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Till J. Winkler

*Humboldt-Universität zu Berlin, Institute of Information Systems, Berlin, Germany, [tw.digi@cbs.dk](mailto:tw.digi@cbs.dk)*

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### Recommended Citation

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<https://aisel.aisnet.org/wi2013/53>

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# IT Governance Mechanisms and Administration/IT Alignment in the Public Sector: A Conceptual Model and Case Validation

Till J. Winkler

Humboldt-Universität zu Berlin, Institute of Information Systems, Berlin, Germany  
till.winkler@wiwi.hu-berlin.de

**Abstract.** The mechanisms of information technology (IT) governance have been widely recognized as practices to sustain alignment of business and IT units. However, the IT governance literature so far has drawn little attention to the possible idiosyncrasies of governance arrangements in the public sector. In this paper we propose a conceptual model to investigate the relationship between IT governance mechanisms and according performance outcomes specifically for public sector organizations. A survey instrument is developed and validated based on in-depth interviews with IT representatives from three different municipalities in Germany. A cross-case analysis particularly provides evidence for the importance of structural and relational mechanisms and demonstrates how different mechanisms can compensate each other. Our findings provide relevant insights for government practitioners and an impetus for further research.

**Keywords:** IT governance mechanisms, business/IT alignment, public sector, conceptual model, instrument development, cross-case analysis

## 1 Introduction

Public administrations today need to maintain a broad range of services, respond to social, political and regulatory changes and simultaneously cope with increasing fiscal stress. Information technology and systems (IT/IS) have become an important resource to operate administrative procedures and implement strategic initiatives of public agencies. Public IT spending in Germany ranges among the highest across all sectors [1] and is also comparable to other industries on a per employee basis [2]. Despite this key role, IT is rarely seen at the top of the agenda of political decision makers, which may also be due to the great number of public IT projects that have been challenged in the past [1].

In research and practice, a number of mechanisms for IT governance have been identified on structural, procedural and relational level that foster business/IT alignment and thus ensure that “IT sustains and extends the organization’s strategies and objectives” [3]. By now, many of these practices have been incorporated in reference

framework such as ITIL and COBIT [4]. According to Weill and Ross, effective IT governance is the “single most important predictor of the value an organization generates from IT” [5].

However, as prior authors find [6], the IS literature so far has drawn little attention to IT governance mechanisms specifically for public agencies. This appears surprising since public organizations, given their inherently different goals from the private sector, may have idiosyncratic and distinctive IT governance needs [7]. In a survey by Broadbent and Weill [in 5], public sector organizations clearly score the lowest IT governance index. This corroborates the call for a more specific approach to IT governance in the public sector.

In this paper we address the question: *how do IT governance mechanisms IT sustain and extend the organizations’ strategies specifically in the public sector?* Based on the extant literature, we conceptualize administration/IT alignment as a key construct to explain public IT value creation and link this construct with appropriate governance mechanisms. The variables of our model are operationalized in a survey instrument, which is then validated based on a series of three interviews with IT representatives from three different municipalities in Germany. By performing cross-case analysis, we particularly find support for the importance of structural and relational mechanisms in a public sector context. While these findings provide relevant insights for government practitioners, our research also represents a starting point for a future confirmatory study.

In the next section (2) we review the principal differences of the public and the private sector before we develop our conceptual model (section 3), describe the survey instrument and its validation approach (section 4), present the case analysis (section 5) and conclude with a brief discussion, limitations and future work (section 6).

## **2 Differences between Public and Private Sector**

The fundamental differences of public and private sector organizations have been widely discussed in the public management and IS literature [e.g., 8],[ 9-12]. However, only few recent works specifically address the IT governance challenges in the public sector [e.g., 5], [6], [7], [13]. For the purpose of this paper, we briefly review the key differences and outline their potential implications for IT governance (ITG), see Table 1.

First, opposed to private entities that seek to generate shareholder value, public governments have their *raison d’être* in serving the community, a goal that the contemporary literature accounts for with the concept of public value [11]. Creating public value can be thought of as more complex than ‘simply’ maximizing profit. Besides improving government operations it requires to consider the broader political and social returns [14]. Cascading such goals down in the organizations, suggests that also the *goals of IT governance* are more multifaceted and more difficult to measure than in private sector [5].

**Table 1.** Public and private sector differences (based on [5-12], author’s representation).

Attribute	Private sector <sup>2</sup>	Public sector	ITG implications
Goals	Shareholder value	Public value / multifaceted	• IT goals
Stakeholders	Few	Many / potentially conflicting goals	• Alignment
Environment	Less regulated	Legal and formal constraints	• Procedural
Incentives	High / market	Low / “soft budgets” / scrutiny	mechanisms
Risks	Lower aversion	High aversion	• Structural
Competition	High competition	Low / intergovernmental cooperation	mechanisms
IT innovation	Competitive advantage	Treated as necessity	• Relational
IT competencies	Varying	Generally lower	mechanisms
IT sourcing	Flexible contracting	Complex tendering processes	• Sourcing
IT resources	Proprietary IT	Shared IT resources	governance

Achieving public value implies inclusion of diverse stakeholder groups, so that conflicts of different political and societal stakeholders may often interfere with administrative operations [10]. Analogously, we assume that public IT governance needs to deal with diverse stakeholders, e.g. political and administrative groups and target at *aligning* these to a greater extent than in private sector.<sup>1</sup>

The different goals of private and public sector also affect performance incentives. In contrast to having the market as a control mechanism, public agencies function within the “soft budgets” constraint. That is, overstretched budgets do not necessarily entail major sanctions [7]. Public organizations in general implement greater scrutiny and formal constraints to control these risks and therefore can be characterized as more risk avert [10]. Thus, in terms of IT governance, we may assume that public organizations also exercise greater scrutiny, for example when implementing *procedural* mechanisms to control for the risks of IT investments.

Risk aversion also implies a lower degree of innovation, since innovations inherently entail risks. The public sector is generally viewed as a late adopter of both management and IT innovations [9]. The management literature generally argues that innovation is, amongst others, the result of greater autonomy of business managers [15]. However, this correlation does not hold for IT innovations in the public sector [13], due to the risk aversion and lack of incentives to innovate that administration officials face [12]. In contrast to private economy, this may imply that from an IT governance perspective public agencies tend to create more centralized *structures* for decision making.

<sup>1</sup> When referring to stakeholders within the public agency (e.g., a municipal administration), we assume a simplified organization model consisting of three major groups: administration departments (e.g., building authority, regulatory authority, etc.), central administration functions (e.g., mayor’s office, personnel, treasurer) as well as internal IT groups.

<sup>2</sup> Note that for simplicity we exclude the non-for-profit private sector, e.g. non-governmental organizations (NGOs), since those range between the two polar extremes [7].

Public agencies also face no (or much less) competition than private companies. Administrations have the opportunity to cooperate and share knowledge on intercommunal, interregional and even transnational levels [7]. Moreover, some authors argue that public sector organizations exhibit lower IT competencies and skills, also due to the difficulty to offer market-based salaries for IT professionals [1]. This strengthens the importance of *relational* mechanisms inside and outside of the organization also for IT governance to compensate for such deficits.

Finally, both public and private sectors use increasing outsourcing [1]. However, due to the legal framework, public procurement procedures are much more complex than for private firms [10]. Sourcing relationships in the public sector are therefore more persistent and increasingly shared across different public bodies [9]. This may also increase the complexity of *IT sourcing governance*.

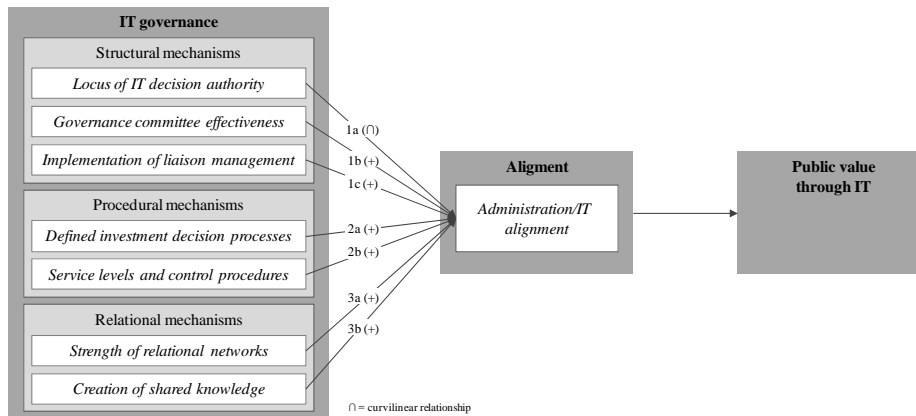
Altogether, while IT governance in the public sector surely exhibits many similarities to private sector, it is also important to consider the differences. The more complex value creation setting, greater scrutiny and the ability to develop shared external capabilities put even more emphasis on the need for appropriate structural, procedural and relational mechanisms [5]. This strengthens the argument for taking an idiosyncratic approach to investigating IT governance in the public sector.

### **3 How IT Governance Creates Public Value: Conceptual Model**

In this paper we aim to advance our understanding on how specific IT governance arrangements can support the creation of public value. The crucial role of stakeholder alignment in public sector organizations motivates us to conceptualize the construct *administration/IT alignment* at the center of our model. In the following we explain this construct and its potential antecedents. The overall model is depicted in Figure 1.

#### **3.1 Administration/IT alignment**

In simple words, alignment describes when “business and IT are working together to reach a common goal” and “everyone is rowing in the same direction” [16]. Since the seminal paper by Henderson and Venkatraman [17], the academic literature has widely recognized and defined this complex construct in several dimensions [16]. For example, the strategic dimension refers to the degree to which the business strategy and plans, and the IT strategy and plans, support each other [16]; the social dimension has been defined as “the state in which business and IT executives within an organizational unit understand and are committed to the business and IT mission, objectives, and plans” [18]. Analogously, we may understand administration/IT alignment in the public sector jointly as the *degree to which the IT goals support the strategic goals of a public agency, and to which administration and IT stakeholders are committed to support these goals*.



**Fig. 1.** Conceptual model (based on [3])

The primary outcome of business/IT alignment is generally seen in organizational performance [16]. The rationale behind is that organizations that successfully align their business strategy/stakeholders with their IT strategy/stakeholders, will achieve more effective and efficient IT spending and therefore achieve superior returns. The question on how to conceptualize (and measure) organizational performance in the public sector—i.e. the creation of public value from IT [11]—remains an ongoing issue [19]. Besides cost-efficiency, frequently mentioned outcomes include accountability, openness and trust [14]. For example, when business and IT goals (and stakeholders) are aligned, there is a lower risk that IT resources will be spent on projects that do not contribute to the administration goals so that desirable innovations occur, which in turn is likely to have a positive impact on citizen satisfaction. Acknowledging the important role of administration/IT alignment for public value, we include this variable in the conceptual model, but focus on the antecedent variables in the scope of this paper.

Although IS researchers have identified a broad set of antecedents of IT/business alignment, alignment research has been partly criticized for being too little actionable, i.e. the literature still falls short in prescribing *which* are the mechanisms that should be addressed to ultimately achieve alignment [16]. Potential antecedents are scattered over the literature and include shared domain knowledge, communication, credibility of IT group, prior IT success, corporate vision, leadership, defined business goals, formalized strategic business plan, sophisticated planning process, and locus of control for system approvals, amongst others [16], [18], [20]. We may recognize that these variables largely fall into the basic categories of IT governance, i.e. structural, procedural and relational mechanisms. This motivates us to run the path taken by previous authors [3] and view *IT governance* as *the* main antecedent of administration/IT alignment.

### 3.2 IT Governance Mechanisms

Despite the different definitions and origins of the concept of IT governance [21], there is a general consensus in the literature that IT governance arrangements are implemented by mechanisms on structural, procedural and relational level [5], [22], [23]. Weill and Ross [5], for example, list 15 of the most common governance mechanisms; De Haes and Van Grembergen [3] explore 12 structural, 11 procedural and 10 relational mechanisms. However, when researchers want to advance towards a deeper understanding of the impact of these mechanisms on performance outcomes—beyond descriptive analysis—the challenge lies in conceptualizing these mechanisms on an appropriate level of abstraction and aggregating them into a smaller number of measurable and reliable constructs. We propose a model of seven distinct constructs to operationalize structural, procedural and relational governance mechanisms.

**Structural mechanisms** include standing groups or committees (in contrast to temporary teams), and liaison roles that link across different organizational units and facilitate shared decision-making.

The most fundamental dimension to characterize decision-making structures is *the degree to which different stakeholders participate in IT-related decisions*—such as decisions on the IT strategy, application needs, and infrastructure investment as well as process improvements—in sum, the aggregate *locus of IT decision authority* [20]. Weill and Ross [5] define six sophisticated patterns (business monarchies, IT monarchies, duopolies, federal, feudal and anarchies) that differ based on the distribution of decision rights between different actors. In a public sector context, we may reposition these decision rights—in a simplified manner—on a single continuum between administrative departments, centralized functions and the internal/central IT department. In line with the literature [12], [13], we assume that, due to risk aversion and low innovation, more centralized decision making is suitable in the public sector to facilitate positive outcomes. However, having argued that the multiple stakeholders and formal constraints in the public sector require strong alignment, we expect that some decision rights, especially for giving input to decisions, are shared with decentralized departments. That is, in sum we theoretically assume a curvilinear relationship with an optimum alignment outcome for centrally balanced decision rights. We can formulate:

Proposition 1a. *Sharing IT decision authority with a strong emphasis on centralization has a positive influence on Administration/IT alignment.*

Committees are one of the most common governance mechanisms to implement shared decision making [3]. Governance committees are widely used in the private as well as in the public sector and include, for example, IT steering committees with representatives from business (administration) and IT-internal management councils [6]. However, the literature suggests that the mere existence and number of such committees does not necessarily improve stakeholder alignment, and can even have adverse impacts on alignment and productivity. Instead, structural devices need to be implemented effectively, i.e. committees need to have a clear agenda, meeting cycle,

and achieve their goals [24]. We may summarize this property as the *effectiveness of governance committees*. Accordingly we pose:

Proposition 1b. *Governance committee effectiveness has a positive influence on administration/IT alignment.*

Liaison management is a third important structural mechanism. Formal liaison roles may include 'key users' on departmental side, single-points-of-contacts on IT side and account managers on supplier side [3]. The presence of such roles explicitly encourages horizontal information sharing and thus integrates business and IT units on strategic and operational level [25]. Informal liaisons can also be generated by structural devices such as job rotation and collocation. We assume that these mechanisms apply at least equally to public sector context and pose:

Proposition 1c. *The implementation of liaison management mechanisms has a positive influence on administration/IT alignment.*

**Procedural mechanisms** (or process mechanisms) comprise "*IT decision making and IT monitoring procedures*" [3]. Following a lifecycle logic, these mechanisms can be broadly classified by pre- and post-implementation practices [24].

Several authors emphasize that *investment decision processes* need to be well defined and effectively executed to ensure that IT investments are aligned and prioritized with the (corporate) goals [22]. Common governance processes that deal with this issue are the IT strategy process, the IT budgeting process, IT portfolio management process and related procedures. Conversely, if these practices are absent, organizations are likely to run into unfocused IT spending and even capacity overloads that will render an effective alignment with the strategic objectives impossible. Aligning public IT spending with strategic priorities appears even more important for public sector. Accordingly we pose:

Proposition 2a. *The implementation of defined IT investment decision processes has a positive influence on administration/IT alignment.*

Post-implementation, the IT governance literature emphasizes the role of certain metrics and monitoring mechanisms. Concrete practices especially relate to the use of service level agreements, service level controlling, project controlling, benefits tracking, and chargeback mechanisms [3]. These practices contribute to alignment inasmuch as they aim to ensure that approved IT projects and services are delivered at previously defined conditions and deliver the expected value to the business / the administration. The routine use of such procedures is often seen as a key characteristic of mature IT organizations [25]. Due to greater scrutiny we expect such mature practices to be of even greater importance in public sector organization and pose:

Proposition 2b. *The use of service level and control procedures has a positive influence on administration/IT alignment.*

**Relational mechanisms** refer to those practices that link different stakeholders informally, i.e. outside of their role description or formal procedures. Two closely related approaches can be differentiated, relational networks and creation shared knowledge [23].



Relational networks refer to the intangible information structure of a firm [3]. Communication and collaboration relationships between the individuals are a powerful social alignment mechanism that spans all levels, e.g. for public sector political leaders, department heads and IT heads as well as departmental and IT employees. They can create a culture of collaboration and foster horizontal knowledge sharing, e.g. problem awareness and a common language [23]. Accordingly we pose:

Proposition 3a. *The strength of relational networks within administration and IT stakeholders has a positive influence on administration/IT alignment.*

Conversely, creating shared knowledge aims the knowledge of individuals which may then engage in (formal or informal) relationships [22]. In our context, this construct primarily refers to complementary knowledge [26], i.e. IT knowledge for administration stakeholders and knowledge about the administration and its goals and processes for IT personnel. Such knowledge stem from own experience or trainings as a typical relational governance mechanism [3]. Shared knowledge and a mutual understanding are likely to lead to better alignment between administration and IT units [18]. Therefore we pose:

Proposition 3b. *The creation of shared knowledge among administration and IT stakeholders has a positive influence on administration/IT alignment.*

Altogether, structural, procedural and relational mechanisms are inherently correlated [22]. For example, standing committees will take defined roles in approval processes, and devices such as job rotation also target at creating shared knowledge and building relational networks. Therefore successful IT governance arrangements are determined by a mix of these mechanisms rather than any single device.

#### **4 Instrument Operationalization and Validation**

To operationalize the constructs of our model in a survey instrument, appropriate items were derived from the literature or developed newly where this appeared necessary. For convenience in filling the questionnaire, all items use 5-point-scales and appropriate dimensions. Table 2 briefly provides an overview of the model constructs the items and the references that motivated us to include these.

The measurement instrument was transferred into a survey format and complemented with further questions, e.g. regarding the IT organization, degree of outsourcing and types of committees. Heeding the guidelines suggested by Hunt et al. [27], we conducted pretest interviews with IT representatives of three different municipalities to validate our instrument both with respect to content validity and to our propositions. In this we followed a theoretical replication strategy [28], i.e. we selected municipalities of different sizes and (presumably) different variable outcomes in order to seek for evidence of our propositions. Deviating from a simple 'pretest' approach, these interviews were conducted in an in-depth fashion where the respondents were asked to comment on each of the questions and to provide further insights on the situation in their municipality, respectively. The interviews (lasting between 1:13 and 1:36 hours) have been recorded and transcribed in an abbreviated form.

**Table 2.** Measurement instrument overview

<b>Construct</b>	<b>Items (short)</b>	<b>Dimension</b>	<b>Literature</b>
Decision authority	Locus of decision rights for IT principles, infrastructure, architecture, application needs, budget etc.	Adm./IT	[5, 20]
Governance committees	Effectiveness in terms of efficient decision making, goal attainment, addressing requirements	Low/great extent	[3, 6, 24]
Liaison management	Special roles in departments, clear contact persons in IT, clear role descriptions, job rotation, collocation	Not/present	[3, 23]
Investment decision processes	Defined IT strategy, defined prioritization, detailed analysis of risks, phased process, actively used	Low/great extent	[3, 22]
Service levels and controls	Service level agreements, project mgmt. methodologies, measurement and monitoring, chargebacks, etc.	Not/present	[3, 25]
Relational networks	Informal communication and collaboration btw. administration, IT, central functions; internal marketing of IT	Low/great extent	[22, 23]
Shared knowledge	IT and administration employees' complementary knowledge; trainings for administration and IT workers	Low/great extent	[18, 26]
Adm./IT alignment	IT goals support administration goals, mutual recognition of work, mutual commitment to support goals, etc.	Low/great extent	[16-18]

For the purpose of case comparison, we present these qualitative findings in conjunction with the mean item scores (1-5) per construct / level of governance mechanism, respectively. Note, that this numeric representation shall demonstrate how the survey instrument links to the qualitative case findings, rather than implying any statistical assessment. The cases and their main characteristics are listed in Table 3 (key figures have been rounded for anonymity).

**Table 3.** Cases overview

	<b>Municipality A</b>	<b>Municipality B</b>	<b>Municipality C</b>
Inhabitants	60,000	200,000	500,000
Employees / IT empl.	900 / 12	1800 / 60	3000 / 185
Budget / IT budget	250 / 0.5 mn Eur	1000 / 6 mn Eur	4,000 / 30 mn Eur
Interviewee role	Chief Information Officer (CIO)	Head of IT coordination and E-government dpt.	Deputy head of the dpt. for E-government & IT
Degree of outsourcing	Low	Low	Moderate
Decision authority <sup>a</sup>	Centralized (4.4)	Centralized (4.2)	Decentralized (3.5)
IT governance mechanisms <sup>a</sup>	Focus on structural m. (4.0; 2.5; 3.2)	Balanced focus (4.5; 4.3; 3.6)	Improving relational m. (4.3; 3.4; 3.4)
Adm./IT alignment <sup>a</sup>	High (4.4)	High (4.4)	Moderate (3.8)

<sup>a</sup> mean item scores on five-point scale in brackets

## **5 Case Analysis**

In the following we will briefly describe the three cases focusing on the salient governance mechanisms before we evaluate the alignment outcomes and propositions.

### **5.1 Municipality A**

Municipality A is the smallest municipality under consideration. The IT department is organized in a form of a staff unit with 12 employees where the CIO reports directly to the head of the central office. The municipality makes low use of outsourcing.

Regarding structural mechanisms, there is an e-government steering group comprising the CIO and five non-IT department heads deciding primarily on questions of process optimization. “This committee,” the CIO states “does not meet too often, but when we meet we also achieve our goals.” All other IT decisions (IT Strategy, architecture, etc.) are largely in the hand of the CIO. Liaison management is warranted through key users (approximately 40) in the departments and defined contact persons on IT side (“always teams of two” as the CIO emphasizes). Moreover, key users and IT people regularly come together in ‘working circles’ to promote active exchange of ideas and make decisions regarding IT applications.

Procedural mechanisms are neither heavily formalized for investment prioritization nor for monitoring. However, despite the comparably small size of the organization, the CIO has implemented service level agreements and cost-based chargeback mechanisms for both infrastructure and additional services. As s/he adds “there is an analysis of service measures and continual improvement.”

Relational networks with IT are perceived to be overall moderately established. The CIO sees the biggest issues in the communication about questions of IT, i.e. the administration’s IT awareness, rather than the ambitions from IT side. As a prominent countermeasure, the CIO fosters active internal marketing of certain IT services. Also, the IT department organizes internal IT trainings for administration employees on a regular basis to improve this situation.

### **5.2 Municipality B**

Municipality B is considerably larger than A. Here, the IT function is separated into a small staff unit for IT coordination and e-government steering, and the internal IT services provider with about 60 employees. The overall degree of outsourcing is low, since this unit provides the majority of IT services to the municipal administration (including public subsidiary enterprises).

In terms of structural mechanisms, there are two governance committees in place, ‘IT steering group’ and an ‘IT steering committee for e-government’. IT steering group comprises four to five top-level representatives (i.e., head of IT coordination, treasurer, data security, personnel and organization, and if needed one from the department that files a request) and decides on IT strategy, budget and investment and process optimization. E-government steering has a similar structure, but solely focuses on projects for e-government. Given the low participation of the departments, the decision structure can be regarded as quite centralized. Liaison management is very

well developed in this municipality. Besides well defined key users (approx. 20) and IT contact roles, the municipality has introduced project-based job rotations for both IT and administration employees and periods of up to three months. Thereby, our interviewee states, “they get to know the procedures [...] so that when they call the hotline they know, what is going on in the back-office [...], so that there is a little bit of understanding.”

On the procedural level, processes for strategy definition and investment prioritization are well defined and implemented including detailed evaluation of benefits and risks. Service levels are defined for all internal IT products, as our interviewee stresses. However, chargeback arrangements are largely absent (except for subsidiary public enterprises), i.e. the internal service providers is accounted for as a cost center.

Relational mechanisms are viewed moderately (similar to municipality A). Informal communication between IT steering and administration departments appears to be fairly developed. However, at the level of the IT services unit as well as internal marketing informal communication and collaboration are stated to be weaker. For shared knowledge, our interviewee sees overall moderate-good levels of IT knowledge on administration side and knowledge about administration goals and procedures on IT side. Like in case A, there are regular trainings for administration and IT workers.

### **5.3 Municipality C**

Municipality C, the largest city from our cases, exhibits a decentralized IT organization structure, where approximately 150 out of 170 IT employees are located adjunct to the different administrative departments. IT steering is shared by a central IT steering unit (approx. 20 employees, “similar to a CIO office”) reporting to the finance department and decentralized steering groups (total approx. 10 employees). Central IT steering also manages external relationships, foremost to the communal services provider, which is currently taking over an increasing amount of datacenter operations.

There are two main IT governance committees for the whole municipality, besides further decentralized committees. The ‘IT meeting’ is the overarching governance body that decides on matters of IT and comprises one IT representative per department plus two from central IT steering. The ‘IT steering group’ primarily serves as an escalation point comprising the five department heads and the head of central IT steering. Given the comparably decentralized structure, overall decision authority is quite decentralized, i.e. evidently there are no decisions that can be made by central IT steering alone. Liaison management is currently being further developed, i.e. key user roles have been introduced in some departments, not all yet.

Regarding procedural devices, our interviewee states that IT investment decision processes are only partly formalized and implemented. That is, for some projects that walk through the annual portfolio and budget planning, a rough decision process is kept. However, since approximately two third of the IT budget remain with the departments, the majority of IT projects elude a central evaluation. Similar challenges apply to service levels and monitoring procedures. Detailed service levels are currently being underway for both interfaces administration/IT as well IT/supplier.

The intensity of relational networks across the different organizational units is moderate. Regarding communication within the departments, our interviewee notes that “the information from the IT meeting does not arrive at the lower levels.” However, the internal marketing of IT “is also rather mediocre, otherwise this situation would possibly not occur” our interviewee admits. Currently especially the collaboration with the central office for personnel and organization is being improved. That is because in the past, for example after the document management system was productive, “IT needed more support” for post-adoption activities, so that now “the office for personnel and organization is joining the project and takes over this work.” Moreover, this collaboration is now being established as a general practice also “for new projects, no matter what comes up, now we sit together and think who [...] has to deliver what [...] and this we do regularly.”

Conversely, our interviewee describes similar issues regarding shared knowledge, e.g. that the knowledge of IT workers about the priorities of the administration “is rather low” since “IT people rather have their own priorities.” This finding may correlate with the low level of internal trainings for IT workers in this case (compared to case A and B, where this was medium level).

#### **5.4 Alignment Outcomes and Case Comparison**

According to our measurement instrument and in line with the case findings, municipalities A and B exhibit a good state of alignment (4.4), while in case C this can be regarded, stated carefully, as a more moderate outcome (3.8). In answer to one of the alignment-items, interviewee A states that “there is mutual recognition” and “this has become better, people are now open in both directions,” i.e. administration and IT. When asking interviewee B for mutual recognition of goals and targets s/he adds “yes, to a large extent, due to this rotation principle that we have implemented.” In contrast, interviewee C adds for consideration that “it is difficult in times of budget cuts to understand the needs and priorities of the others.” And concerning the increasing outsourcing to the external datacenter provider, the interviewee is concerned that the collaboration between administration and IT “is getting more and more difficult for those things that we have outsourced”, since “there is always more understanding with colleagues than with external staff.”

Through cross-case analysis we find evidence for some of our propositions on structural mechanisms (P1). Especially regarding proposition 1a (*locus of IT decision authority*) the findings suggest that those agencies that largely centralize IT decision rights (A and B) and only allow administration departments to give input to selected decisions (e.g., application needs and process optimization), seem to have less alignment issues than those where large parts of IT decisions are taken by the departments themselves (C). Moreover, regarding liaison management (proposition 1c), case B illustrates prominently how the practice of job rotation can have a positive effect on administration/IT alignment, while in case C liaison devices appear to be partly neglected.

We find less evidence for the influence of procedural mechanisms on administration/IT alignment (proposition 2). For example, municipalities A and C both use less

formalized investment decision processes (2a) but have chargeback arrangements and other post-implementation devices in place (2b). Thus, from our case observations we can neither clearly support nor disprove the effectiveness of these procedural mechanisms. Instead, what becomes evident is how one mechanism can potentially compensate for another. That is, in case A, the smallest municipality, a formalization of investment decision processes is possibly not required. Our interviewee states “we don’t have a well defined process in a sense that is modeled and documented,” but the department heads and IT workers “are living the processes I have in my mind.” Thus apparently here the centralized decision authority and relational mechanisms compensate for an alleged lack of documented and formally communicated processes.

On the relational level we find partial evidence for our propositions. Although the overall level of relational networks (3a) and information sharing (3b) is viewed quite moderately across the cases, we can make a longitudinal argument for the importance of relational networks based on case C. That is, the central IT unit in municipality C apparently continues to have great challenges in promoting organization-wide basic technology such as document management (“We are doing document management for 10 years and I still come across areas that say: what, we have such thing?”). To address these issues, now especially informal collaboration with the department of personnel and organization is improved, which “is shaping up well” (interviewee C). We argue that in case C, this informal collaboration can be seen as a mechanism that compensates for the lack of central decision authority for IT diagnosed earlier (1a).

## **6 Conclusion and Discussion**

This work was motivated by the argument that little attention has been drawn on the idiosyncrasies of IT governance mechanisms in the public sector. Based on the extant literature, we proposed a conceptual model that links structural, procedural and relational mechanisms with the (novel) construct administration/IT alignment. We validated this model in three comparative cases. The findings suggest that structural and relational mechanisms are important means to achieve alignment between administration departments and IT units, while our findings provide no clear evidence for the influence exerted by procedural mechanisms. Furthermore, we were able to highlight how some mechanisms (especially relational) are used to compensate for a potential lack of other (i.e. structural and procedural) mechanisms.

Regarding our focal question, we contend that, while there are at first sight no striking contrasts, it is worth to draw our attention to the subtle differences between public and private sector IT governance. Most notably, on a structural level we found evidence for our first proposition (1a) on the centralization of IT decision rights. This finding somewhat contrasts with IT governance in private sector that sees both “business and IT participants [equally] to formally discuss and review the priorities and allocation of IT resources” as one of the most important enablers of IT alignment [25]. We rooted our proposition in the lower incentives for administration officials to innovate and thus to engage in IT decision making [12], [13].

Second, our findings corroborate the importance of relational networks for IT alignment especially in a public sector context [18]. This subtly contrasts with the classic understanding of IT governance private sector, where the effectiveness of relational mechanisms is often less pronounced [3]. For example, reference frameworks such as ITIL and COBIT extensively stress the importance of processes and formal agreements (such as service levels) as opposed to relational mechanisms [4]. One possible explanation for this might be that, due to slower adoption of management innovations [12], IT governance practices in the public sector cannot be regarded as ‘mature’ as in private sector [25], so that relational mechanisms still need to compensate for a lack of procedural and structural devices.

One major limitation of this study obviously lies in that we base our comparison on the literature rather than mirroring our cases directly with comparable private sector organizations. Also the small sample of three German municipalities and the single-respondent approach demand caution when generalizing to other types of public agencies or other national contexts. However, the applied method allowed us to reveal important details about IT governance in the public sector, which was required for theory adaptation and the validation of our survey instrument. In a future study we plan to test our propositions in a broader sample of both private and public sector organizations and thus hope to produce more generalizable insights on the influence of the sector-variable on IT governance arrangements.

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