TOWARDS TRANSFORMATIONAL IT GOVERNANCE – THE CASE OF MOBILE GOVERNMENT ADOPTION

Till Winkler
Natalia Lvova
Oliver Günther

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Winkler, Till J., Humboldt-Universität zu Berlin, Spandauer Str. 1, 10178 Berlin, Germany, till.winkler@wiwi.hu-berlin.de
Lvova, Natalia, Humboldt-Universität zu Berlin, Spandauer Str. 1, 10178 Berlin, Germany, natalia.lvova@student.hu-berlin.de
Günther, Oliver, Humboldt-Universität zu Berlin, Spandauer Str. 1, 10178 Berlin, Germany, guenther@wiwi.hu-berlin.de

Abstract

Using mobile services for e-government opens a new way of interaction between governments, citizens and businesses as well as within the public administration. However, governments face different drivers and inhibitors in their adoption behaviour. In this paper we investigate the question why public sector organizations differ in their adoption of mobile government innovations. Based on 12 in-depth interviews with municipal IT decision makers, we apply grounded theory and content analysis to derive a framework for drivers and inhibitors of m-government adoption. Further, we utilize this framework to analyze four cases in detail and identify the contextual differences in such municipalities. Finally, we isolate the effects in the way IT is governed and derive the concept of transformational IT governance to explain the differences in municipal m-government adoption.

Keywords: E-Government, Mobile Government, Municipal level, Drivers and inhibitors, IT organization, IT governance, Grounded theory, Content analysis, Case studies.
1 Introduction

With the rise of the mobile internet, smart internet connected devices are becoming part of our everyday life. The fact that in many countries mobile broadband penetration has already surpassed fixed broadband subscriptions may only serve as a rough indicator (ITU 2010). Just as for private businesses (Siau 2001), these technological advances also offer the possibility for public sector institutions to rethink the interaction channels with customers as well as with employees and enhance current e-government practices by appropriate mobile government (m-government) services (Kuschchu & Kuscu 2003; Trimi & Sheng 2008).

However, such enhancements may imply transformational steps and require fundamental changes to internal organization and governance (Weerakkody et al. 2007; Janssen & Shu 2008) so that, analogously to private economy, public sector institutions take a different pace in innovation diffusion (Winkler & Ernst 2011). Drawing on findings from a recent survey, our research question is: What exactly makes public sector organizations differ in their adoption of mobile government services? Present literature tends to focus rather on technocratic aspects of m-government adoption, often lacks in empirical foundation and is hardly able to embrace the relevant contextual differences between the objects of analysis (Kuschchu & Kuscu 2003; Sandy & McMillan 2005; Al-khamaseh et al. 2006; Kuschchu et al. 2007; Kumar & Sinha 2007; El-Kiki & Lawrence 2007). We combine grounded theory and quantitative content analysis to develop a comprehensive framework on m-government adoption and apply this framework in four cases to determine the relevant contingencies in this context.

This paper contributes to current research inasmuch as a) we empirically derive factors which influence m-government adoption and b) generate appropriate theory to explain differences in the adoption between different entities. Since mobile government initiatives primarily occur at the local level (Borucki et al. 2005), we chose the municipal decision makers as the object of analysis. In the remainder of this paper we first review related work. Then we explain the methodological approach in section 3. Section 4 presents the derived adoption framework which is then used for the comparative case studies in section 5. Section 6 summarizes the results and proposes future work.

2 Related Work

2.1 Mobile Government Adoption

Following the definition by Kuschchu (2003), m-government can be defined as a strategy and its implementation involving the utilization of all kinds of wireless and mobile technology, services, applications and devices for improving benefits to the parties involved in e-government. Akin to e-government, m-government may have different foci. For the purpose of this work we distinguish between three main interaction patterns: government-to-citizen (G2C), government-to-business (G2B), and government-to-government (G2G) (Trimi & Sheng 2008). Although rarely causing structural changes (Borucki et al. 2005), the use of mobile technology may still help to transform governments (Kumar & Sinha 2007). In this sense, m-government may be related to the upcoming research stream of transformational government (Irani et al. 2007; Weerakkody et al. 2008).

Challenges and success factors of m-government adoption are widely discussed in e-government research (see Napoleon 2010). As the most critical issues, privacy and security as well as accessibility concerns are frequently mentioned (Kuschchu & Kuscu 2003; Sandy & McMillan 2005; Al-khamaseh et al. 2006; El-Kiki & Lawrence 2007; Kuschchu et al. 2007; Kumar & Sinha 2007). Moreover, we find a long list of technical issues related to infrastructure development, payment infrastructures, and compatibility as well as legal issues (Kuschchu & Kuscu 2003; Kuschchu et al. 2007), and user-related issues (such as preferences, quality, user friendliness, convenience, acceptance and education) (Sandy & McMillan 2005; Al-khamaseh et al. 2006; El-Kiki & Lawrence 2007) as well as cost (Sandy & McMillan 2005) as critical factors for mobile government adoption.
However, the rather young literature on m-government mostly draws upon conceptual work and single case studies and still lacks empirical foundation (Napoleon 2010). Thus, adoption factors identified in existing research can provide general normative guidelines, but do not to account for the individual differences between organizations. A recent study by Winkler and Ernst (2011) indicates that public sector institutions differ in innovation adoption. They segment municipalities into four empirical clusters: Innovators, IT-experienced, the Efficiency-oriented and Laggards. Out of these clusters, only the former two may be considered as early adopters. In this paper, we build upon this classification to explain the differences between such public sector organizations.

2.2 IT Governance in the Public Sector

One major barrier for m-government adoption also stated by experts (see El-Kiki & Lawrence 2007) refers to governance during initiation of an m-government project. Governance has equally been mentioned as one of the core elements in government transformation (Janssen & Shu 2008). From an organizational standpoint, any public institution can be horizontally divided in departmental areas and central units that perform cross-functional tasks such as information systems management (Brown 1999). IT Governance defines the distribution of decision-making authority and responsibilities between such entities and may be roughly classified into centralized, decentralized or federal archetypes (Weill & Ross 2004).

Governance mechanisms, which can be implemented at structural, procedural and relational level, have been identified as a key to align IT with business organizations and achieve IT performance in private sector companies (e.g. Weill & Ross 2004). Yet, little research has been conducted on mechanisms that contribute to IT governance within public sector organizations (Ali & Green 2007). For instance, in a cross-industry survey reported by Weill (2006) public sector organizations clearly score the lowest IT governance index. This topic is recently also gaining practical relevance (e.g. Hoch & Payán 2008), as the fundamental differences between public and private sector may also call for different principles of IT governance (cf. Sethibe et al. 2007).

3 Research Method

3.1 Data Acquisition

We acquire data from 12 in-depth semi-structured interviews with municipal IT decision makers. This object of analysis appears particularly suitable, since most m-government initiatives occur at the local level by the involvement of very few departments and workers, as Borucki et al. note (2005). Interview contacts have been drawn from a prior survey (Winkler & Ernst 2011) which features a representative sample of German municipalities (n=50). Interviews took place between June and August 2010 and followed a common guideline (a. context, b. mobile applications c. drivers and inhibitors, d. stakeholders). Average duration of an interview was 54 minutes amounting to 10.8 hours total interview data, respectively 140 pages of transcription. The city size, demographics (100% male) and job positions of the interviewees are depicted in Figure 1.

![Figure 1. Sample description (city size by inhabitants, interviewee age and job position)](image-url)
3.2 Coding Procedure and Content Analysis

We combine grounded theory with quantitative content in a five-step approach to analyze the interview material. Grounded theory is contrary to other research methods as it seeks to systematically develop theory, rather than verifying or testing it (Strauss & Corbin, 1998; Glaser 1992). Straussian grounded theory follows an interwoven process of open coding, axial coding and selective coding. It is thought to be more prescriptive compared to the Glaserian approach (Niekerk & Roode 2009). Our coding and calculations were performed using special software for qualitative analysis (Atlas.ti) as well as a common spreadsheet program.

1. We incrementally performed open coding of the given interview material by two coders and retrieved an initial list of 173 codes. Average groundedness of a code, i.e. number of quotations, is 8.3. Each code captures in average 28.3 words, which is a calculatory 53% of the total interview material.

2. Deviating from the Straussian procedure, we first arranged these codes according to basic categories (coding paradigm), before aggregating codes to mid-level concepts and categories. As the core phenomenon (the adoption of m-government services) was clear from the beginning of this study, we use an adapted Strauss coding paradigm (Strauss & Corbin, 1998) which jointly interprets causal and intervening conditions as drivers (conditions with a positive influence) and inhibitors (conditions with a negative influence). The resulting coding paradigm is illustrated in Figure 2.

3. We merged codes according to perceived semantic distance and partly sorted out codes with very few quotations. Simultaneously, appropriate mid-level categories were found within two of the basic categories to semantically structure these concepts. The result is a condensed hierarchical framework with total 42 concepts in four categories (see Figure 3).

4. We determined the intercoder reliability (Neuendorf 2002) of the condensed code set by recoding a sample of three interviews with switched roles. We considered an overlap in the quotation in both document versions as a hit, and calculated the reliability according to the formula $r = 2 \times \text{hits} / (\text{total codes}_{\text{Coder A}} + \text{total codes}_{\text{Coder B}})$. The resulting reliability of 58% can be regarded as a good result considering the number of different codes. For the subsequent analysis we joined both codings to a consolidated version.

5. For a valuation of the conditional variables, both of the coders went through all quotations belonging to the conceptualized conditions. We rated the relevant 1,273 quotations on a three-point scale, where -1 represents an inhibiting, 0 a neutral, and +1 a driving influence on m-government adoption. The reliability of this rating was $\kappa=78\%$ measured by Cohen’s Kappa, which can be regarded as a very good agreement (Neuendorf 2002). We calculated the influence of each variable as the average ratings of both coders. For purpose of illustration, the resulting valuations have been transformed to an equidistant five-step scale (interval boundaries at -1.0; -0.6; -0.2; 0.2; 0.6; 1) where “-“ represents a strong inhibitor, “-“ a weak inhibitor, “0” a neutral influence, and so on.

3.3 Case Study Approach

To investigate the variance in m-government adoption more in detail, we selected four cases from the sample. In qualitative research, the selected cases should be especially critical or revelatory with
regard to the phenomenon (Benbasat et al. 1987; Merriam, 1998). The replication logic (Yin 1994) either dictates to select cases which are expected to yield similar results (literal replication), or opposite results (theoretical replication). In this research, we followed the latter approach and based our case selection on three main considerations. First, we decided to choose one case from each of the empirical clusters provided by Winkler and Ernst (2010), as these groups emerged from statistic clustering which generally enhances variance. Second, within these clusters we preferred such revelatory cases which are characterized by a good clarity, quality and openness of the interviewee. Third, as selection should also be based on organizational criteria (Benbasat et al. 1987), we took into account municipality sizes and selected two larger and two medium sized cities. This allows for both, pairwise comparison and testing for size differences between these cases. Furthermore, we complemented the analysis with relevant documentation, such as strategy documents, organization charts and press clippings which we additionally retrieved from interview partners and web sources.

4  Framework for Mobile Government Adoption

The developed framework saturates the theoretical categories from Figure 2 with appropriate concepts that play a role in m-government adoption. Figure 3 displays the results of the qualitative analysis with total code frequencies and valuations in brackets. The code frequency (\#) can be interpreted as the relative importance of a concept, while the valuation (+/-) describes the strength of driving and inhibiting influences. For reasons of brevity, we briefly describe the main concepts in the following.

4.1  Contextual Variables

Contextual variables, on the one hand, concern properties of the municipality such as size, economic profile and budgetary situation. On the other hand, we found properties of the municipal IT organization and IT architecture to be relevant for m-government adoption. Examples are horizontal distribution of the IT organization (cp. Brown 1999), the degree of external sourcing, as well as governance mechanisms which are used to integrate IT with the functional departments. The complex influence of such variables should be elicited by the case studies presented in Section 5.
4.2 Drivers, Inhibitors and Strategies

Drivers and inhibitors are the factors that have either positive or negative influence on the municipality’s decision on mobile government adoption. Strategies are the actions that are taken in response to drivers and inhibitors. In the interviews, these actions have been identified by key words such as “need/should/must be done”. To group drivers, inhibitors and strategies, four self-evident levels emerged as categories: user, economic, governmental and technological level.

On user level we mainly find drivers which capture the expected benefit for the three target groups of m-government (citizens, businesses and governmental employees). Some cities aim to increase their attractiveness by offering mobile services, while others clearly doubt such kind of impact. Inhibitors on user level mainly relate to the demand of the different target groups. Particularly for some municipalities, there seems to be a perceived lack of knowledge about the needs of citizens. Furthermore, regarding G2G mobile applications, the technological attitude of the employees often represents a major inhibitor. However, these obstacles may be overcome by several strategies being quoted, such as an early involvement of citizens into the creation of such services, a strict focus on user orientation during the design phase, as well as qualification of governmental employees.

Not surprising, all interviewees put large emphasis on economic aspects, so that we applied a semantically rather fine-grained code set at this level. In the first place, possible process improvements are mentioned to be a driver for M-Government which may further lead to improved cost-effectiveness and potential savings. However, as some interviewees comment, such process improvements do not always pay off on the budget side, as freed resources are often immediately consumed by other tasks or an increased demand. Availability of funding is a light inhibitor. More than that, financial risks play a role as almost any m-government project implies a certain investment. Strategies to ensure the economic success of such project are access to supra-regional funding (e.g. on federal or EU level) and a focus on financial sustainability in general.

On governmental level we find strong drivers as well as strong inhibitors. Few interviewees quote a certain strategic intent, i.e. a strategic vision and creativity of the municipality in the use of new technology, as well as the capabilities of their team (though to a smaller extent) as important drivers. Both drivers are reinforced through strategies of inter-communal cooperation. Political influence seems to be a double-edged sword. On the one hand, political bodies need to be arduously convinced (internal marketing) to commit to technologically enabled changes. On the other hand, once there is a political will, it is much easier to implement larger transformations. However, if such political will is not present (which is mostly the case), the ability to change within the municipal administration becomes a major inhibitor. Further, legal conditions concerning data security, laws, as well as different legal standards between authorities and federal states are an issue. This obstacle, in some cases had, in other cases still may to be overcome by appropriate regulatory changes.

Such regulatory changes are also related to technological influences regarding security and privacy standards that municipalities need to comply with. However, stronger inhibitors on technological side refer to the feasibility to implement new technical solutions and dependency on the market. Deciding for a certain technology may lead to a lock-in to certain vendors. The ability to integrate mobile applications with existing procedures also fails due to a lack of open standards (e.g. web services) in existing applications. Several municipalities address feasibility issues through cooperation with industrial partners or research institutions to stay informed about the state of the art. To minimize technological risks, also a coexistence of the mobile process with the legacy system is proposed. Yet, this strategy generates additional costs. Finally, some IT leaders mention the need to structurally change the IT landscape in order to be able to integrate with mobile channels.

4.3 Consequences

We divided the consequences of M-Government adoption into service outcomes and general outcomes. Concerning the latter, most IT decision-makers generally see a high potential in
m-government possibilities and expect an increasing relevance of this topic in the next two to three years. However, the perceived adoption status differs. While some municipal representatives admit not having ventured any project with respect to mobile government, others consider themselves to have a stronger expertise and experience.

We found these perceptions generally reflected in the number of service outcomes observed which refer to the concrete mobile services which have been planned, implemented or failed. Service outcomes are presented in Table 1. Here, the numbers in brackets correspond to the number of municipalities in the sample (n=12). We acknowledge that these numbers serve as a rough indicator as interviewees might forget to mention a certain service during an interview. We find that there are some common (planned or implemented) applications across cities, e.g. the implementation of mobile city portals, traffic warden support, single service number and mobile parking tickets. Other services, by contrast, seem to be piloted largely on the initiative of individual cities.

Table 1. Service outcomes (by status and target group)

<table>
<thead>
<tr>
<th>Placed</th>
<th>Implemented</th>
<th>Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizens / businesses (G2C/G2B)</td>
<td>Mobile city portal (2)</td>
<td>Mobile city portal (4)</td>
</tr>
<tr>
<td></td>
<td>Mobile library services (2)</td>
<td>Single service number I (4)</td>
</tr>
<tr>
<td></td>
<td>Mobile tourist guide (1)</td>
<td>Mobile parking tickets (2)</td>
</tr>
<tr>
<td></td>
<td>Problem reporting service (1)</td>
<td>Public transportation information (1)</td>
</tr>
<tr>
<td></td>
<td>Mobile payment platform (1)</td>
<td>Public transportation payment (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parking information service (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appointment service (1)</td>
</tr>
<tr>
<td>Government-internal (G2G)</td>
<td>Traffic warden support (3)</td>
<td>Traffic warden support (2)</td>
</tr>
<tr>
<td></td>
<td>City council support system (2)</td>
<td>Food inspection support (2)</td>
</tr>
<tr>
<td></td>
<td>Civil engineering support (1)</td>
<td>City council support system (1)</td>
</tr>
<tr>
<td></td>
<td>Public order office support (1)</td>
<td>Veterinary services support (1)</td>
</tr>
<tr>
<td></td>
<td>Retirement homes control (1)</td>
<td>Firefighter support (1)</td>
</tr>
<tr>
<td></td>
<td>Environment agency support (1)</td>
<td>Mobile radar equipment (1)</td>
</tr>
</tbody>
</table>

5 Mobile Government Cases

To better understand the differences between municipalities we use the presented framework to conduct multiple case studies following the methodology and selection criteria outlined in section 3.3.

5.1 Case A: An M-Government Innovator

Case A is a city with more than 500,000 inhabitants in one of the economic centres in Germany and considers itself to be a leader in e- and m-government. The IT department is subordinate to the general office for central services and can be divided into two sub-units: the department for IT operations and the office for organization and IT steering. Further, in course of the EU services directive, e-government has been given a high priority through establishing an additional inter-disciplinary Competence Centre within the Department for Economic Development. The interface to the departmental areas is provided by a decentralized liaison role. Initiatives for new IT projects, such as mobile services, may be filed by the departmental areas and evaluated by central IT steering, which governs the IT budget. The city has outsourced data centre operations, networks and communication infrastructure and large parts of application management to a communal IT service provider.

The Head of Organization and IT steering sees the main benefit of mobile services particularly on citizen and internal side. Mobile applications, such as an appointment service or the ex-ante

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1 Single service number (D115) represents an exception inasmuch as it follows a Federal initiative of the Ministry of the Interior and is gradually rolled out nationwide. Also, the classification of this service as M-Government may be argued.
2 The EU directive on services in the internal market (2006/123/EC) has been issued with the objective of establishing a single market, and amongst other requires governments to provide a “point of single contact” via electronic means.
completion of required forms, may reduce citizens’ attendance at public bodies, but also efforts for the municipality.

This tendency is seen as an important building block for increasing city attractiveness embedded in a comprehensive strategy of urban development. Same applies to local businesses, where the facilitation of routine interactions with the municipality may become an “absolute location factor”. Economically, such applications should account for their costs, however, some applications which focus more on quality usually pay off only in the long run. Thus, almost everything which is technically feasible will be evaluated in the light of the IT strategy and municipal goals. Possible internal resistance to changes can widely be mitigated through the central empowerment of the office for organization and IT steering within the municipality administration.

The only restrictions from this perspective are technical possibilities and certain legal regulations, such as data protection laws. On the technical side, the interviewee states that most internal procedures and applications – contrary to a service-oriented paradigm – yet do not offer the possibility to be opened towards the (mobile) internet. Thus, on both issues more nation-wide standards, as occurred for example with the introduction of the electronic ID, would be appreciated to avoid redundancy. The municipality actively cooperates with industry, such as a local telecommunication company, as well as with local research institutions. As an outcome, the city offers and operates a number of external and internal mobile services, which enjoy a high acceptance among their users, see Table 2.

5.2 Case B: An IT Experienced Municipality

As case B, we chose a medium-sized city in Southern Germany with a structurally challenging but relatively dynamic economic environment. Our interviewee is the head of an e-government staff function, which has been installed to coordinate between the municipal demands, internal IT and a communal IT services provider. Like in case A, the link to the departmental areas is provided by IT liaison roles that manage day-to-day operations. On the strategic level, there is an IT steering committee meeting every 4-6 weeks and comprising members from the departmental areas, staff council, auditing and internal IT. This committee decides on new and ongoing IT projects and only needs the city council’s approval beyond a certain investment volume.

The driver for m-government is mainly seen in the benefit for local industries. They deservedly claim appropriate interfaces to simplify their own processes, e.g. for switching from a single to a collective billing. On the contrary, the interaction with citizens is characterized by consumption and creation of a benefit that is “hardly quantifiable”. Moreover, the interviewee reports on difficulties in recognizing the citizen demand, as the demands of single interest groups cannot necessarily be understood as a collective need. On the economic level, the importance of a payment platform is stressed, hence only such services will be implemented which directly pay off, e.g. an on-demand provision of geo-data. However, implementing projects just for the sake of the city’s image “was something for the 90s”, rather the city puts emphasis on the sustainability of the solution and pursues long-term partnerships with various industry partners.

On the governmental level we find interplay of sound internal IT capabilities and financing. Similar to case A, the interviewee also cites regulatory challenges on the distribution of competences between different bodies, as well as data protection laws as significant constraints. As a result, despite being very active in the e-government area, the municipality has realized few mobile solutions, yet is planning to expand in this field, see Table 2.

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3 Germany has launched a new electronic ID from November 2010 onwards, driven by an initiative of the German Ministry of Interior, the Federal Office for Information Security and multiple research and industry partners.
Case C: An Efficiency-oriented Municipality

Case C is one of many German municipalities that must manage their resources in accordance with a budget-balancing concept. IT operations have entirely been outsourced to a shared communal service provider. Similar to case A, the CIO and his staff, who are in charge of IT steering, are subordinate to the central office for personnel administration and organization. The municipality has established an efficiency-oriented approach, with IT steering focused on balancing IT expenditures with income. The municipality has established an IT Steering Meeting, and IT planning groups to facilitate decision-making. The municipality has also implemented a few focused applications, with clear benefits, as well as bringing online services to mobile devices. The municipality has maintained strong service outcomes, with planned services such as library services, city portal, and Councillor support. The implemented services include traffic wardens, food and veterinary inspection, and city portal. The failed services include live townhall meetings. The general outcomes show few focused applications with clear benefits. The municipality has established an efficient and effective approach to managing IT resources.

Table 2. Mobile government cases overview

5.3 Case C: An Efficiency-oriented Municipality

Case C is one of many German municipalities that must manage their resources in accordance with a budget-balancing concept. IT operations have entirely been outsourced to a shared communal service provider. Similar to case A, the CIO and his staff, who are in charge of IT steering, are subordinate to the central office for personnel administration and organization. The municipality has established an efficiency-oriented approach, with IT steering focused on balancing IT expenditures with income. The municipality has established an IT Steering Meeting, and IT planning groups to facilitate decision-making. The municipality has also implemented a few focused applications, with clear benefits, as well as bringing online services to mobile devices. The municipality has maintained strong service outcomes, with planned services such as library services, city portal, and Councillor support. The implemented services include traffic wardens, food and veterinary inspection, and city portal. The failed services include live townhall meetings. The general outcomes show few focused applications with clear benefits. The municipality has established an efficient and effective approach to managing IT resources.

The German Local Government Code provides that municipalities must manage their resources in accordance with a budget-balancing concept (Haushaltssicherungskonzept), in case expenditures exceed income in the municipal cameralistics. Such municipalities no longer have the freedom to decide whether certain voluntary tasks should be pursued.
internal idea management process, where employees from all kinds of departments may hand in ideas which are subsequently evaluated by the CIO and the central office.

The CIO considers m-government as an important topic. In course of cost savings and budget cuts, the administration is permanently forced to check for feasible alternatives. This mainly refers to the internal side (G2G), as such closed user groups mitigate the investment risk. Despite the growing popularity of internet connected devices, he sees less potential on the citizen side, as there seems to be only “a hand full of younger citizens” that would use m-government services and those are harder to influence as a target group.

On the governmental level, stakeholders are partly affine, partly averse, leaving it to IT to assure, that estimated costs-benefits are kept. A major concern on the technological level is, that a redundancy of m-government with traditional e-government channels, e.g. for mobile ticketing, will generally lead to higher costs. As an outcome, three out of four ideas for m-government improvements have successfully been implemented, two of which are internal applications. The fourth, a live internet transmission of town-hall meetings, has been dismissed due to an uncertain citizen demand.

5.4 Case D: An M-Government Laggard

Size and financial situation case D municipality are comparable to case A. Despite a considerable debt level, the municipality benefits from a relatively strong economic environment and corresponding tax incomes. Over the past years, the IT organization has undergone several changes. The current setup is comparably fragmented with more than half of the 250 IT employees being located in the main departmental areas. Central ICT is operating infrastructure, telecommunications and networks as well as the city website, and moreover generates business with external clients. There are two main governance bodies for IT decisions: IT steering meeting and IT planning group. The first comprises the IT heads of each IT department and meets 1-5 times a year to inform about new IT projects. Yet, a joint decision-making is only required only for large volume projects. IT planning group consists of two department managers from central IT and two from the office for personnel administration and organization. They jointly decide on technological and organizational guidelines of the municipality.

Central IT seems to have limited insight into user level drivers for m-government. According to the department head, there are hardly any requests to central ICT to offer any new services due to the decentralized structure. With the exception of the mobile city portal, all existing initiatives and realized applications stem from the solo efforts by departmental IT units, e.g. a parking payment application realized by the municipal traffic department. In some cases IT steering meeting was not sufficiently able to create alignment on such developments. This fact may even have induced operational problems, such as bandwidth problems and missing infrastructure support, when involving central ICT at a very late stage.

On an economic level, the objective of achieving cost savings is perceived strongly. However, central ICT as well as IT planning group largely fail to lever efficiency improvements due to a lack of empowerment and internal resistance, especially when processes and resources are concerned. The main strategy to overcome such resistance is seen in take an indirect way via the political level. For this reason, currently a strategic paper including e- and m-government elements is being elaborated. Once the political level adopts an idea, there may be a stronger momentum for renovation of the service landscape. However, the current outcome concerning mobile services (Table 2) is rather seen as the result of the departmental initiatives than of an overall strategy and efficiency goals.

5.5 Case comparison: Contingencies for M-Government Adoption

Regarding the service outcomes, we argue that municipality A has the strongest, cases B and C medium, and case D the lowest adoption of m-government services, which is in line with the quantitative findings provided in (Winkler & Ernst 2010). Further, exploring the target groups (citizens, business and government employees) we find that municipality A is focusing on all three of
them, while B explicitly excludes citizens due to a perceived lack of demand from this user group. Municipality C is even more restrictive and relates m-government primarily to “closed” user groups, i.e. internal staff. For municipality D, no clear user focus could be recognized.

As a municipality context we explored size, economic profile and budgetary situation. Concerning size we selected two comparable cases each for mid-sized (B, C) and very large (A, D) cities. Based on the presented cases, we conclude that there is no support for a coercive correlation between the size of a municipality and the adoption of mobile services. In respect to the financial situation (economic profile and budgetary situation), we find more gradual differences between the four cases. Cases A and D exhibit a comparably good, case B a moderate-poor and case C a poor financial situation. We consider this fact to be an indicator of a relationship between the financial situation of a municipality and the outcomes of m-government adoption for cases A, B and C. However, for case D there seem to be further organizational contingencies.

Properties of the IT organization refer to horizontal distribution, governance mechanisms and sourcing degree. Regarding horizontal distribution and sourcing degree, we find considerable differences between cases A, B, C on the one hand, and case D on the other. We draw on IT governance theory and deduce that case D exhibits an unbalanced allocation of decisions rights between centralized and decentralized IT departments (Weill & Ross 2004). Although municipality D has certain governance mechanisms in place, such as decision committees and an investment approval process, these practices do not work effectively. Thus, decisions which enhance the efficient use of e- and m-government technology encounter large internal resistance. Moreover, unlike in cases A, B, C, the responsibilities for IT and organizational issues are organizationally separated, so that central ICT is not given sufficient decision rights to promote changes of a transformational kind, which amongst other effects, also inhibits m-government adoption. Concluding, we propose a new dimension for the IT governance property which will tell us, whether IT is equipped with such transformational decision rights or not (non-transformational). The resulting contingencies are summarized in Table 3.

<table>
<thead>
<tr>
<th>Financial situation</th>
<th>Strong</th>
<th>Moderate</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target groups: G2C, G2B, and G2G (Case A: Innovator)</td>
<td>Target groups: G2B and G2G (Case B: IT experienced)</td>
<td>Target group: G2G (Case C: Efficiency-oriented)</td>
</tr>
<tr>
<td></td>
<td>Transformational</td>
<td>Non-transformational</td>
<td></td>
</tr>
<tr>
<td>IT governance</td>
<td>Unfocused adoption</td>
<td>(Case D: Laggard)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Case findings – Contingencies for m-government adoption and target groups

6 Conclusions and Future Work

This work used a multi method qualitative approach to explore the factors that make public sector institutions differ in their adoption behavior of mobile government services. We condensed these factors in a novel and empirically well-grounded framework and demonstrated how to apply such framework in four case examples. The results of the case comparison provide previously unexpected evidence for the contingent influence of the contextual variables financial situation and IT governance. To underline our findings, we introduce the concept of transformational IT governance. This concept helps us demonstrate that only those public sector institutions will succeed in transformational projects such as m-government, who are able to effectively connect responsibilities for IT and organization. We hereby enrich literature by a currently underrepresented aspect in e-government research and provide appropriate mid-range theory for m-government adoption on municipal level.
This work has some limitations which should be considered when interpreting the findings. First, due to the relatively small sample size, the theory developed may have limited generalizability. Second, the legal framework as well as culture in German municipalities, may be different from other countries (Hofstede 2001). Finally, the voluntary participation in interviews may imply a non-response bias of the interview data. However, these limitations are inherent to the qualitative approach, as for case study research a statistical sampling is generally not required (Merriam, 1998). In our future work, we are planning to test the proposed theory in larger, confirmatory studies and investigate m-government adoption across different cultural contexts.

References


