be, in the end, does not cause a shift in power but leads to a similar degree of multi-level power balance. According to the observations of this work, digital government reforms cannot be identified as a driver for centralization in federal systems.

Furthermore, in the second article, the phenomenon of administrative interdependency (*Verwaltungsverflechtung*) can be observed both on a horizontal and on vertical level. As the different authorities for child benefits, parental benefits and the registry office are urged to cooperate, the federal competencies are one barrier for closer cooperation: The unified online application (ELFE; see article II), initiated and hosted by the state government of Bremen, requests information and forwards the separate applications (e.g., for child benefits) to other authorities (e.g., child benefits office). The federal government, responsible for the child benefits office, insisted in the beginning of the reform process on their exclusive (federal) competency to receive applications for their services. It complained the state government would not have the right to collect the application and forward it. This is only one example, where the complex and intertwined hurdles of cooperative federalism lie and why the theoretical debate on administrative interdependency needs to be further examined (Bogumil and Kuhlmann, 2022). Linking stakeholders and readjusting their relations, such as the example of concentration without centralization in article one, can be a solution to solve the challenges of administrative interdependency. This approach of organizational unbundling is adopted by the state of Bremen. At the same time, the ambivalent character of administrative interdependency is visible: The interconnectedness does not only have negative but also positive consequences as interconnected administrative structures enable cross-organizational collaboration in building trust and a mutual understanding.

Implementing digital government reforms is leading to different coordinative challenges, depending not only on the level of implementation but also on the specific phenomenon. Examining the implementation of cross-organizational one-stop service provision revealed a multi-dimensional range of impeding factors. On the legal dimension, findings of previous studies (Lips et al., 2011; Wimmer et al., 2018; Wirtz et al., 2016) could be confirmed and extended on the specific case: e.g., the lack of enabling legal frameworks for data exchange. Furthermore, the regulatory competencies were on a different federal level than the implementation competencies. This requires a long and complex process of multi-level legislation to enable further exchange and increases the number of actors and their own interests. Besides the legal barriers, organizational challenges could be observed such as missing trust and confidence between authorities and in the scalability of the project. A very interesting finding of the second article was the conflict between legal advisors and IT-experts: Firstly, the communication between the two parties was impaired using a technical jargon and by a contrary understanding of data protection. Secondly, the expectation of perfect maturity before implementation of services by legal advisors collided with the approach of the IT-experts to launch beta-versions for testing and implementing iterative changes after the launch. Furthermore, a range of technical barriers for cross-organizational services were identified, such as the lack of an account for central citizens to log in and save information or the requirement to finish every process in one session, otherwise filled-out fields would be lost, missing gateways, interfaces, and standards for data exchange.

Shifting from the governance to the tool dimension, the observed effects of digital reforms are disillusioning. In article III it is shown that almost no local service is available on a higher level of digital maturity (level 4 or 5), providing full services online without media discontinuities. The digital immaturity is causing the problem of reforming (extra effort for employees) without relevant effects: the work relief that should have come along with digitalization did not occur from the employees' point of view. The processes in the back office become more complicated, requiring permanent availability of managers via email and additional processing time. At the same time, as shown in both articles III and IV, the satisfaction of citizens is low and their expectation of digital government are largely disappointed, regarding the status quo. The infrequent use of digital services can primarily be explained by slow implementation and the criticized usability, especially caused by media discontinuities and the impossibility to complete services completely online. Explanation can be found once more in the decentralized features and fragmented structure of the German

administrative system, hindering standardization, IT consolidation, and harmonization across levels and jurisdictions. Furthermore, the analysis in the third article closes with the hypothesis that in legalist countries with a pronounced rule-of law culture and a classic-bureaucratic administrative tradition (Kuhlmann and Wollmann, 2019: 71–74), the legal framework constitutes a heavier constraint for the digital progress than in countries with a public interest culture and a less legalistic tradition. This analysis can be put on a more generalized basis, as these patterns are not specific to the case of Germany but a common structural characteristic of systems with legalistic administrative traditions. Furthermore, the shortcomings of Germany in the field of digital government can partly be explained by the lack of a compulsory and legally binding regulation in digitalize government services. Not the "mere insight or the conviction of administrative and political actors, but the obligation through law" (Kühn, 2021: 18) were speeding up the implementation, as it was visible after the introduction of the OZG after 2017. Only based on these regulations, further legal changes, necessary for projects like ELFE from article II, were enabled and then introduced (Digitales-Familienleistungs-Gesetz).

Regarding the citizens' use, the study (article IV) explains different cleavages of use and satisfaction, showing higher use of higher educated, more urban, and younger citizens. The satisfaction in this group was therefore lower, because the ones who experience the low implementation rates and the insufficient user experience, are much more disappointed than the ones who never tried it. The results show that there are considerable divides in all three dimensions (expectations, use, satisfaction), leading to the conclusion that a target-group specific implementation strategy is needed to reach every demographic group and to find satisfying solutions for different needs and requirements.

Table 3.1 - Identified coordination challenges

Coordination challenges	Identified in article(s)	Potential solution
policy related challenges (decentralization/centralization)	I	concentration instead of centralization
agreement of all participating actors for new institutional arrangements	I, II	building trust between actors on a macro level and taking their (political) interests into account
different understanding and different professional "languages"	II	time and opportunity for identifying common ground and building trust on the micro level
fragmented policymaking in federal systems	II, III	alignment of policymaking-processes across governmental levels
legal and resource-related constraints	II, III	establishing legal frameworks for data exchange and overcoming limiting regulations
digital transformation as a burden for public employees	III	considering the employees' interests and designing the change in a way they benefit from
digital divide	IV	specific answers for specific needs, addressing all demographic groups equally

Reaching back to the initial comparison of digital transformation of Germany's public administration with the moon landing in the 1960es, we can constitute that the latter was probably easier. This work shows why the institutional setting and the involved actors in the process make the reforms highly complex and why further research is needed for a better understanding. Because it's not rocket science, but Public Administration.

3.2.   Limitations and Further Research

This research can only be the beginning of the intertwining of different streams of Public Administration, in order to bring light in the darkness of digital government reforms in federal systems. As this approach is partly explorative, many dimensions and aspects were described and elaborated, but further theoretical explanation is still necessary. Introducing other theoretical debates to this field may be one way to expand the view – such as other neo-institutional approaches like sociological institutionalism.

Especially, the generalizability of this study is limited because it is a case study examining the situation of Germany in the 2010s. Working on this objective, two ways are feasible and should be followed for future research: A comparative approach, following the methods of Comparative Public Administration (Kuhlmann and Wollmann, 2019; Lodge, 2016; Pollitt and Bouckaert, 2017) could help not only to set the German example into the context with other federal systems but also to compare the different administrative types and their governance of digital government both on micro and macro level. Another way to enhance the generalizability of the findings of this study would be theory testing with quantitative methods to allow the falsification of hypotheses which can be generated from the results. These hypotheses could then be used to carry out large studies with standardized questionnaires, allowing to use methods of inferential statistics.

3.3. Practical Implications

Regarding the results of this research, not only the scientific discussion can benefit from the findings but – as both the field and the research approach are close to practical issues – implications for practitioners can be drawn as well. First, the mentioned targeting of the different audiences within citizens – with the manifold digital divides in mind – and public servants is important. The often-mentioned user orientation must not stop with UX design (user interface design) for citizen applications but consider the effects on processes in the back office and the impact on public servants' work. Successful implementation of digital government on micro level requires the support of the personnel and their support is depending on increasing efficiency, usability and usefulness of digital processes and tools. Digital tools which speed up services for citizens but increase the workload and the complexity of work for employees in the public sector won't be successful in the long run and are mere superficial digital services. Long-term success requires the digital transformation of back-office processes, including digital tools, connected digital registries and data-exchange between processes and authorities – minding data-protection and the citizens' sovereignty over their data.

This brings us to the implications from the second article: legal and technical barriers have to be removed across administrative levels. This requires more interaction on governmental levels in policy making, because certain limitations are identified on one level, but the change of applied legislation happens on another level. This means that feedback loops in legislation and technical development of digital government solutions in between vertical governmental levels have to be established. A first step are the policy labs, established with the OZG-implementation process (Fleischer and Carstens, 2021; Zern-Breuer, 2021), bringing different stakeholders from all government levels together in agile project management for a preliminary process drafting before legal advisors start the legislative process. The OZG-implementation process was a first impulse, but a broad impact on local governments could not be achieved. In article III, it is explained that the vast majority of citizen-state interaction in Germany is taking place on local level. Therefore, the concentration on flagship projects must be considered as a central shortcoming of the recent reforms. A better communication and implementation across governmental level, especially from federal to local level, is needed for sustainable implementation success.

Finally, the normative question remains: Why all this effort? Wherefor is digital government needed? Digital government should never be an end in itself and digital government reforms are also connected with several downsides – increased costs and additional reform efforts for the employees, just to mention two. So, is it just an extension of the NPM-agenda with new tools (Dunleavy et al., 2006), fostering efficiency and user-centricity in the best case? No, especially the cross-organizational service provision in the second article gave an outlook on what could be possible: An automated service infrastructure, providing a pro-active public administration, which allows to distribute services without citizens' request. As we have seen in the fourth article, the use of digital services and furthermore the general accessibility of public services (Bhattacharya et al., 2016; Sun et al., 2017; Wei et al., 2016) is related to the income of citizens. Lower income leads to less use, this can be due to less knowledge about services, interrelation with other factors such as language skills or to mere accessibility. In any case, an integrated and pro-active public service provision allows to deliver services to all citizens who are obliged to receive a certain service. This leads to the assumption that fully digital and automated service provision is a question of social justice. With reference to the argument made in the introduction that digital innovation is not based on any normative judgement but can lead to positive or negative consequences depending on the political design, this aspect is very interesting. If digital administration is designed in such a way that it lowers access barriers to social services and makes administration simpler and more citizen-friendly, then it can contribute to social justice. In particular, citizens who have difficulty accessing the administration due to language barriers, citizens who lack knowledge of bureaucratic processes and citizens who cannot afford adequate advice (e.g., tax advisors) benefit from appropriately designed digital reforms.

Referring Furthermore, automated services reduce the effort for employees and tackle many of the mentioned barriers in article III. To sum up, a successful implementation on both macro and micro level of digital government measures can help to increase the satisfaction for both public servants and citizens, increase social justice and reduce time and costs. But on the way to fully integrated digital service provision, many barriers lie ahead, and many burdens must be taken – on vertical and horizontal levels of the complex construction of a federal system, such as the Federal Republic of Germany.

4. Annex

Content analysis from article II

Categories	Factors	Valence & **intensity Items**	Authority (Source)
Legal	1. Paper requirements	The parents' correspondence to the three authorities will cease unilaterally (C2G). The **authorities continue to send approval notices to the parents by mail** (G2C), because of existing legal requirements.	Project Coordination (ELFE02)
		Different **burdens of proof in paper form** hinder fully digital C2G channel	Parental benefits office (ELFE07)
	2. Human control requirement	Approval of the application takes place under the dual control principle, an automated control **would need legal changes (*Änderung der Abgabenordnung*) on federal level** (Federal Ministry for Finances)	Family benefits office (ELFE01)
	3. No mandatory digitizing	**No digital certificates for everyone who was born before the reference date of 2009** is available, yet: Digitalization of the data of those whose children are born now would be necessary – as they were born before 2009. But the re-registration is a voluntary task for registry offices.	Registry office (ELFE03)
	4. Missing data exchange regulations	To expand the project for example for unmarried parents, a **data exchange of the registry office with the youth office** (*Jugendamt*) **would be necessary,** because the proof of an acknowledgment of paternity (*Vaterschaftsanerkennung*) and declaration of parental responsibility (*Sorgeerklärung*) is needed.	(ELFE04)

Annex

Introduction of a new legal framework that allows authorities to exchange data is needed, which was until recently only possible in form of administrative assistance (*Amtshilfe*).	Parental benefits office (ELFE05; ELFE07)
No connection between parental benefits offices – multiple applications at different parental benefits offices must be avoided.	Parental benefits office (ELFE05)
No data exchange between registry offices (of different local governments): If the parents were neither born, nor got married at the registry office of the child, it needs (paper) proof of the birth/marriage of the parents from the respective registry offices.	Registry office (ELFE02; ELFE03; ELFE04)

Categories	Factors	Valence & intensity Items	Authority (Source)
Organizational	5. Lack of support	**Missing confidence** in the scalability of the project.	Parental benefits office (ELFE05; ELFE07)
	6. Limitations of federalism	It is not permissible for states to receive and forward applications to the appropriate federal agency, which are **outside of state jurisdiction, but federal jurisdiction** (which child support is).	Family benefits office (ELFE01)
	7. Missing trust between authorities	**Missing trust from other authorities** (esp. registry office) is mentioned: They need legal proof of everything, the mere information is not sufficient.	Family benefits office (ELFE01)
	8. Communicative conflicts	Fundamental **conflict between legal advisors** as data protection experts and **IT-experts** as pragmatists: Different worlds and languages meet.	(ELFE02; ELFE03)
		Some **terms have been used differently** by other actors.	(ELFE05; ELFE03)

Categories	Factors	Valence & intensity Items	Authority (Source)
Technical	9. No central citizens' account	The **lack of a (central) citizens' account** is a severe problem because it is not possible to save data once it has been entered. Either the whole application is filled out and submitted at once, or all entered data is lost, as no log in is possible.	Family benefits office (ELFE01)
	10. Missing unique identifier	A **unique identifier (ID-number across registries) is missing**: The maintenance effort for all the connected registries is otherwise too high.	Family benefits office (ELFE01)
	11. Missing digital gateway/interface	Extra effort to contact the different health insurances – **no digital gateway.**	Parental benefits office (ELFE07)
		Backend for the **communication with the pension insurance** not ready yet.	Parental benefits office (ELFE05; ELFE07)
		The data exchange of the newborn (name and address) from the registry office (*Standesamt*) to the registration office (*Meldebehörde*) happens automatically when the entry is completed. However, the entry is "touched" again at the registration office to be transferred manually to the civil register because of the **missing software interface.**	Registry office/Registration office (ELFE03)
	12. Missing standard for data exchange between authorities/ government levels.	No separate digital process has been created within the authority – on the contrary: **Data from the other authorities is not received digitally**, yet. The family benefits office "simulates" digitalization in typing the information manually into the software.	Family benefits office (ELFE01)

13. Missing IT-support	Queries to the IT service provider Dataport and the manufacturer of the software, AutiSta-Verlag, are usually answered late or not at all. The exchange is therefore still in need of improvement from the perspective of the working level.	(ELFE04; ELFE08)

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