1 Introduction

How can the governance of information systems (IS) outsourcing projects be improved? With this practical question in mind, I started my dissertation project. Of particular interest to me was the role and the value of a contract in respect to the governance of complex IS outsourcing projects over time. Especially, I sought to understand whether it is worth investing in negotiating a comprehensive IS outsourcing contract at the outset of a project or whether other, relationship-based, facets of governance are more important. In my dissertation, I examine the changing importance of contract-based and relationship-based governance mechanisms and their relationship. This follows the central assumption that governance mechanisms are subject to change over time and need to be adapted to unfold their positive impact on IS outsourcing success. Moreover, I investigate the supportive role of information technologies to make contractual and relational governance more efficient.

1.1 Governance of Information Systems Outsourcing Projects

Information systems outsourcing is an omnipresent phenomenon, and the number of companies that have outsourced parts of their IS function to external vendors has grown constantly over the 20 last years (Dibbern 2004). The IS function includes rather structured tasks, such as systems and data center operations (e.g., maintenance of client / server infrastructures) as well as unstructured tasks, such as software development (Dibbern and Heinzl 2009). The reasons for IS outsourcing range from targeting cost savings, gaining access to skilled labor resources, improving service quality, to focusing on core competencies (Dibbern 2004). The availability of highly qualified external vendors in low-wage countries such as India has fuelled this trend. However, many IS outsourcing projects

fail to achieve the expected benefits. One of the main reasons lies in the inappropriate governance of the relationship between client and vendor. While research has started to examine the effects of IS outsourcing governance (Goles and Chin 2005; Lee and Cavusgil 2006), findings contradict each other and there is still little knowledge on how IS outsourcing projects should be governed given their idiosyncratic characteristics (Mani et al. 2006). Appropriate governance requires capabilities for contractual and relational governance, but also technical capabilities (Mani et al. 2006; Mani et al. 2010). Technical capabilities relate to the enabling role of technologies for "*automating* and *informating*" (Mani et al. 2010, p. 46). As such, the role of information technologies to govern IS outsourcing projects is also of central importance, though it has not yet been investigated sufficiently. Moreover, while research indicates that contractual and relational governance mechanisms may change over time (Choudhury and Sabherwal 2003), there is a void of knowledge about how and why they change. In this dissertation, I seek to develop a dynamic view on IS outsourcing governance to understand how and why governance mechanisms change. In addition, I aim to investigate the impact of information technologies on contractual and relational governance.

1.2 Research Gaps

Early research on IS outsourcing governance has investigated the impact of particular governance mechanisms on IS outsourcing success. One research stream identified *relational governance* as a key driver for IS outsourcing success (Goles and Chin 2005; Kern and Willcocks 2000; Lee and Kim 1999); another argued that the characteristics of the IS outsourcing contract *(contractual governance)* are major determinants of success (e.g., Gopal and Sivaramakrishnan 2008). In light of the relevance of both contractual and relational governance for IS outsourcing success, they are typically used in combination in IS outsourcing projects (Sabherwal and Choudhury 2006). Thus, the relationship between contractual and relational governance has gained center stage in research.

Two conflicting views on their relationship have arisen: substitution and complementarity. By emphasizing the importance of either contractual or relational governance, the majority of prior studies investigating the relevance of governance mechanisms argue more or less explicitly for a substitutional view. According to this perspective, a contract reduces the need for a trust-based relationship and vice versa. While a number of studies empirically substantiated the substitutional view (Larson 1992; Ring and Van de Ven 1994), recent results challenged these findings. Poppo et al. (2002) and Goo et al. (2009) found evidence for a complementary relationship. A complementary relationship indicates that combining contractual and relational governance results in higher benefits (e.g., impacts on IS outsourcing success) (Goo et al. 2009).

Empirical studies investigating the relationship between contractual and relational governance have predominantly taken a static perspective (i.e., followed a cross-sectional research approach) on complementarity and substitution. This is problematic, since prior research has used (untested) process explanations for theorizing or interpreting results on a cross-sectional basis. For example, complementarity has been explained by concluding that a contract will promote the development of trusted relationships over time (Goo et al. 2009). This implies that a change in contractual governance (crafting a contract) will lead to an increased level of trust and, as a consequence, to an adaptation of relational governance. Thus, to examine complementarity and substitution, it is essential to acknowledge the temporal sequence and the processes of governance adaptations. This may also entail shifts from a complementary relationship to a substitutional one, or vice versa (Klein Woolthuis et al. 2005). These considerations lead to the following two research gaps:

Research Gap 1: *Contractual and relational governance mechanisms have rarely been investigated from a dynamic perspective. As such, we know little about changes in governance mechanisms over time.*

Research Gap 2: *Research on the relationship between contractual and relational governance has not yet investigated, whether the relationship (i.e., being complements or substitutes) is subject to change over time.*

The importance of appropriate IS outsourcing governance has promoted research on contractual and relational governance. While contractual and relational governance are established in research and practice, research on how these mechanisms may effectively be supported by information technologies has not yet been investigated sufficiently. Starting in 2000, tool vendors, such as DigitalFuel and Oblicore, have introduced innovative technologies to support the management of outsourcing relationships. These technologies are referred to as IS outsourcing governance tools (Leimeister et al. 2010) or outsourcing relationship management tools (Hirschheim et al. 2009). Moreover, there exist various other technologies (e.g., contract management solutions), which may help to support organizations in outsourcing governance. As such, another research gap is described as follows:

Research Gap 3: *Influence of information technologies on contractual and relational governance in IS outsourcing relationships has not yet been investigated. Accordingly, we know little about how governance can be supported by information technologies.*

Based on the three research gaps identified, I derive four research questions (RQs) which I seek to address in this dissertation. These are described in the next section.

1.3 Research Questions

We[1] address the research gaps in a stepwise process. First, we seek to identify and describe governance changes and interactions over time (RQ1 and RQ2). Subsequently, we aim to explain the occurrence of these governance interactions and their impact on the relationship between contractual and relational governance (RQ3). Finally, we strive to investigate the impact of information technologies on contractual and relational governance (RQ4). The research gaps and the derived research questions are summarized in Table 1 and described subsequently.

Research Gaps	Research Questions
Research Gap 1: Contractual and relational governance mechanisms have rarely been investigated from a dynamic perspective. As such, we know little about changes in governance mechanisms over time.	*Research Question 1:* How do governance mechanisms change over time and are there recurring patterns of interaction between contractual and relational governance? *Research Question 2:* How can the underlying processes driving these dynamic interaction be described?
Research Gap 2: Research on the relationship between contractual and relational governance has not yet investigated, whether the relationship is subject to change over time.	*Research Question 3:* How can different findings regarding the relationship between contractual and relational governance be explained?
Research Gap 3: Influence of information technologies on contractual and relational governance in IS outsourcing relationships not yet investigated.	*Research Question 4:* How do information technologies impact contractual and relational governance?

Table 1: Research Gaps and Questions

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[1] The pronoun 'we' is used to credit all scholars that have contributed to the research projects.

RQ1: How do governance mechanisms change over time and are there recurring patterns of interaction between contractual and relational governance?

RQ2: How can the underlying processes driving these dynamic interaction be described?

In this dissertation, the change of governance mechanisms and their relationship is examined in various ways. First, we investigate the change of governance mechanisms and their interaction over time (RQ1). Based on the findings of the first research project, in the second research project, we develop a framework that captures the changes between different concepts of governance. To provide a rich description of interactions between governance mechanisms, we make more explicit what is meant by contractual and relational governance. To this end, we propose a framework that distinguishes contractual and relational governance along the lines of four concepts: contract and formal control for contractual governance and trust and informal control for relational governance. The framework enables us to identify and describe change in each of the four concepts and related change in other concepts. We also investigate the drivers of change (RQ2), which have been observed as being either rather self-enforcing and incremental or externally triggered and disruptive. As such, we investigate the drivers of change by distinguishing between evolutionary and revolutionary changes. Evolutionary change refers to incremental, piecemeal, and continuous change while revolutionary change refers to disruptive and discontinuous change (Brown and Eisenhardt 1997; Gersick 1991; Pettigrew 1990). The punctuated equilibrium paradigm lends itself well as a change theory that incorporates both evolutionary and revolutionary change (Romanelli and Tushman 1994; Van de Ven and Poole 1995). Punctuated equilibrium describes organizational change as long and stable phases with incremental change that are punctuated by brief revolutionary phases with radical change. Moreover, we complement this theoretical perspective with the metaphor of biological interactions. These biological interactions help us to understand how contractual and relational governance interact.

RQ3: How can different findings regarding the relationship between contractual and relational governance be explained?

To address the third research question (RQ3), we examine how external events and governance changes impact the relationship between contractual and relational governance over time, i.e., whether the two governance mechanisms are complements or substitutes.

Based on our knowledge of the interactions of contractual and relational governance gained in the course of the first two research projects, we aim to explain how and why governance mechanisms become complements and / or substitutes. Applying and extending a process-theoretic approach, this study links triggering events to governance interactions, which in turn yield complementary and / or substitutional relationships.

RQ4: How do information technologies impact contractual and relational governance?

The last research question (RQ4) raised in this dissertation is closely related to the work performed in the preceding three research projects. To support the governance of IS outsourcing relationships, innovative technologies have been developed. Nevertheless, their impact on contractual and relational governance in IS outsourcing relationships has not yet been investigated. We aim to investigate this impact in the fourth research project. For this purpose, we use the refined conceptualization of contractual and relational governance (developed in the second research project), and explore the impact of information technologies on each governance parameter (contract, trust, formal control, and informal control).

1.4 Overview of the Dissertation

The dissertation is organized as follows: After this introduction, the four research projects are presented, before the findings and implications are summarized in chapter 6. Please see Figure 1 for an overview of the dissertation's structure.

Chapter 1: Introduction

Chapter 2, Addressing RQ 1:
Adopting a dynamic perspective on governance change to explore interactions between contractual and relational governance over time.

Main Finding of Chapter 2:
Contractual and relational governance interact. These interactions occur in sequences. As such, they form to positive and negative paths.

Chapter 3, Addressing RQ 2:
Refined framework of contractual and relational governance to adopt an evolutionary view on governance interactions.

Main Finding of Chapter 3:
Incremental governance changes are similar to the biological interactions of mutualism, commensalism, and competition.

Chapter 4, Addressing RQ 3:
Explaining the development of complementary and substitutional relationships between contractual and relational governance.

Main Finding of Chapter 4:
Complementarity and substitution are the outcome of governance interactions, triggered by external events. The relationship is subject to change over time.

Chapter 5, Addressing RQ 4:
Investigating the impact of information technologies on contractual and relational governance.

Main Finding of Chapter 5:
Information technologies support all aspects of contractual governance, but only particular aspects of relational governance.

Chapter 6: Conclusion

Figure 1: Structure of this Dissertation

First, research project one (chapter 2) seeks to identify changes of IS outsourcing governance over time. For this purpose, contractual and relational governance are investigated by adopting a dynamic perspective. Examining five IS outsourcing projects at a global acting German financial institute (BANK), recurring sequences of interactions between contractual and relational governance were observed. These interactions form to positive or negative paths. While these paths represent incremental changes driven by interactions between governance mechanisms, we also identified disruptive changes. Those changes are the result of strong events and have the power to interrupt sequences (e.g., turn a positive path into a negative path).

The first research project yielded valuable insights and implications for the subsequent research projects. Within this project we distinguished between contractual and relational governance, the two basic concepts considered for the governance of IS outsourcing projects (Dibbern et al. 2004; Lacity et al. 2009). For the further investigation of governance changes, this distinction bears one challenge. Contractual governance is based on a contract, and this contract may be extended over time by adding deliverables, policies, operating level agreements etc. Instead, a reduction of contractual clauses is a rather rare phenomenon. Nevertheless, the governance based on the contract, i.e., control actions derived from the contract, may indeed be volatile. As such, we formulate the need for a distinction between the contract and the derived governance (which we refer to as formal control). The same distinction is necessary for trust and trust-based governance. Hence, we distinguish between trust and informal control. Based on these considerations, a refined framework is presented in research project two.

Moreover, the findings of the first research project suggest that governance changes may depend on strong external events (interrupted path triggered by a vendor takeover), but also on incremental changes. The second research project (chapter 3) aims at investigating the differences in governance changes by distinguishing evolutionary (incremental) and revolutionary (disruptive) changes. For this purpose, the second research project draws on an evolutionary perspective that differentiates between evolutionary and revolutionary changes: the punctuated equilibrium model. Moreover, we used the metaphor of biological

interactions to investigate the incremental changes in more detail, as the distinction in four governance parameters (trust, contract, formal control, and informal control) allowed for a more specific description of how the governance mechanisms interact.

For the second research project, we gathered additional data. As such, we conducted a second round of 14 interviews for four of the five IS outsourcing governance projects presented in research project one. Adding to the findings of the first research project, we found another kind of strong external event. This event also resulted in major governance adaptations, confirming the findings of the first research project.

Subsequently, drawing on the results of the first two research projects, the third research project (chapter 4) addresses the research question of how different findings of prior research with regards to the relationship between contractual and relational governance can be explained. Again, additional data was gathered to complete the data collection at a leading German financial institute. Similar to the first two research projects, interactions between contractual and relational governance were captured over time. However, this third research project provides a different view on governance interactions. For each IS outsourcing project investigated, the interactions are presented in temporal order. Then, triggers for governance adaptations were investigated. These triggers are categorized as goal fuzziness, goal conflicts, and goal misachievements. A trigger leads to governance adaptations, which over time result in complementary or substitutional relationships.

Finally, the fourth research project (chapter 5) approaches contractual and relational governance by investigating the impact of information technologies. Nowadays, contractual and relational governance are increasingly supported by integrated information systems. Since 2000, those systems, i.e., dedicated IS outsourcing governance tools, have entered the market. Drawing on an additional data set comprising of five client and five vendor companies, we explore the effects of information technologies on governance. For this purpose, we build on the refined conceptualization of contractual and relational governance developed

in the second research project (i.e., trust and informal control for relational governance and contract and formal control for contractual governance). Our findings suggest that the contract, formal control, and informal control are well supported by information technologies, while trust does not receive this direct support.

The dissertation proceeds as follows. The next chapters consist of four research projects conducted during my dissertation. These are all directed toward the goal of extending the knowledge of how contractual and relational governance act and interact. The research projects are presented as separate articles and may act on a standalone basis. All articles have undergone challenging review processes at leading IS conferences or journals.[2] Finally, within the last chapter of this dissertation I summarize the major contributions and implications for research and practice.

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[2] The publications are listed in the Appendix to this chapter.