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### **Digital Transformation at the Local Tier of Government in Europe: Dynamics and Effects from a Cross-Countries and Over-Time Comparative Perspective (DIGILOG)**

#### **Abstract**

This contribution is meant to present a new collaborative research project about the digital transformation of local governments which represents the most significant megatrend of administrative reform in the post-NPM era. Given that local governments are the key players in this process, the project systematically analyzes the state of implementation and effects of the digital transformation at the local government level in Europe in a cross-countries and over-time comparative manner. Research is jointly conducted by the Zurich University of Applied Sciences School of Engineering (Switzerland), the University of Potsdam (Germany), and the Vienna University of Economics and Business (Austria). The project will generate coherent data for a systematic comparison, by performing a quantitative survey of local authorities in 47 countries (members of the Council of Europe), based on web crawling and machine learning techniques and qualitative case studies in selected municipalities.

The first main research questions address the dynamics (scale and pace) of digital transformation in European local government: To what extent there has been radical/rapid revolutionary or gradual/slow evolutionary change and how and why these dynamics differ from an international and inter-municipal perspective? The second main research question addresses the (intended and unintended) effects of digitalization in terms of outputs (service delivery, organization, processes, and human resources), outcomes (performance and accountability), and impacts (citizens' acceptance, governance, new cleavages). Explanatory factors consider the macro-level (institutional properties of the local government systems), meso-level (internal organizational arrangements), and micro-level (actors, interests, motives).

## 1. Introduction

Digital transformation is one of the most significant megatrends of administrative reform in the post-New Public Management era (Bogumil/Jann, 2020; Kuhlmann et al., 2020b). Most recently, the COVID-19 pandemic has shown the fundamental importance of a well-prepared digital administration to replace analog processes, especially needed in times of physical distancing (Kuhlmann et al., 2020a). Digitalization is expected to remold the public sector, governance, administrations in Europe in a disruptive way. Organizational settings, modes of service delivery, and human factors are expected to change comprehensively through digital transformation in the years to come (Dunleavy et al., 2011; Mergel et al., 2019). Although e-government and e-administration have been progressively advancing since the 1990s, the digitalization of public administration has reached a new magnitude as a major reform movement since the year 2000. Well beyond the mere conversion of analog data into digital formats, new paradigms of problem-solving and models of service delivery and organization are meant to bring about a profound transformation in interactions between citizens and public authorities as well as within those administrations (Heuermann, 2018, p.1).

Local governments are key players in digital transformation. In many countries, they form the most important level of public service delivery, ensuring proximity to citizens and direct involvement in democratic processes (Kuhlmann, 2009, p. 21; Bouckaert/Kuhlmann, 2016). The COVID-19 crisis, too, has revealed the salient role of local governments in many countries in ensuring delivery of services to the population under pandemic conditions (Kuhlmann et al., 2020a; Franzke/Kuhlmann, 2020). However, the crisis has also highlighted shortcomings in the digital readiness of local governments resulting in (partial) institutional failures, closures of citizen-related services, and the complete suspension of services when electronic systems were not working. Against this background, it is cause for concern and criticism that in the current comparative research concerning the digital transformation of the public sector the local level of government is insufficiently investigated. Systematic comparisons on the dynamics and effects of the digital transformation are not available for European local governments.

This collaborative research project is intended to remedy these deficits by exploring the dynamics and effects of the digital transformation in European local governments from a cross-countries and over-time comparative perspective. It will answer the question of whether and why there are similar and/or different dynamics of digital change at the local level of government and how these have impacted on local governments' organizational settings, human resources, performance, and relations to citizens. In revealing the time dynamics and the effects of the local digital transformation, we will make a distinction between disruptive and incremental change. Our assumption is that a specific combination of explanatory factors on the macro-level (e.g., country-specific institutional settings and administrative culture, local government systems, and economic situation), meso-level (e.g., internal organization and resources), and micro-level (actor strategies and micro-politics) account for different transformational dynamics as well as the outputs, outcomes, and impacts of digitalization. These might include intended changes, such as reduced workloads for employees, improvements in efficiency, customer orientation, and transparency, as well as and the unintended negative side-effects of digitalization, such as additional burdens on staff and citizens, digital divides, loss of discretion and privacy, or acceptance issues. The potential effects of digital transformation can also be related to new (or deepened) cleavages between local governments - for instance, between urban and rural localities, big cities and small communes,

more affluent and more impoverished local governments, or simply between local governments with different administrative cultures. As a result, there might be more convergence in institutional development between some (clusters of) local governments in Europe. In contrast, others will show greater divergence or persistence over time. This project aims to monitor and explain these dynamics and effects for local governments from all over Europe, providing descriptive, explanatory, and evaluative knowledge, and also forecasting future digitalization processes at the local level in Europe. The large-n-based digitalization monitoring will be combined with in-depth case studies of selected local governments from different administrative cultures. This should reveal country-specific and other supporting/hindering factors of digitalization in various national and local settings, which, in turn, are expected to account for the dynamics of change and transformational impact.

The project will generate coherent data to compare the dynamics and effects of digital transformation in local government across Europe systematically using methodological triangulation (qualitative/quantitative techniques). It will establish a new set of comparative knowledge on local digitalization reforms, revealing the interrelations between national context conditions, dynamics of change, and reform effects. The findings will enhance the scope of the conceptual and empirical foundations as well as the methodological rigor of comparative local government and e-government research. Finally, the project will yield policy-relevant knowledge concerning local digitalization measures from a European perspective, which can then be utilized to improve policymaking for future public sector modernization.

## **2. Current State of Research in the Field**

To understand the concept of digitalization as a political-administrative reform, we must distinguish three different dimensions or states of implementation (Mergel et al., 2019). First, digitalization in a narrow sense, aka *digitization*, is understood as the pure transformation of analog data for digital storage, i.e., a 1:1 translation of analog processes without further changes in the administrative, organizational, and process structures (Mergel et al., 2019). Second, digitalization, in a broader sense, relates to the transformation of analog processes into digital processes in connection with a change in the administrative processes and an introduction of new organizational models (Heuermann, 2018; Schwab et al., 2019a, 2019b). Third, digital transformation is understood as a comprehensive institutional change in public administrations, considering not only organizational and processual change but also cultural change in public authorities and change in personnel and qualification structures, job profiles, interaction with citizens and long-term changes in the performance of public service delivery.

There is an extensive body of literature in the field of e-government and digitalization of public administration. However, those studies mostly focus on central government (Stier, 2015; Melitski/Calista, 2016; Ma/Zheng, 2019; Wirtz/Daiser, 2018), whereas local government is underrepresented in this field of comparative research. E-service provision is also an increasing field of research (Arduini/Zanfei, 2014), but studies with the focus on the local level are the exception and rarely comparative (Manoharan et al., 2015; Berger et al., 2016; Wang/Feeney, 2016; Schmidhuber et al., 2017; Budding et al., 2018). These will either compare distinct aspects of local e-government in selected countries (Bonsón et al., 2015), or evaluate the current stage of digital governance in large municipalities in the United States or worldwide based on a longitudinal assessment of their websites (Holzer/Kim, 2007; Coursey/Norris, 2008; Manoharan et al., 2015; Ingrams et al., 2018). Larger research consortia like the Horizon 2020 project TROPICO have an

interest in digital transformation and include local government as an empirical basis, but focus on a specific aspect – in this case, collaboration – as a research interest (van de Walle/Lerousse, 2019). Co-VAL deals with digital transformation in public administration, but mainly focuses on the central and state level (Mergel et al., 2019). Consequently, comparative and consistent up-to-date research on digitalization, digital transformation, and online service provision in European local governments is required, especially concerning the dynamics in this field.

Further studies focus on determinants, enablers, and barriers when establishing digital public services (Savoldelli et al., 2014). Manoharan/Ingrams (2018) summarized factors and determinants of local-level e-government adoption: First, citizen adoption, organizational characteristics such as technical skills and professionalization, and public managers as enablers; second, barriers such as lack of IT staff, financial resources, and support from elected officials. In addition, previous studies have identified the state structure, degree of decentralization, (larger) size of a municipality, and legal framework (Moon/Norris, 2005; Coursey/Norris, 2008) as influential. Pina et al. (2010) analyzed how e-government promotes accountability. Other studies (Alcaide Muñoz et al., 2017) support their findings. Concerning the effects of digitalization reforms, Moon et al. (2014) distinguish between the managerial approach, i.e., improvement of public services, organizational performance, and productivity, and the political approach, i.e., democratic accountability, bureaucratic responsiveness, and citizen participation (López-López et al., 2018; Ahn/Bretschneider, 2011; Pina et al., 2010). However, as Wirtz/Daiser (2018) showed in their meta-analysis, the effects of digitalization reforms are not yet a key topic of empirical e-government research. Again, we lack studies that examine the effects of digitalization reforms and digital transformation that focus on the local tier of government.

There are several pertinent *indices on digital service provision* that offer a ranking of countries. Examples are the European Commission's (2020) *Digital Economy and Society Index Report*, the *Digital Adoption Index* by the World Bank, the *E-Government Development Index* by the United Nations and its sub-index *Local Online Service Index* of 100 cities worldwide (UN DESA, 2020). In summary, these pertinent indices on digital service provision deal either almost exclusively with central government and national administrative levels, or they focus only on cities (thereby excluding smaller municipalities) or on one country. Comparative cross-country data for Europe's local governments, including cities and smaller municipalities, is still missing. Against this background, people interact more directly with their local governments (UN DESA, 2020), and it should, therefore, be considered a highly significant tier of government in the context of digitalization and digital transformation. A pressing need remains to assess how far digitalization and digital transformation have progressed at the level of local government and how their dynamics and configurations appear. For example, it remains to be determined why there is more progress in some countries and local contexts than in others, and what the effects might be.

### **3. Research Questions**

This project explores the dynamics and effects of the digital transformation in European local governments from a cross-countries and over-time comparative perspective. The main research questions are:

- (1) What are the dynamics (scale and pace) of digital transformation in European local governments? To what extent has there been a radical/rapid revolutionary or gradual/slow

evolutionary change? How and why do these dynamics differ from a cross-country and inter-municipal perspective?

- (2) What are the (intended and unintended) effects of digitalization on local self-government in different countries/regions regarding:
- a. outputs: service delivery, organization, processes, and human resources,
  - b. outcomes: performance, accountability, work relief/burdens,
  - c. impacts: citizens' acceptance, governance, new cleavages.

#### **4. Theoretical Background: Studying Institutional Dynamics**

To explain the dynamics and effects of digitalization, we draw on theories of institutional change and new institutionalism and use two models of institutional change defined by the scale (gradual vs. radical) and pace (slow vs. rapid) of change (Greenwood/Hinings, 1996; Walgenbach/Meyer, 2008).

The first model emphasizes incremental institutional change as a gradual transformation of existing institutions (Streeck/Thelen, 2005). *Evolutionary change* is characterized by a modest scale and a slow pace of change (Greenwood/Hinings, 1996, p. 1024). We proceed from the assumption that the national/local “starting conditions” will shape corridors and affect the digitalization. We assume that digitalization effects depend on the administrative cultures and local government systems in different countries inherited from and ingrained in the past (Pollitt/Bouckaert, 2017). This line of reasoning is theoretically underpinned by the historical and sociological approaches of new institutionalism, both of which suggest that the functioning and performance of institutions are historically and culturally embedded. The historical approach stresses path dependencies, which are assumed to predetermine further institutional development (Steinmo et al., 1992; Pierson, 2004). Subsequent policy choices appear to be conditioned by policy legacies springing from the past. Institutional arrangements are seen “as relative persistent features of the historical landscape and one of the central factors pushing historical development along a set of ‘paths’” (Hall/Taylor, 1996, p. 941). Following this line of thought, institutional change is expected to occur as a gradual process (e.g., as displacement, layering, drift, and conversion; cf. Mahoney/Thelen, 2009; Streeck/Thelen, 2005) rather than a disruptive transformation. The sociological approach to new institutionalism puts greater emphasis on cultural imprints, cognitive scripts, and moral templates that provide “frames of meaning” guiding human action (Hall/Taylor, 1996, p. 14). According to this sociological approach, the underlying cultural authority and the embeddedness of institutional arrangements are not certain to follow on from the introduction of new formal rules. Instead, there can be a mismatch between new institutional structures and cultural legacies with origins in the past. Stressing the limited scope of reforms on the one hand and pointing to cultural frames on the other, both the historical and the sociological approaches to new institutionalism would suggest a more incremental rather than large-scale institutional change.

The second model argues that discontinuous, “*revolutionary change* happens swiftly and affects virtually all parts of the organization simultaneously,” so is characterized by a large scale and fast pace (Greenwood/Hinings, 1996, p.1024). Radical institutional change can be pushed by exogenous pressures (e.g., crises such as the COVID-19 pandemic) and result from the comprehensive disruption of existing institutions. According to the punctuated equilibrium model (Baumgartner et al., 2014), policy agendas are characterized by periods of stability (equilibrium) with little or no change and interruptions of periodic abrupt and disruptive change (punctuations). Political inattention and under-reaction to institutional problems or shortcomings during periods of

stability are combined with short periods of over-reaction and exceptional activity resulting in radical changes and transformations. This attention can be triggered by exogenous events (shocks) opening up critical junctures. Relevant triggers for disruptive change are changes of government, the release of international benchmarks, or extraordinary events like the recent COVID-19 crisis that has unexpectedly fueled many national governments' efforts towards the digitalization of public administrations. To what extent this will ultimately result in disruptive or incremental change and what effects will result from these transformational processes remains to be seen. Disruptive change by digital transformation - also referred to as digital disruption - entails the notion that digital innovations are so radical and substantial that they will lead to an erosion of existing boundaries and organizations (Skog et al., 2018; Christensen/Overdorf, 2000). Even though the notion that framing as a creative destruction process might destroy and shake up entire sectors is widespread, its theoretical and conceptual positioning remains vague. Riasanow et al. (2019) showed in their literature review that digital transformation is linked with an array of different schools of thought, from more disruptive and systemic assumptions about the type of change to more incremental ones. We view the two models of institutional change presented above not as a dichotomy but as a continuum from stability over incremental, evolutionary change towards radical, revolutionary change (Campbell, 2004).

## 5. Research Design

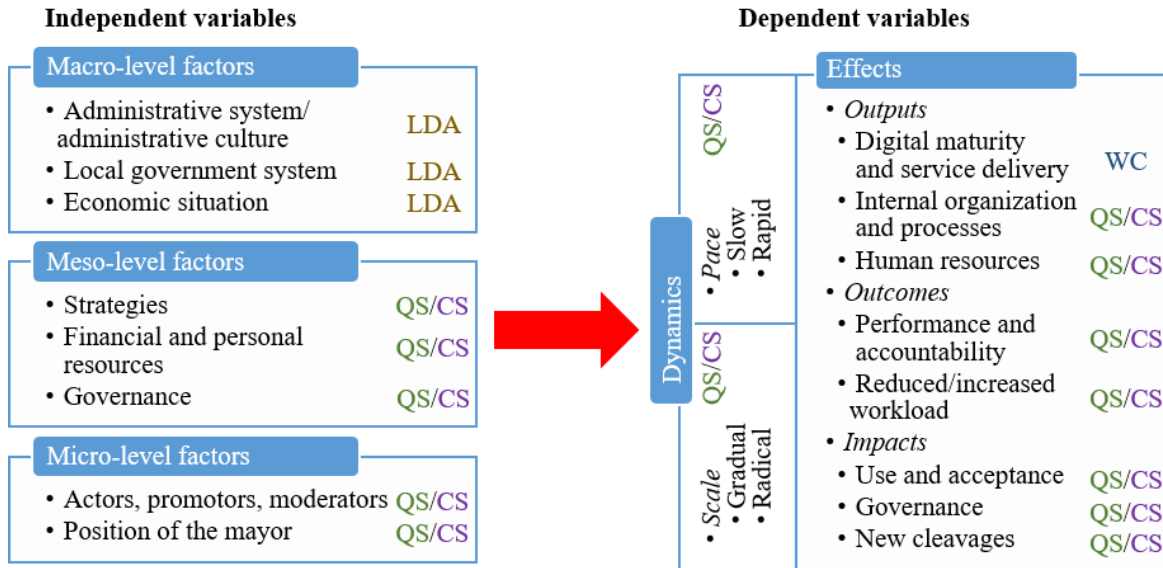
From a public policy perspective, digitalization in local governments can be conceived as an institutional policy or “polity policy” (Wollmann, 2003, p. 4) directed at remolding the procedures and organizational structures of local institutions. For assessing the effects of this type of public policy – in contrast to (“normal”) sectoral policies – a more complex analytical framework must be applied. To reveal the *dynamics* of change, that is, the scale (gradual vs. radical) and pace (slow vs. rapid) of the local digital transformation, and to identify the factors at the macro-, meso-, and micro-levels which explain the varying transformational patterns, we apply a three-step model of institutional impact assessment drawing on Kuhlmann/Wayenberg (2016, p. 239; cf. Pollitt/Bouckaert, 2017; Kuhlmann/Wollmann, 2011; Kuhlmann, 2010; Reiter et al., 2010; Mergel et al. 2019).

- In the first step, we analyze the *outputs* of digitalization, namely the speed and degree of implementation (e.g., digital services available in local governments, level of digital maturity, usability standards, etc.) and the related institutional changes within the local administration (organizational adjustments, process-re-engineering, etc.).
- The second step concerns the intermediate *outcomes*, which refer to the consequences of the institutional changes, i.e., changes in local government performance and accountability resulting from digitalization.
- In the third step, the *impacts* of digital transformation are analyzed; this refers to longer-term effects on citizens, local governance, and possible new cleavages between local governments in Europe (e.g., urban/rural, rich/poor, or North/South/East/West divisions).

Our dependent variables are the dynamics and effects (outputs, outcomes, impacts) of the digital transformation. Drawing on new institutionalism (see above), the independent variables of this research refer to institutional and actor-related factors on the macro-, meso-, and micro-levels, which are assumed to explain the varying scale and pace of institutional change from an over-time,

cross-countries and inter-local comparative perspective. The analytical framework of our study reads as follows (see figure 1):

Figure 1: Analytical framework



## 2.1. Dependent variables: Dynamics and effects of digitalization

We will investigate similarities and differences in the scale and pace of the digital transformation in European local government, thereby distinguishing between evolutionary (slow/gradual) and revolutionary (rapid/radical) change. Owing to the comparative nature of our study, the scale and pace of change are not absolute variables that can be defined a priori but relative variables that will be ascertained in cross-case comparison. We assume the transformational dynamics vary among countries and municipalities as well as over time and depend on specific combinations of explanatory factors on a macro-, meso-, and micro-level.

*Outputs:* In our study, the digital services and processes available in local governments, their level of digital maturity, and the related organizational changes occurring in local administrations are referred to as the “outputs” of the digital transformation. We analyze both the external and internal dimensions of digitization. External digitization refers to the interaction of the municipality with citizens (e-services) or private companies and, therefore, to the government-to-citizen (G2C) or government-to-business (G2B) relationship. Internal digitization, on the other hand, refers to internal processes, information exchange, and communication within the administration or between different administrative areas/levels (e-administration) and thus the government-to-government (G2G) relationship. The transformational power of digital innovations in organizations can reach different levels regarding the complexity and depth of value-added of new digital tools (Coursey/Norris, 2008; Fountain, 2001; Layne/Lee, 2001; Wescott, 2001). This transformational power (also called digital maturity) is lowest when local governments make use of electronic formats merely to provide information for the citizens, e.g., on websites (information function). It is higher if they reach out to their citizens, for instance, by answering inquiries via e-mail (communication function). If citizens can complete administrative procedures digitally (transaction

function) and if data from different information systems or public registries are shared and integrated across levels or sectors of government (integration function), their digital maturity can be considered most advanced and the impact on service delivery expected most significant (Layne/Lee, 2001; Moon, 2002; Budding et al., 2018; Kuhlmann/Bogumil, 2020). However, digital transformation refers not only to increased digital maturity but also to related changes in the local organizational settings and human resources. It might also lead to the elimination of organizational units with direct face-to-face interaction (branch offices, deconcentrated and local contact points) and thereby fundamentally change the nature of interactions of citizens and government officials (Goodsell, 1981; Lindgren et al., 2019). Furthermore, new demands in terms of human resources, qualifications, and skills are to be expected in the digital local administration, including IT skills, soft skills, and analytical skills, triggering processes of up- and re-skilling (Distel et al., 2019) as well as changes in job/activity profiles, recruitment, training, and professional development.

*Outcomes:* Regarding the outcome dimension, we focus on the performance of local governments and on reduced (or increased) workloads for public employees. Digital tools, such as automated decision-making, electronic file management, and faster exchange of data between different administrative units, might help save time and resources, speed up procedures, improve coordination, and enhance service quality. However, empirical evidence is needed about whether these digital processes are more straightforward and equally accessible to all relevant stakeholders and to what extent efficiency concerns coexist or predominate over aspects such as effectiveness, accountability, responsiveness, and flexibility. Further, we will analyze the effects of digitalization on the staff situation and working conditions, i.e., to what extent relief (or additional burdens) on employees have been generated and whether the new digital tools are accepted or rejected by employees. Resistance to change and critical attitudes can stem from employee fears or experiences of higher workloads, the loss of professional autonomy and discretion, worsening job conditions, and potential replacement by computers (Baldwin et al., 2012; Meijer, 2015).

*Impacts:* The impact analysis refers to the longer-term effects of digitalization on citizens and local government. Furthermore, it includes possible new cleavages between (clusters of) local governments resulting from different paces and intensities of digital transformation across the local landscape in Europe. First, the reaction to and acceptance of citizens to new e-services, actual use (or non-use) of digital services by citizens and possible gaps between their expectations and the reality of digital services will be taken into account. Second, we will seek to identify system changes (Pollitt/Bouckaert, 2017), that is, shifts in relevant local governance arrangements, such as territorial scales, task allocation in the multi-level system, and institutional boundaries between the public and the private sector. We will scrutinize to what extent, in the different country contexts, the principles of territoriality and functionality of local governance (Wollmann, 2004; Wayenberg/Kuhlmann, 2018) have been re-aligned as a result of digitalization. Finally, we will consider whether and how the digital transformation has deepened existing - or created new cleavages and divisions between (clusters of) local governments in Europe, e.g., between urban and rural, rich and poor municipalities, or between various European regions/countries.

## **2.2. Independent variables: Macro-, meso-, and micro-level factors**

Independent variables include explanatory factors on the macro level (institutional properties of the local government systems), meso level (internal organizational arrangements and procedures), and micro level (actor strategies, interests, motives) (Roberts, 2020).



*Macro-level factors:* On the macro level, the characteristics of the countries' administrative system, administrative culture, and local government systems constitute a corridor for local actors' decisions on institutional reforms. First, the degree of centralization/decentralization affects central governments when imposing specific digital components to municipalities top-down, and local governments when developing their own digitalization strategies more autonomously in a bottom-up manner. In unitary states with a centralized administration, central governments can easily intervene in the affairs of sub-national tiers of government, impose digitalization reforms and centrally monitor, control, and steer their implementation. By contrast, in federal and highly decentralized states with strong sub-national units, the introduction of digital services and e-administration can be expected to be less centrally streamlined and, instead, voluntary-managed to a large extent. Second, administrative cultures and legal contexts will presumably influence the dynamics and effects of digital transformation. We would anticipate digitalization to advance more hesitatingly in Continental European countries (e.g., Germany, France, or Italy) with a strong legalistic administrative culture characterized by extensive regulations, a closed civil service, and a predominance of legally trained staff, rule-oriented administrative procedures, and a certain reluctance towards (private-sector imported) digital tools. This might contrast with countries with a public interest tradition (e.g., U.K.) and more open civil service systems (e.g. Sweden or Denmark) marked by less legalistic and more pragmatic orientations, in some instances, also combined with an instrumental notion of the state and a (digitalization-friendly) culture of transparency, informational freedom, and disclosure (Kuhlmann/Wollmann, 2019). The degree of local autonomy in different national and regional contexts (Ladner et al., 2019; Baldersheim et al., 2017; Heinelt et al., 2018; Wayenberg/Kuhlmann, 2018) can be assumed to impact local digital reforms. Highly autonomous and functionally strong local governments will be presumably more inclined to transforming their administrations digitally according to their own local needs and citizens' demands than less autonomous ones. The same could be assumed for territorial sizes and the urban/rural divide as an element of local institutional contexts. Thus, we would expect large-scale (urban) local entities to be more capable of coping with the transaction and opportunity costs (Williamson, 1985; Kuhlmann/Wollmann, 2006) of digital reform implementation than small (rural) municipalities whose resources are spent on day-to-day business alone. The former usually have more extensive pools of human resources and professional expertise from which to draw and can, therefore, develop more ambitious digitalization projects than the latter who suffer from capacity shortages and lack of expertise. Furthermore, we will consider the respective country's economic situation (Domínguez et al., 2011), which influences both the supply and demand for digital services. We would expect countries with a lower budget deficit and national debt to spend more on the digitalization of their public sectors. In addition, access to technological devices and online services is more likely in countries with a higher standard of living, in turn affecting citizens' demand for and use of digital services.

*Meso-level factors:* On the meso level, local government digitalization strategies, resources, and governance of the digitalization process must be taken into account as relevant explanatory factors. We will investigate how different types of local digitalization strategies influence the dynamics and effects of digital transformation in local government. We will also consider whether (and with what content) such local digitization strategies are designed, whether they are linked to specific targets, time, and resource requirements for implementation, whether they relate explicitly and directly or rather implicitly and indirectly to the implementation of digital projects, as well as how

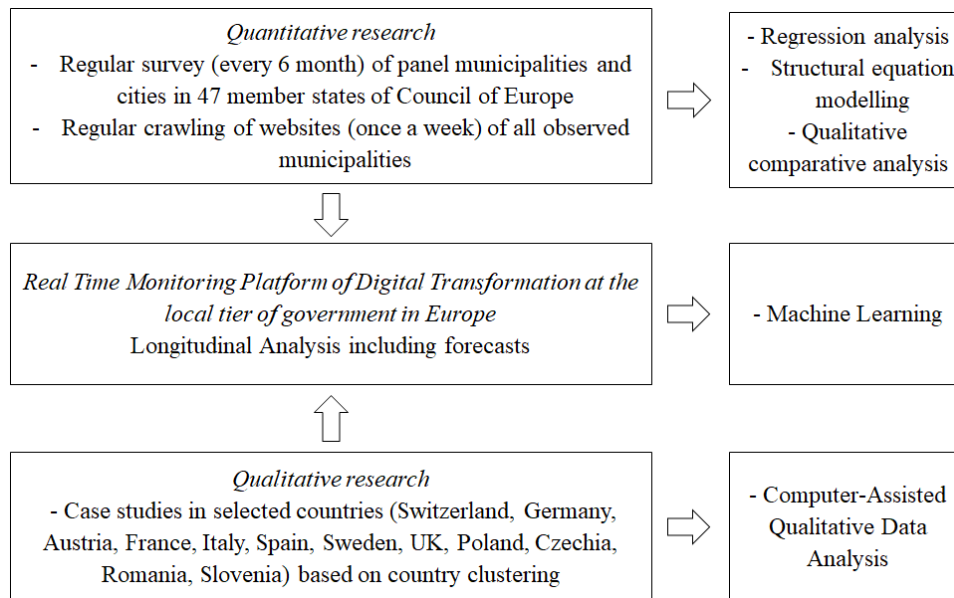
administrations respond strategically to the fundamental challenges (Bryson, 2018). Digitalization strategies for local governments might exist at different loci (for different organizational units) in the local governments, and might only be partially aligned and explicated (Schedler/Siegel, 2005; Proeller/Siegel, 2012). Most important, though, is to check whether strategies have led to reflective practices within the organization rather than merely formal strategic planning processes (Proeller et al., 2014). We assume that deliberate, formalized strategies foster achievement of goals and achievements explicated in the strategy. However, we also assume that the more disruptive and radical transformations are only observable when reflective and learning routines are part of the strategic processes. Furthermore, the governance of digital reforms will be considered. The establishment of “parallel organizations” to accompany reforms, steering groups, and other flexible forms of process management can promote the digital transformation of municipalities. Simultaneously, an excessive number and fragmentation of such bodies and the associated interface problems and coordination costs with a possible lack of or too weak overall leadership can have a delaying and inhibiting effect. Finally, meso-level factors concern the financial and human resources available and mobilized in local governments, which might facilitate or inhibit digital transformation and enhance or limit its effects. This concerns, in particular, the budgetary situation, the financing of digitization projects, and the provision of IT-trained staff (Coursey/Norris, 2008; Goldfinch, 2007; Meijer, 2015; Moon, 2002; Norris/Moon, 2005; Ziemba et al., 2015). On the one hand, it can be assumed that administrations in a difficult financial situation and with staff shortages see considerable potential for relief through digitization and that these resource bottlenecks are a driver for corresponding comprehensive reform efforts. On the other hand, however, it could also be that administrations with a difficult resource situation are hesitant and selective in their approach to digitization because the associated institutional transformation process initially generates considerable additional costs and requires more room for maneuver (organizational slack) (Cyert/March, 1963).

*Micro-level factors:* Concerning explanatory factors on the micro level, we will scrutinize the relevant players, promoters, and moderators of local digital reforms and specific local actor constellations, supporting and blocking coalitions preferences, interests, and motives. It can be assumed that the digital transformation of an administration will be decisively shaped by the locally dominant constellations of actors and opinion leaders, including the elected local council, the mayor, department heads, or employees, who can either promote or hinder digitization (Bogumil et al., 2007; Kuhlmann, et al. 2008). It is, therefore, necessary to examine the extent to which innovation and acceleration agents (change agents), local advocacy coalitions and opinion leaders, and digitization promoters and opponents, are involved in the process of digital transformation - and whether they promote or hinder it. Furthermore, we would assume that in local governments where the position of the mayor is powerful (Heinelt et al., 2018, pp. 36-47), digitalization might benefit from pronounced leadership and the advancement of well-functioning e-services for citizens will attract approval and possibly secure re-election. By contrast, when mayoral leadership is weak, digitalization projects might be less well supported by the city government and thus less successful in terms of outputs, outcomes, and impacts for citizens and local government employees.

### **2.3. Methods**

This project will implement a mixed method design, using quantitative and qualitative research (see figure 2).

Figure 2: Research design and methods



### *Real-Time Monitoring Platform of Digital Transformation at the Local Tier of Government in Europe*

One goal of the project is to design and implement a real-time platform for monitoring digital transformation at the local level of government in Europe. On this platform, the state and dynamics of digitalization in Europe’s local governments will be published, showing the present state, development over time, and a recommendation or forecast of future development. A glossary will be generated containing terms that will have been crawled and followed in the contents of the websites. This is complemented by findings from the qualitative and quantitative research.

#### *Quantitative research*

We will send short surveys every six months to the responsible individuals at municipalities (political leaders and heads of digital transformation in public administration) and analyze the answers to track updates in the survey content. The surveys will ask about the development and perception of changes implemented since the previous survey. An iterative proportional fitting (IPF) will allow us to have a representative overview of European municipalities. To ensure successful data collection, an international network of researchers acting as country contact persons is needed. These contact persons will be selected from the GIE on the European Charter of Local Self-Government of the Council of Europe. For the data analysis in the quantitative section, multiple regression modeling, structural equation modeling (SEM), and qualitative comparative analysis (QCA) will be used.

#### *Qualitative research*

Comparative case studies will be conducted in selected municipalities. A major criterium for the selection of cases is, firstly, country variance regarding local administrative systems (Kuhlmann/Wollmann, 2019; Heinelt et al., 2018; Bouckaert/Kuhlmann, 2016). The well-established typology for the comparative study of local governments is based on three key dimensions: institutional (multi-level macro-structure), cultural (legal families/administrative culture: the rule of law vs. public interest culture), and historical dimension (East-West differences: traditional (Western) bureaucratic and post-communist models). First, we will apply a “most

similar systems” design and compare the three countries of the continental European federal type: Switzerland, Germany, and Austria. Second, we will contrast them with selected countries of the other types. In this way, the application of a “most different systems” design allows us to cover a maximum of institutional variety and explore its consequences for digital government. Second, for each country, one typical, representative case is selected (Seawright/Gerring, 2008).

The case study approach draws on semi-structured interviews with experts and focus groups to be conducted with local chief executives, CIOs, heads of departments, staff council representatives, street-level bureaucrats, and citizens. We will perform *computer-assisted qualitative data analysis*. First, we will perform a co-variance analysis, providing confirmation or falsification of correlations between dependent and independent variables, and exploring the causal mechanisms that occur within the cases. Second, we will perform a congruence analysis of the general causal propositions and a pattern-matching investigation between the cases and countries (Pollitt, 2016). In so doing, we aim to deepen, validate, and complement previous findings. The case study results will also be used to identify good practices, derive lessons, and share transformational knowledge relevant to practitioners and decision-makers in municipalities undergoing digitalization.

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