Management of IS Outsourcing Relationships –
A Dyadic Analysis of Antecedents and
Consequences of Dependencies and Power

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Abstract

Many companies today rely heavily on specialized information technology (IT) suppliers for fulfilling their IT demands. However, external provision, i.e., outsourcing, of IT services is a risky endeavor, and expectations are frequently not met. This dissertation addresses the challenge of successfully managing outsourcing relationships between clients and IT suppliers.

The dissertation begins by presenting results from a multiple case study that analyzes the organizational design of the management of supplier relations in the IT organizations of five client companies. These results contribute to research in this area and show IT decision makers on the client side efficient ways of organizing the 'client-supplier interface'.

Special attention is paid to the risks associated with outsourcing arrangements that should be addressed as part of successful relationship management. From a client's perspective, excessive dependence on the IT supplier is viewed as a major outsourcing hazard. However, research from related disciplines suggests not only analyzing a client's dependence but also incorporating the supplier's dependence on the client in a dyadic exchange relationship. Differences between the dependency levels of the client and the supplier can lead to a power advantage for one party that can then be used to the detriment of the dependence-disadvantaged party.

The dissertation investigates different dependence and power constellations in outsourcing relationships using a case study approach. The investigation results in conceptualizations and measurement instruments for client and supplier dependence in outsourcing relationships. The dissertation ends with a large-scale empirical survey that analyzes the effects of different combinations of dependencies and power use on the contractual partners' satisfaction with the exchange performance. Taken together, the results advance knowledge about the successful management of outsourcing relationships and, more specifically, they enable clients and IT suppliers to capture and optimize dependence relations.

Kurzfassung

Aufgrund vieler ökonomischer Vorteile ist die teilweise bis vollständige Fremdvergabe der Unternehmens-IT (IT-Outsourcing) heute integraler Bestandteil unternehmerischer Praxis. Mit IT-Outsourcing gehen aber auch Risiken einher und häufig werden die Erwartungen an solche Vorhaben nicht erfüllt. Diese Dissertation widmet sich der Herausforderung eines erfolgreichen Managements von Outsourcing-Beziehungen zwischen Kunde und IT-Anbieter.

Zunächst werden Ergebnisse einer Fallstudie in IT-Organisationen von fünf Kundenunternehmen vorgestellt, die hinsichtlich der organisatorischen Ausgestaltung des Beziehungsmanagements zu IT-Anbietern untersucht wurden. Die Ergebnisse liefern einen Beitrag zur Forschung in diesem Bereich und zeigen IT-Entscheidern auf Kundenseite Möglichkeiten zur effizienten Gestaltung der „Kunden-Anbieter-Schnittstelle" auf.

Da ein erfolgreiches Management von Outsourcing-Beziehungen insbesondere deren Risiken berücksichtigen sollte, wird diesem Aspekt in der Arbeit besondere Aufmerksamkeit geschenkt. Aus Kundensicht gilt eine Abhängigkeit vom IT-Anbieter als eines der größten Risiken. Doch Arbeiten aus verwandten Forschungsdisziplinen legen nahe, nicht nur die Kundenabhängigkeit sondern auch die umgekehrte Abhängigkeit des Anbieters vom Kunden in einer dyadischen Austauschbeziehung zu betrachten. So können Unterschiede in den Abhängigkeiten beider Parteien insbesondere zu einem Machtvorteil einer Partei führen, welcher zum Nachteil der abhängigeren Partei genutzt werden kann.

Die vorliegende Dissertation untersucht verschiedene Abhängigkeits- und Machtkonstellationen in Outsourcing-Beziehungen mit einem Fallstudienansatz. Es werden Konzeptualisierungen der Kunden- und Anbieterabhängigkeit sowie Vorschläge zu deren Messung im Kontext des IT-Outsourcings erarbeitet. Der letzte Teil der Dissertation untersucht in einer großzahligen, empirischen Umfrage den Einfluss unterschiedlicher Abhängigkeitskonstellationen sowie der Nutzung von Machtpositionen auf die Zufriedenheit der Parteien mit der Geschäftsbeziehung. Zusammenfassend leisten die Ergebnisse einen Erkenntnisbeitrag zum erfolgreichen Management von IT-Outsourcing-Beziehungen und unterstützen Kunden und IT-Anbieter insbesondere bei der Erfassung und Optimierung der Abhängigkeitsverhältnisse.

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Darmstadt, February 2014   Jasmin Kaiser

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Acronyms

AVE	Average variance extracted
CB-SEM	Covariance-based structural equation modeling
CIO	Chief Information Officer
CITC	Corrected item-total correlations
CL	Comparison level
CMB	Common method bias
CP	Client perspective
CR	Composite reliability
CRM	Customer relationship management
CU	Centralized unit
EFA	Exploratory factor analyses
FTE	Full time equivalents
GUI	Graphical user interface
IS	Information system(s)
IT	Information technology
ITIL	IT Infrastructure Library
ITO	Information technology outsourcing
IT SRM	IT supplier relationship management
MIMIC	Multiple indicators, multiple causes
PLS	Partial least squares
PMO	Project management office
PUSE	Power use
QDA	Qualitative data analysis

RDT   Resource dependence theory

RQ   Research question

SC   Switching costs

SCM   Supply chain management

SEM   Structural equation modeling

SET   Social exchange theory

SP   Supplier perspective

SRM   Supplier relationship management

TCE   Transaction cost economics

VIF   Variance inflation factor

VMO   Vendor management office

1 Introduction

1.1 Problem Description and Motivation

Many client companies today rely heavily on specialized information technology (IT) suppliers for fulfilling their IT needs. External provision, i.e., outsourcing, of IT services is a common practice that has become a fixture on many CIO agendas. Market reports underscore this development – the German IT services market for consulting, outsourcing, and software, for example, has shown a sustained growth over the last few years and is expected to reach a market volume of approximately 54 billion euros in 2013 (BITKOM 2012; BITKOM 2013).

This thesis focuses on information systems (IS) outsourcing, viewed as a business practice in which a client company contracts its information systems out to specialized IT suppliers (Hu et al. 1997, p. 288). Clients hope to derive many advantages from IS outsourcing, including cost reduction, concentration on core capabilities, access to expertise/skills in global markets, improvements in business performance, flexibility, and the enhancement of innovation (Lacity et al. 2009; Oshri et al. 2011b; Oshri and Kotlarsky 2009). For over two decades, these benefits have been studied in IS research, along with the associated risks, the optimal degree of outsourcing, and the determinants of success (see e.g., Lacity et al. 2010).

However, even though the external provision of information systems is extensively practiced and has been the subject of extensive research, some have expressed a concern that client firm expectations of their IT suppliers and their services are often not met (Butters 2005; Deloitte Consulting 2012; Oshri et al. 2011b; Qi and Chau 2012). For example, a recent study found that in 2013, 50% of IT managers were not satisfied with their IT providers (Urbach and Würtz 2013). Thus, the success of outsourcing arrangements cannot be taken for granted; some arrangements suffer from underperformance, and some are even (prematurely) terminated. And while it is often clients who terminate the arrangement, the possibility of termination by suppliers should not be overlooked (Suang et al. 2009).

As a consequence, researchers and consulting firms have explicitly drawn client firms' attention to the importance of 'managing an outsourcing relationship' in order to make the outsourcing arrangement successful (Butters 2005; Hild 2008; Oshri et al. 2011a; Qi and Chau 2012), and a large amount of research has shifted to studying the later stages of outsourcing endeavors. This research involves thoroughly exploring, for example, how trust, open communication, and cooperation develop as the 'relational governance' of a relationship (Goles et al. 2005; Heiskanen et al. 2008; Kern and Willcocks 2000; Lee and Kim 1999). A second governance mechanism, 'contractual governance,' involves the adequate design of contracts (Fitoussi and Gurbaxani 2012; Goo et al. 2009) and the use of formal actions and control (e.g., Lee and Cavusgil 2006) to govern a relationship (Huber et al. 2011). Much debate surrounds the interplay of these two forms of governance (Gopal and Koka 2012; Huber et al. 2011; Lacity et al. 2009; Poppo and Zenger 2002). Focused research has also been devoted to the successful transfer of knowledge between the parties (Krancher and Dibbern 2012; Park and Lee 2013) and the development of capabilities on the client and supplier sides (Feeny and Willcocks 1998; Karimi-Alaghehband and Rivard 2012; Lacity et al. 2010) such as successfully monitoring and controlling activities within the business relationship (Gregory et al. forthcoming; Herz et al. 2013).

Successful relationship management requires addressing the risks associated with outsourcing arrangements. Research has identified excessive client dependence on the IT supplier as a major IS outsourcing hazard (Gonzalez et al. 2005; Lacity et al. 2009; Martens and Teuteberg 2009). Consulting firms and independent market researchers point to the potential loss of bargaining power resulting from a high degree of dependence (BSI 2005; Deloitte Consulting 2005; Experton Group 2008). The concerns associated with being strongly dependent in IS outsourcing endeavors include being unable to switch to another IT supplier or to backsource the IT service, being subject to the dictation of pricing, suffering from low service quality, and being forced to adhere to the supplier's terms in contract renegotiations or renewals.

While dependence is known to be a serious outsourcing risk for clients, the investigation of dependence in the setting of IS outsourcing is still in its early stages and scant attention has been paid to the findings of fundamental dependence research in reference disciplines (Cook 1977; Emerson 1962; Gaski 1984; Kumar et al. 1995). This is made clear by the majority of IS outsourcing research, which a) treats the concept of client dependence quite superficially, b) fails to adopt a dyadic perspective that simultaneously considers the exchange partner's (in this case the supplier's)

dependence – which is necessary for several reasons, including correctly deriving and explaining implications for the parties and their bilateral relationship, and c) pays little attention to the interconnections between dependencies and other IS concepts and theories. As prior research (e.g., Emerson 1962) suggests, dependencies should be viewed as a critical (risk) facet of client-supplier relationships that must be borne in mind during all stages of an outsourcing endeavor to ensure satisfaction and success. To that end, this thesis focuses on interdependence and its management in IS outsourcing relationships.

The following chapters discuss in detail the research gaps that have been identified and address these with a mix of qualitative and quantitative studies. The expected overall contribution of this thesis is to advance research about the successful management of IS outsourcing relationships in general and about interdependence in these relations in particular.

1.2   Objectives, Benefits, and Research Questions

To meet the challenges presented by the current state of IS outsourcing research and practice, this thesis pursues three major goals with five research questions. This section briefly presents the research goals and questions and discusses the associated research benefits. The following chapters will present both the related literature and the research gaps that have led to this thesis' research agenda in greater detail.

The first major goal of this thesis is to contribute to a better understanding of firm-level management issues regarding outsourcing relationships. As explained in section 1.1, the management and governance of outsourcing relationships are viewed as critical success factors in IS outsourcing endeavors. To enrich our understanding of recent developments in and approaches to the management of supplier relations, a multiple case study that investigated design questions from a holistic perspective was conducted in five IT organizations of large-scale companies. The study underscores the importance of outsourcing relationship management. It adopts the perspective of the client side and addresses the following research question:

Research Question 1: How can IT supplier relationship management be efficiently organized on the client side?

The thesis then focuses on a key relational aspect of outsourcing arrangements, namely, the different dependence structures between client and supplier firms, with two goals comprising four research questions. One of these goals is to enhance our

understanding of the dependencies on both sides of an outsourcing dyad and to derive proper conceptualizations of these. We identify the determinants and influencing facets of client as well as supplier dependence, as reflected in research questions 2 and 3:

Research Question 2: What are the determinants and influencing facets of a client's dependence in IS outsourcing relationships?

Research Question 3: What are the determinants and influencing facets of a supplier's dependence in IS outsourcing relationships?

Based on the resulting conceptualizations, the fourth research question goes one step further and addresses ways of measuring client and supplier dependence in IS outsourcing relationships.

Research Question 4: How can client and supplier dependence be adequately measured in the context of IS outsourcing relationships?

After capturing and measuring dependence, the third major goal concerns the consequences that dependencies have for outsourcing relationships. In particular, the fifth research question investigates the effects of different combinations of client and supplier dependencies on the quality and exchange performance of an outsourcing relationship:

Research Question 5: How do different combinations of client and supplier dependence affect the quality and exchange performance of a relationship?

1.3   Research Context and Fundamentals

This section presents the research context for this thesis and introduces basic terms and concepts. Section 1.3.1 is devoted to the fundamentals of IS outsourcing and management of client-supplier relationships. Section 1.3.2 presents the basics of dependence research.

1.3.1 Management of Client-Supplier Relationships in IS Outsourcing

The sourcing literature is replete with jargon, buzzwords and acronyms (Oshri et al. 2011b). This section offers definitions for some of the terms used throughout the following chapters.

The general term *sourcing* refers to "the act through which work is contracted or delegated to an external or internal entity that could be physically located anywhere"

(Oshri et al. 2011b, p. 7). It encompasses various *insourcing* (internal provision) and *outsourcing* (external provision) work arrangements (Dibbern et al. 2004; Oshri et al. 2011b). Furthermore, three outsourcing models can be distinguished based on the *degree of outsourcing,* often measured as the proportion of outsourced services in a company's IT budget (Lacity and Willcocks 1998):

- *total outsourcing*, which involves transferring more than 80% of the IT budget to external provider(s),
- *total insourcing*, which involves retaining more than 80% of the IT budget within the organization, and
- *selective sourcing*, which involves externally sourcing selected functions while still providing for 20 to 80% of the IT budget internally.

Another important aspect of outsourcing relates to the tasks that are being outsourced. As mentioned above, this thesis focuses on relationships built on the *outsourcing of information systems*, which means that a company contracts all or some of its IS-related tasks to one or more specialized IT suppliers (Hu et al. 1997). In this context, an *information system* can be described as interrelated components working together to collect, process, store, and distribute information to support, for example, decision making and coordination in an organization (Laudon and Laudon 2013). Typical activities that might be sourced externally include tasks involved in the development, maintenance and operations of an IS. Development tasks include analysis, design, and IS implementation (Xia and Lee 2005). After the system's go-live, maintenance and further development tasks involve correcting and optimizing the system (e.g., fixing bugs), as well as making functional enhancements (Basili 1990; Dekleva 1992). The purpose of IS operations is to perform all day-to-day operational activities necessary for delivering system services at agreed-upon levels to business users and customers (Taylor et al. 2007). These activities include the performance of backups and restores, ongoing management of technical infrastructure, and the detection and elimination of system failures and performance problems.

Turning to supply configurations, different models of varying degrees of complexity can be distinguished. From a client's perspective, information systems can be sourced from one or several external suppliers (single- vs. multi-sourcing). The *supply base* represents the set of contractual relationships with suppliers at a given time (Su and Levina 2011). In a simple model, a single supplier might provide an IS to the client (supplier A, IS1, Figure 1-1). However, sourcing of an IS might also involve multiple

suppliers – e.g., one supplier operates the IS while a second takes over its maintenance (e.g., suppliers B and C, IS3, Figure 1-1). An external supplier might also be involved in providing different information systems to the same client, resulting in a network of multiple exchange relationships between the two parties (supplier C, IS2 and IS3, Figure 1-1).
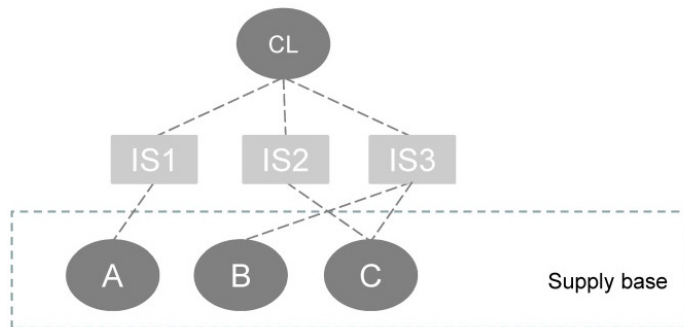
Figure 1-1: Different IS Supply Configurations

Ideally, such outsourcing relationships are managed from both sides of the client-supplier dyad. From the supplier perspective, these outsourcing relationships require *customer relationship management*. Similarly, on the client side, IT *supplier relationship management* (IT SRM) is often in place. As will be outlined, IT SRM covers a variety of activities, ranging from identifying potential IT suppliers to developing and monitoring supplier relationships and terminating underlying outsourcing contracts (see chapter 2). The importance of the management of external suppliers has long been recognized in research disciplines other than IS. For example, writing about the automotive industry, Cusumano and Takeishi (1991) stated: "Supplier relations and management are crucial areas for any firm that subcontracts portions of components design and production because of the dependence this creates on the skills of outside organizations" (p. 563). Along with the fundamental importance of supplier relationship management, this observation stresses (the client's) dependence on external sources – which brings us to the main topic of this thesis.

1.3.2 Dependence Structures and Power Advantages

In a client-supplier dyad, both the client and the supplier have a certain degree of dependence (ranging from low to high) on their exchange partner. A party's *dependence* on its partner is the "need to maintain the relationship in order to achieve desired goals" (Frazier 1983, p. 158). Furthermore, dependence is interlinked with the concept of *power*: the dependence of a party A on a party B is equal to the power B

holds over A (Emerson 1962) and thus B's ability to influence A's behavior (Jasperson et al. 2002).

Combining the individual client and supplier dependencies allows adopting a dyadic perspective and fully explicating dependence structures between the parties. Research in reference disciplines has proposed a distinction between two constructs: *relative dependence*, or the difference between the two organizations' dependencies on each other, and *joint dependence*, or the sum of the dependencies (Casciaro and Piskorski 2005; Gulati and Sytch 2007; Kumar et al. 1995). The first construct, relative dependence, allows for distinguishing between a balance (or symmetry) and an imbalance (or asymmetry) of the dependencies (Emerson 1962). When the difference between the individual firm dependencies is zero, the dependence structure is *fully balanced* (indicated by the diagonal line in Figure 1-2a). Theoretically, in this case there is no dominant party in the relationship; the parties have equal power and interact at eye-level. When the relative dependence is not zero, either the client or the supplier is in a more powerful position (recognizable by a data point that does not lie on the symmetry line in Figure 1-2a; Emerson 1962). In this case, either the client or the supplier in the dyad possesses a *dependence (or power) advantage*, namely, the partner that has the lesser dependence. Calculated as the sum of the individual partners' dependencies (Casciaro and Piskorski 2005; Gulati and Sytch 2007; Kumar et al. 1995), *joint dependence* ranges from low (light grey area), to medium (medium grey area), to high (dark grey area) in Figure 1-2a.

As an example, z_1 denotes a configuration of equal dependencies in Figure 1-2a, where both parties have a medium dependence on the other. When the configuration changes to z_2, the supplier's dependence decreases while the client's dependence increases. The outcome is a relationship in which the supplier possesses a dependence advantage. However, note that the degree of joint dependence has not changed during the shift from z_1 to z_2, since the changes in the individual dependence scores balance each other.

Holding relative dependence constant, joint dependence between the parties can still vary. Turning to Figure 1-2b, we start again from a fully balanced relationship with a medium joint dependence (z_1). Both parties' dependencies increase from moderate to high levels when the configuration changes to z_3. This results in an increased joint dependence. While not shown in the figures, changes in individual dependencies can also result in simultaneous changes to both relative and joint dependence.
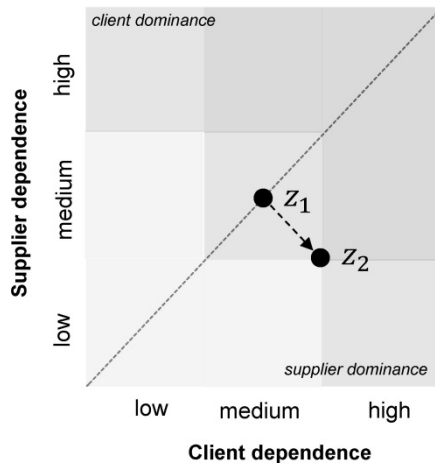
Figure 1-2a: Dependence Map Showing an Increase in Relative Dependence (Holding Joint Dependence Constant)
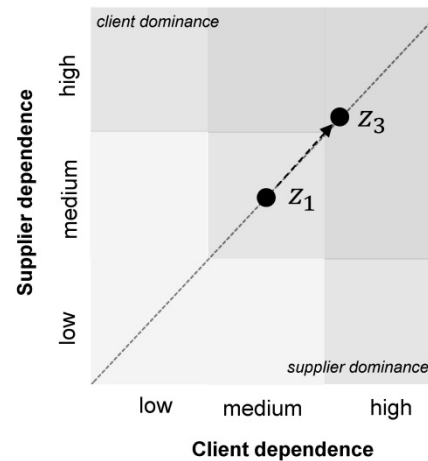
Figure 1-2b: Dependence Map Showing an Increase in Joint Dependence (Holding Relative Dependence Constant)

Research questions 2–5, which address dependence in IS outsourcing relationships, can be well understood in terms of the dependence maps. Research questions 2 and 3, offering the conceptualizations, will enable us to determine the degrees of dependencies and thus understand how different configurations arise. Further, they involve the question of how changes in the degrees of dependence occur and which factors influence clients' and suppliers' dependence positions in the matrix. Research question 4 concerns how to reliably and correctly measure a party's dependence and thus how to determine the mapped coordinates in the dependence map. Research question 5 investigates the consequences of different dependence combinations, as reflected in relative and joint dependence.

1.4   Outline and Structure of the Thesis

The thesis as a whole is organized into eight chapters (see Figure 1-3). Following this introductory chapter, chapters 2 to 7 address the five research questions and (with the exception of chapter 7) present previously published scientific articles. Overall, the thesis comprises one empirical paper on IT SRM from the client perspective (paper A), three empirical papers on dependencies and their antecedents in IS outsourcing relationships (papers B, C, D), and one conceptual paper on the consequences of relative and joint dependence in IS outsourcing relationships (paper E). The model developed in paper E is further tested with a survey sample, and the as-yet unpublished results are presented in chapter 7. Finally, chapter 8 presents the thesis' conclusion and summarizes its theoretical and practical contributions. A brief summary of the contents of the main chapters and how they correspond to the research questions follows.
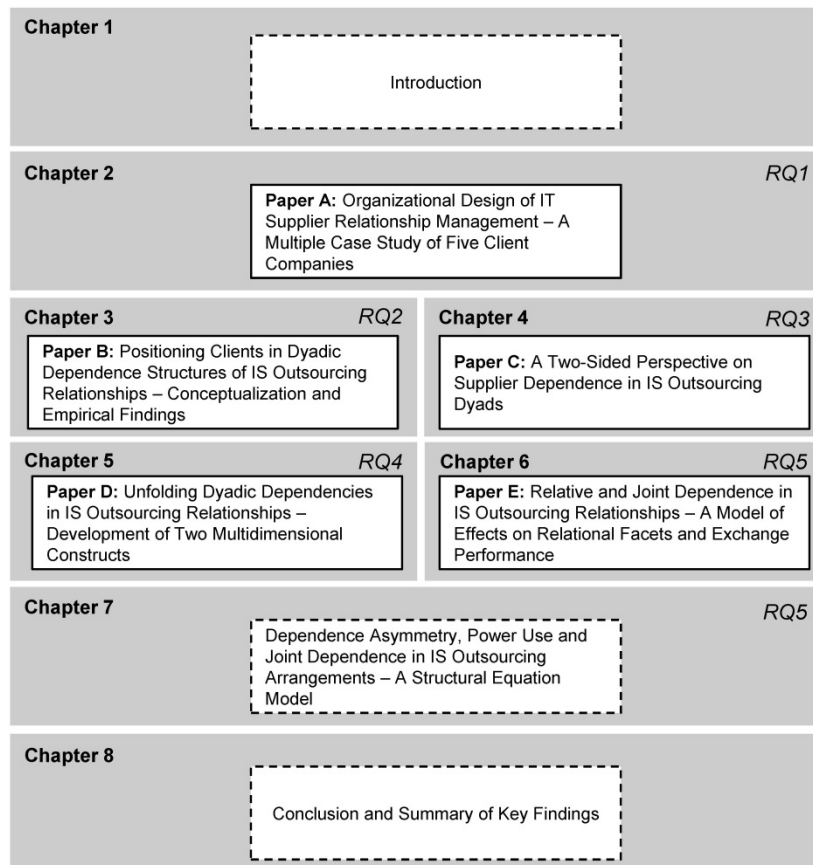
Figure 1-3: Structure of the Thesis

Chapter 2 (paper A) shows that the management of contractual relationships in IS/IT outsourcing has not only been receiving greater attention in academic research, but that it has also become a focus of companies with high degrees of outsourcing. This shift in attention to relationship management is accompanied by observable changes in the design of IT organizations', which reveals a relatively unexplored but promising research topic. While prior research has predominantly explored single aspects of managing these relationships, for example, supplier selection or relationship building, this chapter takes a more holistic approach to IT SRM with a focus on organizational design. A conceptual framework covering three core elements of organizational design – strategy, structure, and process – guided a multiple case study on IT SRM in five client IT organizations. The chapter discusses the designs and potential benefits of different organizational models in detail, providing empirical examples. The multiple case study points to issues that have barely been examined and that are promising directions for future research in the field.

Chapter 3 (paper B) addresses this thesis' second research question and presents a cornerstone for the following chapters on dependencies in IS outsourcing

relationships. To advance the conceptualization of dependence in IS research, the chapter investigates five outsourcing relationships with respect to the interdependence in the dyad. As its contribution, the chapter aims to explain different client positions in the dependence structures. The dependence construct is therefore broken down into its constitutive facets. In addition to the importance of the delivered IS and the substitutability of the supplier, spillover effects emerged as an unanticipated third determinant of dependence. Originating from other exchange relationships with the same partner, spillover effects can distort the dependence structure in the focal relationship.

Chapter 4 (paper C) addresses the supplier side of an IS outsourcing dyad and investigates supplier dependence in the case study's five outsourcing relationships with two-sided data. The chapter identifies influencing facets and categories to propose a conceptualization of supplier dependence, thus answering research question 3. In addition, the chapter applies the two central dyadic constructs from reference disciplines, relative and joint dependence, to the five investigated relationships.

Building upon the insights of chapters 3 and 4, **chapter 5** (paper D) follows a multi-method approach to develop two multidimensional 'dependence' constructs that reflect both sides of the IS outsourcing dyad, i.e., client and supplier dependence. This is important because although dependence is viewed as a major risk in IS outsourcing relationships, to date little attention has been paid to fully and unambiguously capturing the complex nature of this phenomenon and specifying how to measure it. This chapter aims to contribute to and extend inter-organizational IS studies and also to support client and supplier firms in monitoring and influencing dyadic dependence structures. As such, this chapter is devoted to research question 4.

The conceptual **chapter 6** (paper E) presents a research model encompassing anticipated effects of interdependence on IS outsourcing relationships. The chapter discusses expected effects of relative and joint dependence on relationship quality and exchange performance. While joint dependence generally yields positive outcomes, high relative dependence and the exercise of exploitative power by the dominating party might produce two countervailing effects: use of a power advantage is theorized to be beneficial for the dominant party, as it allows that party to structure the exchange to its benefit, yet a possible detrimental side effect arises because power use can diminish the relationship's value-generating potential and decrease performance outcomes for both parties. This leads to the question of whether and to what extent it is

reasonable to leave power potentials untapped. Thus, this chapter addresses the conceptual part of research question 5.

To address research question 5 empirically, **chapter 7** uses data collected from 100 IS outsourcing relationships, with each relationship assessed by either a client or a supplier representative, to test the research model developed in chapter 6. Partial least square analyses largely confirm our hypotheses and underline the critical role of dependencies and power for exchange performance. As a theoretical contribution, the model adds to findings in other research disciplines and extends our knowledge of IS outsourcing relationships. Additionally, the results yield several implications for outsourcing practice.

1.5 Research Design and Methods

This section discusses the overall research program for the thesis' content-related components from a method-centric perspective. Deciding which method(s) to use in a research endeavor is central to any research design (Creswell 2009). However, given the plurality of research methods, the decision is often not an easy one. It has generally been suggested that the selection of research methods should be driven by the research problem and derived questions (Corbin and Strauss 2008; Creswell 2009).

Research methods can be classified in many different ways. The most common distinction is between quantitative and qualitative research methods (Myers 1997). Both are well-accepted methods in the IS discipline. Quantitative methods include surveys, laboratory experiments, formal approaches, and numerical methods such as mathematical modeling (Creswell 2009; Myers 1997). While quantitative research methods were originally developed in the natural sciences to study natural phenomena, qualitative research methods stem from the social sciences (Myers 1997). Examples of qualitative methods are action research, case study research, ethnography and grounded theory studies (Creswell 2009; Myers 1997).

Both quantitative and qualitative methods have different benefits and shortcomings. For example, quantitative research methods are valuable because of careful measurement, generalizable samples, experimental control, and statistical tools (Miles and Huberman 1994). Qualitative methods are designed to help researchers access well-grounded, rich descriptions and explanations of phenomena in real-world contexts (Corbin and Strauss 2008; Miles and Huberman 1994; Myers 1997).

Quantitative and qualitative methods need not be viewed as incompatible, and many researchers advocate that the two types of research methods and data can be usefully combined to provide a rich, contextual basis for interpreting and validating results (Creswell 2009; Kaplan and Duchon 1988; Mingers 2001). As Miles and Huberman (1994) put it, "we have to face the fact that numbers and words are both needed if we are to understand the world" (p. 40). Research that links quantitative and qualitative approaches is often referred to as *mixed methods* research (Creswell 2009; Venkatesh et al. 2013). Venkatesh et al. (2013) highlight that a mixed methods approach is especially then involved when quantitative and qualitative methods are combined in a *single research inquiry*. Such a single research inquiry might be a research program spanning multiple papers, or multiple studies can be reported in a single paper (Venkatesh et al. 2013). While mixed methods research has received much attention in the social and behavioral sciences (Tashakkori and Teddlie 2010), little research in IS has employed mixed methods in an overall study design (Ågerfalk 2013; Venkatesh et al. 2013).

However, recent work strongly encourages IS researchers to use mixed methods (Ågerfalk 2013; Mingers 2001; Venkatesh et al. 2013). There are multiple reasons for such studies, including complementarity, completeness, development, expansion, corroboration/confirmation, compensation, and diversity (see Table 1-1). Mixed-method studies often simultaneously fulfill several of these purposes (Venkatesh et al. 2013).

Table 1-1: Purposes of Mixed Methods Research (adapted from Venkatesh et al. 2013)

Purpose	Description
Complementarity	Mixed methods are used in order to gain complementary views about the same phenomena or relationships.
Completeness	Mixed methods designs are used to ensure that a complete picture of a phenomenon is obtained.
Development	Questions for one strand emerge from the inferences of a previous one or one strand provides hypotheses to be tested in the next one.
Expansion	Mixed methods are used in order to explain or expand upon the understanding obtained in a previous strand of a study.
Corroboration/ Confirmation	Mixed methods are used in order to assess the credibility of inferences obtained from one approach (strand).
Compensation	Mixed methods enable compensation for the weaknesses of one approach by using the other.
Diversity	Mixed methods are used with the hope of obtaining diverse views of the same phenomenon.

It is also important to note that while qualitative-quantitative linking can be applied at the level of the overall study design, i.e., to connect various studies of different types, it can also appear at lower levels, for example, at the level of data types, where qualitative information (perhaps from an interview) can be compared to numerical data (such as from a questionnaire filled out by the same person; Miles and Huberman 1994).

This thesis applies a mixture of qualitative and quantitative research methods depending on the research questions and objectives involved (see Figure 1-4). Chapters 2, 3 and 4 follow a case study approach (Yin 2008). While case study research is traditionally viewed as a qualitative research method, researchers have suggested using 'multiples sources of evidence' (Dubé and Paré 2003; Yin 2008). For this reason, many case studies use a combination of qualitative (e.g., interviews) and quantitative (e.g., questionnaires) data sources to provide a richer look at the phenomenon under investigation (Dubé and Paré 2003). Each of the three case studies presented in this thesis employ a mix of qualitative and quantitative data collection and analysis methods to *corroborate*, *complement* and *expand* findings. Qualitative and quantitative data were mainly collected *concurrently* (or in close succession) and *integrated* for analysis (Creswell 2009; Venkatesh et al. 2013).
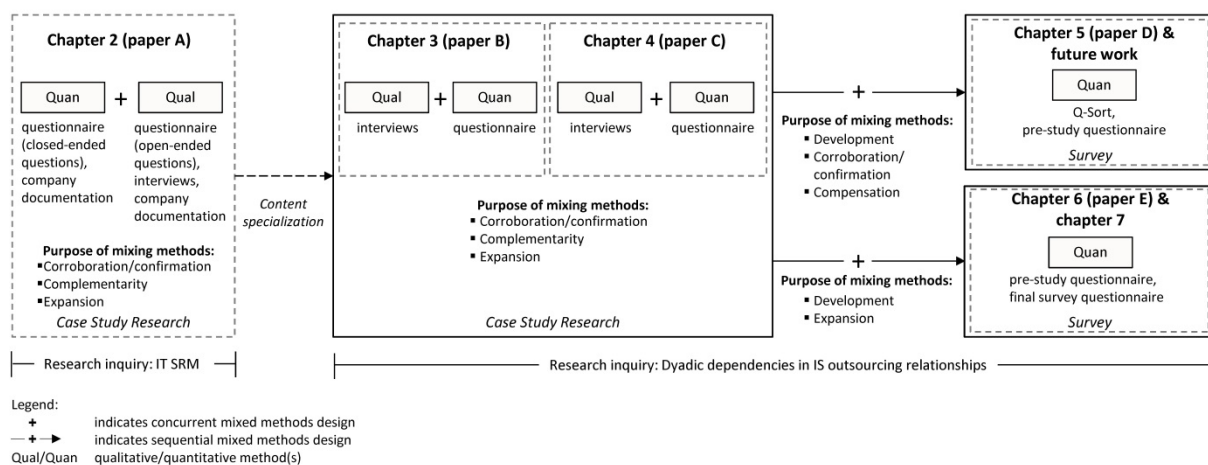
Figure 1-4: Research Design and Employed Research Methods

In the transition from chapter 2 to chapters 3 and 4, a *content specialization* takes place, from looking at the overall management of outsourcing relationships to focusing on dyadic dependencies between firms. The latter were investigated during a multi-step research inquiry, starting with the case studies on the client (chapter 3) and supplier (chapter 4) side.

Subsequent to the case studies, surveys were predominantly used to additionally study the phenomenon from a pure quantitative perspective. The sequential series serves the different purposes of mixed method research as described in Table 1-1.

Development and validation of our dependence constructs (chapter 5 and future work) build on the facets, the determinants, and their relationships identified during the previously conducted case studies (*developmental purpose*). The collection of quantitative data is believed to ultimately confirm the findings from the previous qualitative interviews (*confirmatory purpose*). Furthermore, application of the survey method follows a *compensatory purpose* by aspiring to a larger sample size, necessary for assessing the relevance and significance of the dependence determinants and their facets.

The second strand, development and testing of a model of consequences of relative and joint dependence (chapters 6 and 7), can also be seen as an advancement of the case studies, in which survey questions emerged from the previous mainly qualitative findings (*developmental purpose*). Additionally, the final research model captures further causal relationships to expand our initial understanding of the phenomenon (*expansionary purpose*).

The mixed methods approach in this thesis is intended to provide a *holistic understanding* (Venkatesh et al. 2013) of its subject, on which extant IS outsourcing research is fragmented and inconclusive. The following chapters will present the different gaps in the research and apply the mix of methods explained above to answer this thesis's research questions.

2 Paper A: Organizational Design of IT Supplier Relationship Management - A Multiple Case Study of Five Client Companies[1]

2.1 Introduction

IT organizations face enduring demands to drive down cost and increase efficiency. As a preferred strategic option, many rely on outsourcing arrangements with specialized IT suppliers, which fulfill a substantial part of their IT services. The management of these outsourcing relationships has become one of the key issues, which mostly plays a crucial role in IS/IT outsourcing.

A thorough exploration of successful client-supplier-relationships has also become a newer focused theme in IS/IT outsourcing literature, which has shifted research away from the exploration of initial steps in a sourcing process, for instance outsourcing decision making (see e. g., Hirschheim et al. 2008, pp. 9f.). However, management of external suppliers is not solely an issue in IS/IT outsourcing. The general importance of supplier relationship management (SRM) was already stated in 1991 by Cusumano and Takeishi, when presenting results from a survey of automobile plants in Japan and the US: "Supplier relations and management are crucial areas for any firm that subcontracts portions of components design and production because of the dependence this creates on the skills of outside organizations" (Cusumano and Takeishi 1991, p. 563). As the example shows, the concept of SRM has also evolved in other fields of research, such as supply chain management (SCM), highlighting its cross-industry wide importance.

In this paper, we adopt a client perspective regarding the management of supplier relationships. In this context, IT SRM covers a variety of activities, ranging from identifying potential IT suppliers through developing and monitoring supplier

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relationships, to terminating an underlying outsourcing contract. Thus, IT SRM has many facets and researchers have tried to address them. A wide range of contributions has appeared in the respective subphases, covering, for example, important elements of contract negotiations (Lacity and Hirschheim 1993) or contract design (Fitzgerald and Willcocks 1994), as well as factors that influence the duration of an outsourcing arrangement (Goo et al. 2007). To further manage outsourcing relationships, it has been argued that firms need sourcing competencies and capabilities to succeed (Cohen and Young 2005, p. 12; Feeny and Willcocks 1998; Willcocks et al. 2006). Furthermore, the role of two modes of governance – formal control (e.g., written contracts) and relational governance (e.g., unwritten, practice-based mechanism) – have been studied in research (e.g., Goo 2009; Poppo and Zenger 2002). Further work was done by McFarlan and Nolan (1995) who identified areas within a company that are crucial for managing external suppliers. Another contribution in this context explored formal vs. informal approaches to the management of supplier relationships (Heckman 1999). An overview of relevant articles published from 1988 through 2000 is provided by Dibbern et al. (2004). Recent work to the implementation phase of outsourcing is revealed in follow-up literature reviews (Alsudairi and Dwivedi 2010; Gonzalez et al. 2006; Lacity et al. 2010).

The purpose of the paper at hand is to explore IT SRM from a more holistic perspective, extending prior research that primarily focused on single subphases, for example, supplier selection or relationship building. More precisely, we pay attention to the client's organizational design to manage outsourcing relationships. It is widely believed that organizational design can positively impact corporate performance, as long as organizational design decisions fit to certain contingency or context factors, such as a company's strategy (Drazin and Van de Ven 1985; Galbraith et al. 2002). In IS/IT outsourcing, the role of organizational design at the 'client-supplier interface' (Willcocks and Lacity 2006) is, however, an under-researched topic. One exception is the work of Jimmy et al. (2011), which recently examined the organizational design of the 'customer interface' on the supplier side. This paper contributes to IS outsourcing relationship literature by addressing a client's organizational design choices on the interface to its suppliers. Filling this gap in research helps to pave the way to a better understanding about how to 'fit' organizational design to a given company's context, thereby contributing to IT SRM effectiveness and, ultimately, IS/IT outsourcing success.

Literature on organizational design was used to guide the study on organizational design of IT SRM. The following research question guided the research process and analysis: "how can IT supplier relationship management be efficiently organized on the client side?"

To answer the research question, the remainder of the paper is organized as follows: The next section reviews literature on organization design in general and provides the conceptual background of this study. With a description of our empirical study design, we illustrate our chosen research approach. Third, the results of a multiple case study, conducted in the IT organizations of five large-scale enterprises, are presented along our research framework. The article closes with a discussion of findings, limitations, and possible directions for future research.

2.2 Conceptual Framework

Organization design is often simplifying thought of organizational structure, but it goes far beyond the step of drawing boxes and lines in organizational charts (Champoux 2000). There is a long tradition on organization research that gave rise to several theories and frameworks in the past 60 years (Snow et al. 2005). For example, Galbraith (1977) proposed his star model, a framework composed of strategy, structure, processes, human resources, and reward systems. A similar model was offered by Peters and Waterman (1982) called the 7-S model which contained seven major organizational components. Miles and Snow (1978) empirically examined relationships among organizational strategy, structure and process, and they identified three commonly occurring configurations called the prospector, defender and analyzer. Despite some differences in the frameworks, scholars stress the importance of an alignment of the components (Drazin and Van de Ven 1985). In this paper, we guided our study on the star model offered by Galbraith et al. (2002) (see Figure 2-1):

Strategy encompasses the company's vision as well as short- and long-term goals and depicts the 'cornerstone' in the organization design process. Consequently, design decisions should be in accordance with strategy.

The second component of the star model addresses organizational *structure*. Organizational structure determines the location of formal power and authority within an organization. Designing an organization's structure determines organizational components and defines their relationship and hierarchical structure.

After strategy and organizational structure have been defined, the framework continues with *process* design. According to Galbraith et al. (2002), each organizational structure creates 'silos' that might in turn be harmful when collaboration across organizational units is needed. Defined processes as well as lateral connections (e.g., informal networks, cross-boundary teams) present mechanisms to create collaboration of structurally separated organizational units.

The last two components are *reward systems* and *people practices*. Reward systems "define expected behaviors and influence the likelihood that people will demonstrate those behaviors" (Galbraith et al. 2002). The following four components were deemed essential for a successful reward system: performance metrics, desired values and behaviors, monetary and non-monetary rewards. The final point on the star model comprises people practices that include human resources systems and policies within an organization. As typical elements, selection and staffing, performance feedback mechanisms, training, and career development are included.
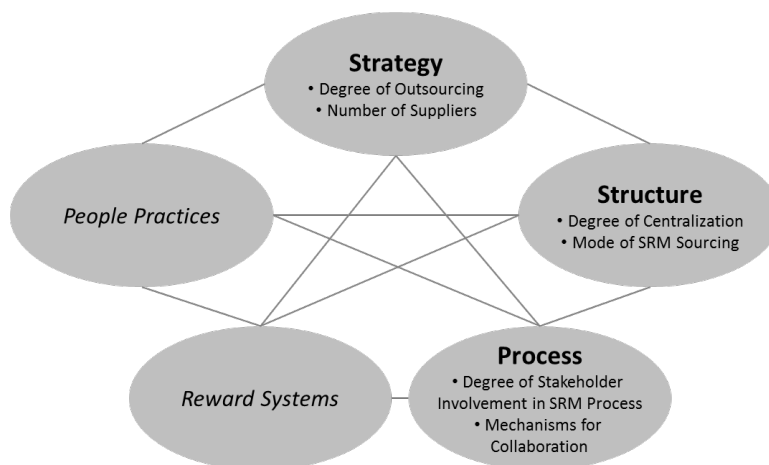
Figure 2-1: Conceptual Framework of Organizational Design (adapted from Galbraith et al. 2002)

In this paper, we investigate three aspects of organization design that also occurred frequently in other evolved frameworks: strategy, structure, and process. Although organizational design is often primarily thought of as being relevant for the customer interface, a company is also challenged to build organizational design on the procurement and supply side (Trent 2004). Given the focus on IT SRM in this article, we discuss these three components from an IT organization's perspective. Thereby, we focused on several constructs, for example, degree of outsourcing, required to assess appropriately the respective organizational components in the context of IT SRM (see Figure 2-1).

2.2.1 Strategy

A company's IS/IT sourcing strategy is ideally derived from corporate strategy (Lasch and Janker 2005) and basically covers decisions on what to outsource and what to insource. Furthermore, a sourcing strategy may determine preferred suppliers and guidelines on how they should be contracted (Feeny and Willcocks 1998). Therefore, ideally, a company's IT SRM activities, for example, supplier selection and contract negotiation, are in accordance with the overall sourcing strategy. Two crucial determinants of a firm's sourcing strategy are the aspired *degree of outsourcing* and the *number of external sources or suppliers* involved in the provision of IT services and products, often also discussed as single vs. multi-sourcing.

The degree of outsourcing has been an element of various empirical studies (e.g., (Lacity and Willcocks 1998; Lee et al. 2004) and is often measured as the proportion of outsourced services of a company's IT budget (Lacity and Willcocks 1998). Researchers have introduced several theories to explain outsourcing and decision making, for example, resource-based theory, transaction cost theory or agency theory (e.g., Dibbern et al. 2004).

From a transaction cost economics view (Coase 1937; Williamson 1981; Williamson 1985), a sourcing or 'make vs. buy' decision can be seen as a "tradeoff between production costs and coordination or transaction costs" (Malone et al. 1987, p. 485). This idea is based on two fundamental observations. First, competition and economies of scale typically lead to lower production costs in markets ('buy') than in hierarchies ('make'). Contrarily, transaction costs are, in general, higher in markets than in hierarchical arrangements (Williamson 1981; Williamson 1985, referring to Coase 1937). Transaction costs encompass a variety of costs, such as costs for searching for an adequate supplier, negotiating a contract and controlling and monitoring a supplier's performance. Precisely, these costs limit the number of suppliers that can be managed by a customer; in other words, it may be assumed that when adding a supplier to an organization's supplier base, the sum of transaction costs increases (Bakos and Brynjolfsson 1993, p. 39). However, transaction cost theory is only one perspective that has been adopted to study 'the optimal number of suppliers.' When reviewing literature, many statements can be found that address differing strategic benefits by either decreasing or even increasing the number of suppliers. Table 2-1 lists a short selection that was adopted from a literature review of Levina and Su (2008).

Table 2-1: Selected Literature of Supplier Base Strategies (adapted from Levina and Su 2008)

Author (year)	Recommendation and Implications
Rottman and Lacity (2006)	Firms should employ a relatively small number of suppliers (but at least two) to reduce strategic and operational risk and increase competition.
Cousins (1999)	Focusing on fewer suppliers helps build high-dependency relationships, shares technological advantages, and allows time to build relationships, which improves resource utilization and reduces costs. Focusing on a few suppliers risks missing critical changes in supplier markets, reduces flexibility, and increases dependency.
Lacity and Willcocks (1998)	Employing multiple providers and fostering competition among them can help firms maximize flexibility and control.
Richardson and Roumasset (1995)	Single sourcing supplier policy creates lock-in and increases costs due to the lack of supplier competition.
Bakos and Brynjolfsson (1993)	Firms should limit the number of employed suppliers to induce suppliers' investments in 'noncontractibles' such as quality, responsiveness, and innovation.

A related research area worth mentioning is the development of theoretical models at the beginning of the 1990s that investigated the impact of an increased use of information technology on the extent of a supplier base. Early research predicted that the use of IT may reduce client's coordination costs with suppliers (Malone et al. 1987), their search costs (Bakos 1991) and costs for supplier performance monitoring (Clemons et al. 1993, p. 14). In consequence, an extensive use of IT would tend to increase the optimal number of IT suppliers (Bakos and Brynjolfsson 1993, p. 39). However, it was hard to find empirical evidence for these early assumptions. Driven notably by studies of the automobile industry that reported a move to fewer suppliers (e.g., Cusumano and Takeishi 1991), further theoretical considerations were made. Bakos and Brynjolfsson (1993) showed that when suppliers' commitment is needed, such as certain investments in innovation or quality, it can be optimal to rely on a small number of suppliers in order to increase their incentives to make such non-contractible relationship-specific investments. Clemons et al. (1993) argue that an increased use of IT will lead to a higher degree of outsourcing. They argue that IT decreases not only coordination costs, but additionally the risks associated with an outsourcing endeavor. On the basis of these considerations, they advanced their 'move to the middle' hypothesis: In light of the favorable effects of information technology, firms will increase their outsourcing degree but will rely on fewer suppliers, taking advantage of long-term relationships that allow for steeper learning curves and economies of scale.

The discussion shows that strategies are generally not static and are subject to alter over time due to changes in markets, external environment factors or dissatisfaction with current performance (Johnson and Leenders 2001; Markides 1999). However, dynamic studies of changes in IT sourcing strategies are scarce. One exception is the study of Aral et al. (2010), which examined companies' IT sourcing decisions over a five-year-period, revealing that companies globally prefer to rely on long-term relationships with known IT suppliers. In this study, sourcing strategy was also assessed dynamically to better understand the 'cornerstone' of the remaining organizational dimensions, structure and processes.

2.2.2 Structure

As the famous statement 'structure follows strategy' (Chandler 1962) stipulates, ideally, the organizational structure of IT SRM should be in line with the IS/IT sourcing strategy. In general, five common ways of structuring an organization exist, namely, grouping by function, by geography, by product, by customer/markets, or by workflow processes (Galbraith et al. 2002). While doing so, it has to be determined where decision-making authority and power is located (Galbraith et al. 2002). This task refers to the classic issue of centralization vs. decentralization (Monczka et al. 2010; Pugh et al. 1968). Organizations position themselves on a continuum with complete centralization at one end and complete decentralization on the other, choosing thereby a specific *degree of centralization*. With our study's focus on IT SRM, a centralized unit that has the authority for the majority of SRM activities can be envisioned on one extreme. Similarly, we might encounter more decentralized organizations where the majority of SRM responsibilities have been assigned to divisional sub-units within the IT or purchasing departments. There may be organizations that do not lie at these extremes but rather rely on a combination of a centralized and decentralized approach, called *hybrid* (Monczka et al. 2010). Given that IT SRM is a boundary-spanning activity in the sense that interaction with suppliers from the company's external environment is needed, it appears to additionally be a challenging task to determine which activities should be centrally lead and which should be assigned to operating units. The challenge arises because each fundamental structure, centralized or decentralized, has advantages and disadvantages. For example, centralized structures can often more easily obtain cost savings, efficiencies, and decisions with increased clout, while decentralized structures are known for an increased speed of response, easier coordination, and a better opportunity of reacting to unique requirements.

In the context of IT SRM, the approach of a centralized or hybrid structure is related to the organizational concept of a 'Vendor Management Office' (VMO), a term primarily discussed in publications for IT professionals, such as CIO Magazine or Computerworld. According to Guth (2007), the first VMOs appeared in 2000 and were first adopted by IT departments of large companies, like Cisco Systems. According to a study by Forrester Research, centralized SRM models have been widely implemented in companies, either in the IT or purchasing department (Connaughton 2011). However, profound literature about VMOs is lacking. Functions that a VMO should ideally fulfill, their potential added value as well as organizational structure have to the best of our knowledge not yet been addressed by academic studies.

One might now be reminded of a related organizational entity seen in many companies, the Project Management Office (PMO). The Project Management Institute (2008) defines a PMO as "an organizational body or entity assigned various responsibilities related to the centralized and coordinated management of those projects under its domain. The responsibilities of the PMO can range from providing project management support functions to actually being responsible for the direct management of a project." The definition is broad and empirical cases show that in practice structure, function, and roles of a PMO vary to a high degree (Artto et al. 2011), similar to what one might expect in the case of a centralized unit (CU) for IT SRM.

However, organizations need not solely rely on resources within an organization to carry out their SRM (pure in-house model). Theoretically, companies have various 'sourcing alternatives' for IT SRM (*mode of SRM sourcing*). As in initial IS/IT outsourcing of, for example, IS development or operations, it might also be conceivable here to outsource the subsequent management of IT suppliers completely (or more likely to a certain degree) to a specialized third party. In case of an outsourced IT SRM, four different structural types can be differentiated. First, SRM may be assigned to either (I) an internal provider, for example, a subsidiary company, or (II) to a provider external to the company. Second, we can distinguish whether (a) the focal company has still direct contractual relationships with its suppliers or (b) whether the provider acts primarily as a prime contractor for the focal company and has a number of subcontractors further down the supply chain.

While the case of contracting a prime contractor (type b, internal or external) is already a well-known outsourcing configuration in IS/IT outsourcing literature (e.g.,

Cullen et al. 2005), especially the approach of contracting a 'specialized' provider for the management of the company's remaining IT suppliers opens up various opportunities for future research (type a). One central question that arises here is: To which degree it is advisable to outsource the management of IT suppliers to a third party? Accordingly, this model can be combined with a retained internal organization (centralized, decentralized or hybrid) to fit a company's needs and strategy.

Figure 2-2 aggregates the aforementioned organizational structures for IT SRM, varying upon degree of centralization and mode of SRM sourcing. The results of our multiple case study give further insights into the shape of these models in practice.
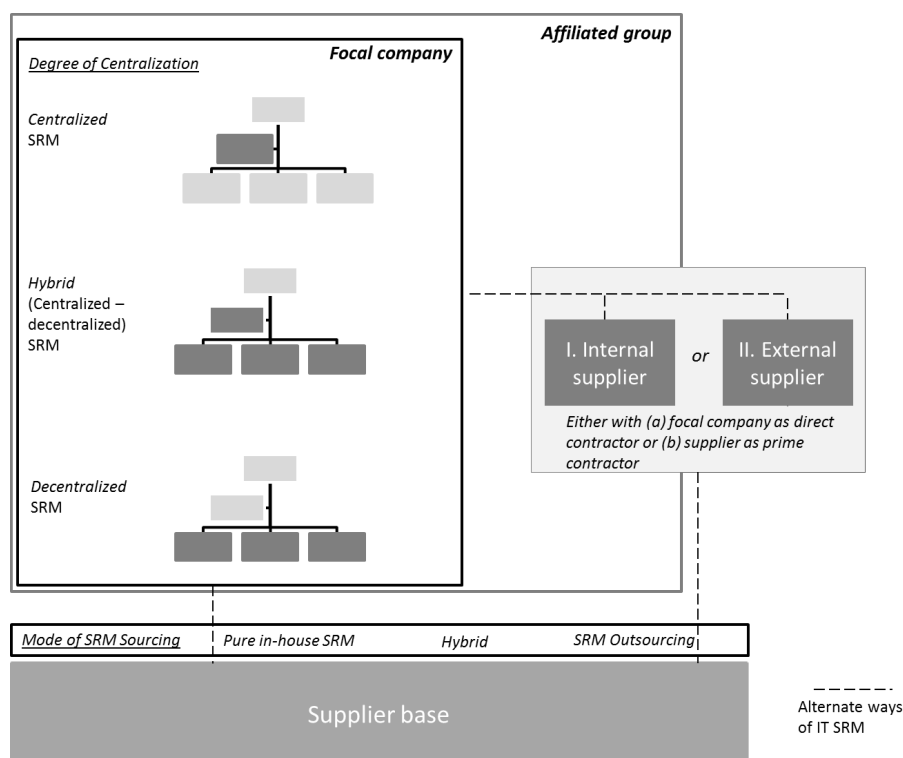
Figure 2-2: Organizational Structure Models of IT Supplier Relationship Management

2.2.3 Process

As a third dimension of organization design, the process layer of IT SRM is now examined (see Figure 2-1). At the beginning, we introduced IT SRM, ranging from selecting potential IT suppliers through developing and monitoring supplier relationships to terminating an underlying outsourcing contract. This section takes up this idea and outlines nine core activities that were deemed to be central to IT SRM.

This selection of core activities is based on a generic supplier management process proposed by Lasch and Janker (2005). Herein, the concept encompasses the identification, limitation, analysis, and rating of potential suppliers, as well as the ongoing management and controlling of client-supplier relationships. Thus, this understanding encompasses a broad range of tasks, beginning with the identification of potential suppliers subsequent to an outsourcing decision. SRM is embedded in an overall sourcing process that further includes a strategy phase, where a sourcing strategy is derived from corporate strategy (Lasch and Janker 2005), the feasibility of outsourcing is evaluated, and the outsourcing endeavor is finally planned (Brown and Wilson 2005, p. 25).

In a first step, market research often needs to be conducted in order to identify potential suppliers that might provide the required product or service. However, in an overall selection process it is often not possible to analyze and evaluate all potential suppliers identified in this step. Therefore, clients seek further information from suppliers, for example, by requesting a self-assessment questionnaire or 'request for information' (Koppelmann 1998, p. 81; Lasch and Janker 2005, p. 411). The result is a short list of pre-qualified suppliers that is used for the subsequent analysis and rating steps. We abstract these steps in the first phase and summarize them under the first core activity '*identifying and preselecting suitable IT suppliers*.' In supplier analysis, results from market research and self-information, and if necessary from additional audits, are collected and processed to the following rating or evaluation step ('*analyzing and evaluating the performance of potential IT suppliers*'). Evaluation should be conducted systematically and be based on key factors relevant to supplier choice. Many methods for evaluating and supporting decision making are discussed in literature (e.g., Lasch and Janker 2005, p. 411). A typical tool is the supplier scorecard that lists the selection criteria, assigns weightings and is filled out with quantitative and/or qualitative data gained from supplier analysis (Monczka et al. 2010, p. 175). The evaluation process is normally followed by a contract negotiation phase ('*conducting contract negotiations*') with one or more short-listed suppliers, where the design of a contract itself is seen as a very critical issue (van Weele 2009, p. 171). The future outsourcing parties need to agree upon, for example, type and scope of contract, terms of agreement, and pricing and fee structure (van Weele 2009, p. 172). With the final supplier selection and the signing of an outsourcing contract ('*selecting IT supplier for service provision*'), the pre-contractual and contractual phases are completed.

Once a contract has been signed and the supplier has started contract fulfillment, monitoring and controlling of supplier performance need to be carried out ('*monitoring and controlling contractually agreed IT services*'). In order to encourage suppliers to improve their service, companies can take corrective measures such as incentives or sanctions ('*taking measures (incentives, sanctions) to manage external service provision*') (Lasch and Janker 2005; Sparrow 2003, p. 109). In SCM literature, additional concepts, for example, supplier advancement, supplier development or supplier integration are often discussed (Lasch and Janker 2005; Monczka 2000, pp. 47 f.). We did not go into depth on this point. However, we see opportunities for future studies to explore, for example, relevance and shape of these concepts in the IS/IT outsourcing context. The next step covers '*maintaining IT supplier relationships*' in terms of relationship building and care.

So far, we have derived seven core activities of IT SRM from SCM literature. In a second step, we compared our activities with the 'supplier management process' introduced in ITIL (IT Infrastructure Library), a recognized framework of best practices for IT Service Management worldwide (Office of Government Commerce 2010, p. 3). Inherently, the process steps explained therein were already 'IT-related.' However, the described ITIL process is quite similar to our process, derived from 'generic' SCM literature and encompassing four core activities ranging from evaluation of new suppliers/contracts up to contract renewal and termination (Office of Government Commerce 2007, p. 151). Since it seemed reasonable to include the step 'contract renewal or termination' as well, we extended our process with '*renewing/terminating active contracts*.' Furthermore, ITIL recommends the establishment of a supplier/contract database to increase consistency and effectiveness in the implementation of overall supplier strategy and policies. Therefore, we included a more 'administrative,' ongoing task with '*maintaining an IT supplier and/or contract database*.' Based on literature, we finally derived nine major activities of IT SRM (see Figure 2-3).

The process described is by its nature 'cross-functional' and involves several people with different competencies and skills, who are typically active in different organizational entities throughout an organization. On a department level, the following five entities are conceivable as relevant stakeholders in IT SRM within large-scale client firms (Heckman 1999, p. 61; Office of Government Commerce 2007, p. 150): (1) A business department demanding a specific IT product or service, (2) the IT department fulfilling the IT needs of their internal customers (typically with the

support of IT suppliers), and (3) the purchasing department with its traditional tasks, like the identification of potential sources of supply, bid and contract preparation, negotiations, and supplier performance evaluation. (4) Legal departments might also be involved in the SRM process, since they typically handle a company's legal issues and act as advisers, for example, in drafting contracts with suppliers. And finally, (5) the financial department in charge of organizing financial and accounting information necessary to make sound business decisions.
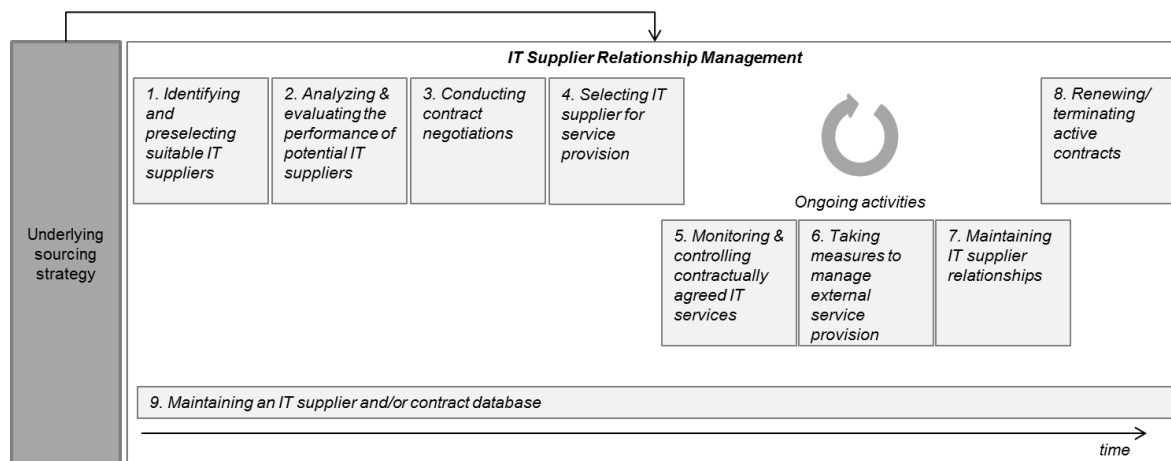
Figure 2-3: Core Activities of IT Supplier Relationship Management Process

In order to achieve the involvement of these usually separated departments, at least two ways exist to bridge boundaries established by an organization's structure, here referred to as *mechanisms for collaboration* (Galbraith et al. 2002). First, a company can formalize its processes, that is, documenting activities and clearly defining and articulating roles and responsibilities. In addition to process formalization, lateral connections can be used to bridge barriers. Informal networks, as well as cross-business teams, can help to foster work collaboration. Especially when selecting an appropriate supplier, a temporary, cross-functional purchasing team may be assembled to combine skills of different stakeholders (Johnson et al. 2001, p. 127; Sparrow 2003, pp. 70 f.).

2.3   Research Approach

2.3.1 Research Design

Relating to our main research question 'how' IT SRM is organized with regard to strategy, structure and process, the case study approach was deemed particularly appropriate (Yin 2003, p. 13). Despite traditional criticism, for example its lack of generalizability, the case study method has seen extensive application in the IS field

(Dubé and Paré 2003; Gonzalez et al. 2006). Since IT SRM has not yet been studied from an organizational research perspective, the case study approach was deemed especially appropriate because it allows researchers to thoroughly study the phenomenon of interest from different sources of evidence.

Given that multiple cases usually yield more general results, a multiple-case design was chosen (Yin 2003). Relying on multiple individual cases ensures that "the events and processes in one well-described setting are not wholly idiosyncratic. At a deeper level, the aim of multiple case study is to see processes and outcomes across many cases, to understand how they are qualified by local conditions, and thus to develop more sophisticated descriptions and more powerful explanations" (Miles and Huberman 1994, p. 172). According to this rationale, five cases were selected for this study, which allow us to deepen our understanding of organizational design in relation to IT SRM. The investigation of five cases complies with the evaluation of Eisenhardt (1989), who considers a number between 4 and 10 cases appropriate for most purposes. Furthermore, by the end of the fifth case, little new knowledge about the research object was acquired and we deemed the number sufficient with regard to 'theoretical saturation' (Eisenhardt 1989).

This utilization of case study research methodology follows a widely recognized positivist research approach, which assumes that the researcher plays a passive, neutral role and does not intervene in the phenomenon under study (Dubé und Paré 2003). According to Yin (2003), case studies can further be of exploratory, explanatory and descriptive nature. The objective of this case study approach is to compare each individual case with the *a priori* developed organizational design framework. Although the theoretical background of the framework has been discussed, it is not the primary aim of this case study to establish or to test causal relationships. Thus, our case study approach is best described as a descriptive one.

Within our five cases, IT organizations of large-scale client companies form the units of analysis. The sample of enterprises covers different industry sectors, such as Automotive, Finance, Transport, Travel, and Logistics. Apart from this sectoral variation, we tried to raise homogeneity in our selection and focused on companies with headquarters in Germany. Furthermore, our selection was driven by criteria that point to similar challenges with regard to IT sourcing and SRM. In addition to a comparable size and complexity (the cases had IT budgets in the region of three-digit million Euro in 2010), all investigated IT organizations have outsourced activities such

as the development and/or operation of their information systems to a substantial part to IT suppliers, leading to a degree of outsourcing ranging from 60 to 80%. To justify this limitation in our selection, it can be argued that the proportion of in-house production is inherently interrelated with the number and types of contracted IT suppliers, as well as the role that IT SRM might play in the respective organization. With this in mind, the selection of cases follows theoretical and literal replication (Yin 2003, p. 47). Basically, we ensured that the basic conditions just explained were similar in each case (literal replication). Apart from that, cases were selected to predict contrasting results due to differing case conditions, for example, whether or not a large in-house provider was in place (theoretical replication).

2.3.2 Data Collection

The whole study was conducted in a time period of three months, starting in January 2011. For data collection, we relied on multiple sources, because data triangulation is highly recommended in case study research (Eisenhardt 1989, p. 534; Yin 2003, pp. 97-101). Altogether, a questionnaire, five in-depth interviews and company documentation were used to raise confidence in our findings (Yin 2003, p. 86). Qualitative data was interlinked with quantitative data to elaborate our analysis later on (Miles and Huberman 1994, pp. 40-43).

The questionnaire consisted of seven pages, comprising qualitative and quantitative questions. The structure was related to our research questions and divided into four sections. In the first section (two pages), we queried general information about size, core activities, and organizational structure of the IT organizations under study. The second section (one page) contained questions about the past and current developments in IS/IT sourcing strategy. The process activities of IT SRM and the involvement of different stakeholders was the subject of the next section (two pages). The last section covered questions with regard to the organizational structure of SRM (two pages). A pretest of the questionnaire with three respondents was initially conducted, discussing reactions to the form, wording, and order of the questions.

The key-informant method was then used to obtain knowledge on organizational design in our case study companies (e. g., Bagozzi et al. 1991; Campbell 1955). The key informants were staff members of the respective IT organization, relatively high in hierarchy (most of them with direct reporting to the CIO) or entrusted by their CIO to conduct the study with us. The experts had several years of experience in the company/within the IT organization and were suitable contact persons for our study

subject. In a first step of data collection, the key informants were asked to send us a completed version of the questionnaire. An early analysis of responses proved that using a standardized questionnaire was fruitful in revealing first similarities and irregularities between the five cases. In a subsequent step of data collection, the contact persons were available for semi-structured face-to-face interviews. Here, we used the completed questionnaire as a guideline for more detailed questions. In one case, due to time and availability constraints, the questionnaire had to be filled out during the in-depth interview. In almost all cases, we were able to collect additional information material encompassing, for example, organizational charts and process descriptions. In this way, potential errors and biases resulting from our key informants' judgments were reduced.

During data collection, a case study protocol and database supported our research and helped to raise the reliability of our study (Yin 2003). The protocol was established prior to data collection and recorded the objectives of our study, procedures, as well as the questionnaire design. Therefore, it was easier to ensure that data collection followed the same guidelines in each case. Our case study database kept all relevant data in one place. It contained raw material, including completed questionnaires, interview transcripts and company documentation, as well as data displays and analysis results.

2.3.3 Data Analysis

After transcription of the audio-taped interviews, the data gained from the three collection techniques were interlinked and analyzed. In a first step, each case was analyzed separately along our conceptual framework. Data from the three sources were brought together and checked for consistency. Case analysis meetings with two research assistants, priorly involved in data collection, were frequently held, discussing the data and interpretations to create a common understanding of the respective cases (Miles and Huberman 1994). Various data displays (Miles and Huberman 1994) of the qualitative and quantitative data were created and assigned to the conceptual organizational design framework, also allowing for the identification of patterns from cross-case analysis.

During the different phases of research, we attempted to increase validity in several ways, as recommended by Yin (2003) among others. As already mentioned, we relied on multiple information sources during data collection to enhance construct validity. For the same purpose, we sent a result report in anonymized form to all companies

participating in the study and discussed it specially with experts from one case company in depth. To enhance external validity, we used replication logic in our multiple-case design. Furthermore, our underlying framework was built upon existing literature and theories, raising both the conceptual level and comprehensibility of our work (Eisenhardt 1989, pp. 544f.).[2]

2.4   Empirical Findings

In the following, the findings that emerged during case study analysis are presented along the conceptual framework of organizational design. Thus, the findings on our research question, how IT SRM is organized across the five cases, as well as the observable reasons that lead to a specific organizational design, are discussed in the following three sections.

2.4.1 Strategy

To assess strategy as the first component of organizational design of IT SRM, the study examines the degree of outsourcing and the number of contracted IT suppliers as two major determinants of an IT department's strategy that have naturally a high impact on the shape of IT SRM.

2.4.1.1 Degree of Outsourcing

The current degree of outsourcing was measured as the proportion of IT budget in 2010 spent on outsourcing (see Table 2-2). In three of the five companies, the degree was measured exactly with the reported numbers of total IT budget and purchasing volume. For the remaining two companies (cases D and E), the degree of outsourcing in relation to the IT budget was estimated by our key informants or calculated by themselves. The current degree of outsourcing was relatively high in all five companies, ranging from 60 to 80%. As described earlier, a high outsourcing degree was a selection criterion in our study, since it seems reasonable that companies with a high outsourcing degree are particularly challenged to set up an efficient SRM.

Since strategies, and hence the degree of outsourcing, are subject to change, an attempt was made to capture a dynamic view of the underlying sourcing strategy. While analyzing the responses towards past and future trends in the degree of outsourcing, it was striking that except for *company E,* no one reported an increased outsourcing within the last five years. During interviews, however, we gained the

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[2] A detailed assessment of the case study can be found in Table A-1 in the appendix.

impression that the general degree of IT outsourcing has already been on a high level *for more than five years* in all five companies. A further significant increase of outsourcing was not expected in the next years. Companies *B*, *C* and *E* in particular started to reduce their in-house activities approximately 10 years ago, shifting the provision of IT services and products towards external sources. *Case A* reported that the degree of in-house activities was increased during the financial crisis in the last years. However, now, they again pursue an opposite strategy and are increasing outsourcing. Furthermore, *company D* reported that its in-house IT supplier would increase outsourcing with regard to coding and testing activities.

2.4.1.2 Number of Suppliers

To assess the current status of companies' IT supplier bases, the number of active IT suppliers (based on purchase orders in 2010) was queried. Four of five companies have implemented a 'multi-sourcing' model and purchased from a multitude of IT suppliers, ranging from 60 up to 'several hundred' in 2010. *Case A* had difficulties in indicating the exact number of its suppliers. Whereas the number of external IT suppliers operating their information systems was well-known with 7, the number of IT suppliers supporting IS development was not exactly determinable. The total number here was estimated to reach several hundred IT suppliers, whereby the key informant adopted a group perspective. *Case B* was able to exactly indicate the number of IT suppliers in their division, mainly because the number was 'manually' determined by the company with great effort prior to this study. The number includes one in-house provider that accounts for a substantial part of total IT spending. *Case C* reported that they contracted about five large outsourcing partners and about 35 medium-sized businesses. A large number of smaller IT suppliers are purchased through a general contractor, resulting in a total of 60 suppliers. Compared with the other cases, *case D* was particular. A subsidiary company receives 90–95% of the total IT spending yearly, that is, a 'single sourcing' model was basically adopted here.

Table 2-2: Overview of IT SRM Findings on Strategy, Structure, and Process

			A: Automotive	B: Travel	C: Logistic	D: Transport	E: Finance
Strategy	Degree of Outsourcing	Current (2010) Percentage of Total IT Budget	69%	76%	63%	80%	60%
		Significant increase in the last 5 years?	no	no	no	no	yes
		Future development	slight increase	rather constant	rather constant	(provider:) increase	/
	Number of IT Suppliers	Total (2010)	'several hundred' (group-level)	182	60	basically 1 in-house provider	5-10 large & 50-100 smaller suppliers
		Significant reduction in the last 5 years?	yes	no	yes	no	yes
		Expected change in the next years?	further reduction	reduction/ consolidation	rather constant	rather constant	similar strategy as before
Structure	Degree of Centralization		hybrid (one central unit)	decentralized (planning to establish a central unit)	hybrid (two central units)	rather decentralized	hybrid (several central units)
	Mode of SRM Sourcing		hybrid (in-house SRM & outsourced SRM, type IIb)	hybrid (in-house SRM & outsourced SRM, type Ib)	hybrid (in-house SRM & outsourced SRM, type Ib and IIb)	pre-dominantly outsourced SRM (type Ib)	pre-dominantly pure in-house SRM
Process	Degree of Involvement*	IT Dep.	2.8	1.9	2.4	1.1	2.4
		Purchasing Dep.	1.8	1.6	2.1	2.7	1.1
		Legal Dep.	0.4	0.6	0.7	0.2	1.4
		Financial Dep.	0.0	0.4	0.0	0.4	0.0
		Business Dep.	0.6	1.1	1.0	0.6	0.3
	Mechanisms for Collaboration		process formalization, cross-functional teams	process formalization, cross-functional teams	process formalization, workflow management system, cross-functional teams	process formalization, cross-functional teams	process formalization, cross-functional teams

Notes:

* data for activity 'maintaining an IT supplier and/or contract database' was not available in case E. Scale: 0 'not at all' to 3 'very intensive'.

Finally, our key informant of *case E* indicated that they basically relied on 5-10 large IT suppliers on a group-level. Although the informant was not able to indicate the exact total, the number of more smaller IT suppliers was estimated to range between 50 and 100.

Three of our five companies surveyed indicated that they had decreased their number of IT suppliers noticeably in the last five years. Among these was *company A* that significantly reduced the number of suppliers contracted for operating their information systems: the number decreased here from 270 to 7 in 2008. In the domain of information systems development, a comparable reduction was not yet achieved. Owing to an increased 'level of complexity' resulting basically from the process-oriented structuring of the IT organization, a significant decrease is therefore considered more difficult. However, first approaches were made: One large IT supplier was contracted to act like a prime contractor. This prime contractor then contracted further suppliers that had previously had direct contractual relationships with *company A*. Thus, the number of 'direct suppliers' was decreased in this case by a form of 'subcontracting' from *company's A* perspective. Similar changes were reported in *case C*. The logistics company reduced their numbers from 250 in 2003 to 60 in 2010. Again, a substantial part of this reduction was achieved by 'subcontracting,' also known as 'tiering' in SCM literature: the "tiering approach reduces the number of suppliers that the organization deals with directly, but does not necessarily reduce the total number of suppliers in the supply chain" (Ogden and Carter 2008, p. 9). The third company (*case E*), which has streamlined its supplier base, explained its strategy as follows:

"We have strategically concentrated our purchasing to a few suppliers. In the bidding procedure we have guidelines of preferred suppliers. When you have niche products or projects then we might involve smaller suppliers. But we have followed the overall strategy to a few larger suppliers within the last years." (case E)

With regard to future changes in the supplier bases, several forward-looking statements were gained. Whereas *case A* expects a further decline in their supplier base in the next years, *C's* supplier base is expected to remain rather stable. Our key informant in c*ompany E* was more unsure on how to predict an outcome for his company and commented cautiously that the future number would depend on changes in markets and project volumes. However, for the coming years he expects that the desired trend towards a few strategic partners would continue. Although the *companies B* and *D* have not significantly reduced their supplier bases in the last years, *case B* at least expects a move to fewer outsourcing relationships in the upcoming years.

Company D sees no imminent shift in strategy and expects to continue contracting almost exclusively through its subsidiary company.

Taken all together, we observed that many companies still deal with a large number of IT suppliers. However, when trying to interpret these numbers we have to keep in mind that our cases were based on large-scale companies, where IT needs cannot be compared to mid- or small-sized companies. Whether the large number of suppliers was a strategic decision or whether the supplier bases had grown uncontrolled was not subject to our study. Nevertheless, we found evidence that some IT organizations have realized a substantial reduction of their supplier bases (*cases A, C,* and *E*) or have planned to do so in the next years (*case B*). In addition, as described earlier, all companies had a high degree of outsourcing at the time of the survey. Although we have not explored the favoring role of increased use of IT, we might notice that some companies have started a 'move to the middle' approach (increase of outsourcing but to fewer suppliers) expected by Clemons et al. (1993). However, the two parts of the approach – increased outsourcing and reduction of supplier numbers – do not seem to occur in parallel. The findings suggest that strategic decisions that can be dated back to more than five years ago lead to today's high outsourcing degree in the investigated companies, and have seemingly reached a 'steady state' now. In contrast, significant reductions in the IT supplier bases appear to have taken place in the last five years and/or to be taking place in the next few years. From a cost perspective, it might be argued that in the past few years the case study companies have turned their attention towards potential cost savings that reside in supplier base reductions, instead of relying solely on 'optimal' outsourcing decisions.

2.4.2 Structure

With regard to the second organizational design element, structure, the case study companies have implemented various models for the management of their IT suppliers. In the following, the findings on degree of centralization and implemented mode of SRM sourcing are presented.

2.4.2.1 Degree of Centralization

The majority of the five companies surveyed have implemented a centralized unit for SRM, pursuing a hybrid approach (*cases A, C, E*). *Case B* still has a 'decentralized' structure in place, but is also considering implementing a central unit within the next years. The internal structure of *case D* to carry out the management of its large in-house provider also follows rather a 'decentralized' approach. The three companies

that have implemented a centralized SRM point to a high heterogeneity regarding organizational position, structure and the responsibilities of a centralized unit (see Figure 2-4). The central units were established in a time period from 2000 to 2009 and encompass at least 10 people today.

Figure 2-4: Characteristics of Central Units in Hybrid Supplier Relationship Management Models

Beginning with *case C*, the company decided to even implement two separated units for SRM, one dealing with 'build'-suppliers, that is, suppliers contracted for IS development, and one addressing 'run'-suppliers, responsible for IS operations. The separation was explained as follows:

"We separated the tasks into two units. One is dealing with a large number of development suppliers and one is dealing with a small number of IS operations suppliers. [...] Furthermore, we have different levels of service depths in each unit. In the first unit, staff members of the purchasing department and business departments are more involved than in the second unit." (case C)

The organizational unit that manages suppliers for IS development has a specific 'controlling function' and therefore involves stakeholders central to the SRM process:

"They [staff members of the unit] ensure that the purchasing department concludes an appropriate contract. Besides, they involve the business departments' ideas and call the legal department in legal matters." (case C)

The second organizational entity focuses on the management of contracts/licenses in the domain of IS operating and is orientated towards ITIL's service agenda for 'supplier management.'

Company A established a centralized unit within its IT department two years ago and takes a similar approach to that followed by *company C*. Again, a unit, reporting to the head of IT infrastructure, was established to fulfill the management of suppliers providing IT operations. Alongside carrying out license and contract management, the unit is responsible for monitoring supplier performance. However, a similar unit for the management of suppliers for IT development has not been established yet.

Company E established one unit with a direct line reporting relationship to the Chief Organizational Officer of IT and assigned 'strategic tasks,' for example, development of sourcing strategy and maintaining relationships to strategic outsourcing partners. In addition, a central unit was established within each of several CIO divisions, carrying out more 'operative' tasks, for example, monitoring suppliers' performances and conducting contract negotiations.

Across all three cases, perceived benefits that resulted from the implementation of one or more central units for IT SRM were reported to be the following:

- facilitating the development and enforceability of guidelines and standards for IT sourcing/SRM, for example, procedure models or security guidelines, and their check of compliance;
- raising transparency of a company's contractual relations with one supplier across different divisional units;
- helps leveraging synergy potentials and cost savings by bundling activities and optimal utilization of resources.

2.4.2.2 Mode of SRM Sourcing

With regard to our second structure variable, mode of SRM sourcing, our case companies relied on different alternatives previously discussed theoretically. As described earlier, we found that during supplier base reduction, a 'tiering' approach was often chosen (*cases A* and *C*): multiple contractual relationships to smaller IT suppliers were terminated and they were now serving as subcontractors to one general company contractor. From a SRM perspective, we might expect that a substantial part, if not all, of the management of these 'second tier' suppliers was assigned to the prime contractor in this way (type IIb – external provider, focal company has no direct

contractual relationships with suppliers). Subsidiary companies, internal to the group, are in place in *cases B, C* and *D* (type Ib – internal provider, focal company has no direct contractual relationships with suppliers). In the latter case, the in-house provider is considered to be primarily responsible for IT SRM for the group. Except for the management of this in-house provider and a small number of direct commissioned external suppliers, the IT organization is significantly relieved from the management of IT suppliers.

To a lesser extent, cases *B* and *C* have an in-house provider in place, whereby the directly commissioned suppliers are still managed in-house. *Case E* follows a pure in-house model, in which the SRM of external IT suppliers is predominantly fulfilled by client staff.

The theoretical consideration that companies may still have contracts in place with various IT suppliers (types Ia and IIa), but have delegated their management to an internal or external party was not predominantly observed in our case companies. However, this scenario is not unrealistic. To increase professionalism or realize cost savings, companies might choose to contract a specialized third partner for, e.g., supplier selection or performance monitoring. We see at least specialized suppliers in the market, offering a broad range of SRM activities. As mentioned above, further research is specifically needed here to understand the shape, benefits, and limitations of this model from a theoretical and empirical point of view.

2.4.3 Process

The whole process of IT SRM described above was expected to be cross-functional and involve resources, skills and competencies that are located most likely in different organizational entities, such as the purchasing or IT department.

2.4.3.1 Degree of Involvement

A dedicated section in our questionnaire tried to capture the relevance of the derived nine core activities, as well as the involvement of the five stakeholder departments within the organization. To achieve this, the case study respondents were asked to rate the intensity of stakeholder involvement throughout the process. The five departments included were IT, purchasing, legal and financial departments, as well as the respective business departments representing internal customers. For each activity and stakeholder department a four-point intensity scale, ranging from 'not at all' to 'very intensive,' was provided to indicate the degree of involvement. Table 2-2 shows the

average involvement of the five departments in IT SRM across the five cases. Here, we coded the response options with integers, ranging from 0 ('not at all') to 3 ('very intensive') and calculated the arithmetic mean across all nine activities.

Beginning with *case D*, due to its 'unique conditions' in our case selection, the involvement of the purchasing department (2.7) was in average rated here much higher than the involvement of the retained internal IT department (1.1). An essential reason is that the internal IT department of *case D* has transferred a substantial part of SRM to its in-house provider. In other words, the in-house provider is basically in charge of selecting and contracting new suppliers, as well as managing the ongoing contractual relationship. Nevertheless, the in-house provider's activities are controlled by the remaining IT organization of the group. The interplay between D and its subsidiary company was exemplarily explained regarding strategy development as follows:

> *"Our in-house provider is in charge of further developing our IT sourcing strategy. Of course, it needs to be accepted by our CIO, but the provider is the driving force here." (case D)*

Apart from a variance in the absolute degree of involvement, the results in the remaining four cases, which fulfill still significantly SRM activities in-house, show a similar distribution: the IT department (arithmetic mean 2.3) and purchasing department (arithmetic mean 1.6) are the departments being most involved in the management of a company's IT suppliers. A predominant role in IT SRM was often attributed to the IT department. Legal and business departments play a supporting role. In particular, financial departments seem to play a minor role in IT SRM.

Looking more closely at the average involvement in the nine core activities of IT SRM within these four cases, the findings suggest the following (see Table 2-3):

- The role of an IT department is predominant regarding the following tasks: identification and preselection of suitable IT suppliers, monitoring and controlling suppliers' performance as well as taking measures to improve service provision.
- The steps of analyzing and evaluating the performance of potential IT suppliers, conducting contract negotiations, as well as the final selection of an IT supplier are jointly fulfilled by an IT and purchasing department.

Table 2-3: Average Rating in Nine Core Activities of IT Supplier Relationship Management

Department	1. Identifying & preselecting suitable IT suppliers	2. Analyzing & evaluating the performance of potential IT suppliers	3. Conducting contract negotiations	4. Selecting IT supplier for service provision	5. Monitoring & controlling contractually agreed IT services	6. Taking measures to manage external service provision	7. Maintaining IT supplier relationships	8. Renewing/ terminating active contracts	9. Maintaining an IT supplier and/or contract database	Overall average degree of involvement
IT	2.5	2.3	2.8	2.8	2.5	2.3	2.0	2.8	1.3	2.3
Purchasing	1.3	2.0	2.5	2.5	0.3	1.0	1.0	2.3	2.3	1.7
Legal	1.3	0.8	2.0	1.0	0.0	0.3	0.0	1.3	0.0	0.7
Financial	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Business	1.5	0.8	0.5	1.5	1.0	0.5	0.3	0.5	0.0	0.7

Notes: Scale 0 'not at all' to 3 'very intensive'

However, these results must be interpreted carefully. The rating was solely done from an IT organization's perspective, that is to say: for example, a purchasing manager might have rated the involvement of his department differently (see limitations of our study).

2.4.3.2 Mechanisms for Collaboration

The star model of Galbraith et al. (2002) suggests that organizations need to find ways to bridge structural boundaries that might especially exist between IT and purchasing departments in this context. The IT organization of *case B* shows a good example of how formalization and the use of teams, as a more lateral connection, facilitates the collaboration across structurally separated departments. Similar to the remaining cases, *B* has developed guidelines for the whole sourcing process, ranging from development of a sourcing strategy through selection of suppliers to the termination of a contract. A formal process description governs the sequence of steps and the involvement of the purchasing department. In addition, it defines when a temporary purchasing team with representatives from, for example, a project as well as the purchasing and controlling department needs to be established. In *case C*, it was reported that their SRM process was even supported technologically by a workflow management system, facilitating an active control of the process steps across organizational boundaries. Thus, in the five case companies, process formalization and the use of cross-functional teams were the observed predominant means of guaranteeing the exchange of information in the context of IT SRM. While not focused in our study, we expect informal networks to be additionally in place within the companies, favoring also cross-functional collaboration in IT SRM.

2.5 Conclusion

This paper can be classified as a research paper paying attention to an emerging issue in IS research: the management of outsourcing relationships. Organizational design decisions on the client side were selected as the focus of this study to provide better insights into effective ways to manage IT supplier relationships. Three core elements of organization design, strategy, structure and process, were examined in five IT organizations of large-scale enterprises. The findings suggest that IT SRM is widely perceived as an important aspect in IS/IT outsourcing leading to various changes in IT organizations' design.

2.5.1 Discussion of Key Findings

As the star model of Galbraith et al. (2002) suggests, companies' underlying sourcing strategies that have an essential influence on IT SRM, were first explored. Here, we focused on two aspects: outsourcing degree and number of suppliers. In general, all companies surveyed have a relatively high outsourcing degree and have outsourced a substantial portion of their IS development/operating to third parties. Except for one company, which contracts almost exclusively to its subsidiary company, the number of IT suppliers was from 60 up to 'several hundred' IT suppliers across all remaining cases large. However, we partially observed a sharp reduction in the supplier bases within the last few years. While the automotive industry is the classic example where a significant reduction of the number of suppliers has been observed (Clemons et al. 1993; Cusumano and Takeishi 1991; Lemke et al. 2000), similar investigations of a company's reaction to a very large number of contracted IT suppliers are very scarce in today's academic research. One exception is a recent study of Willcocks et al. (2010), which also indicated that some client companies have started working on a reduction and consolidation of their supplier bases. Here we have brought the 'move to the middle' hypothesis to mind which predicted a move to more outsourcing but with fewer suppliers (Clemons et al. 1993). A dynamic view on companies' sourcing strategies suggests that the investigated IT organizations have recently aimed much effort at an efficient management of their contractual relationships instead of relying solely on 'optimal' sourcing decisions.

This shift of emphasis does not only affect sourcing strategies, but leads to changes in organizational structure as well. Our conceptual framework distinguished between different organizational models of IT SRM, varying upon the degree of centralization and mode of SRM sourcing. The two extremes on a continuum, 'decentralized supplier relationship management' and 'centralized supplier relationship management,' present ways to structure SRM intra-organizationally. The outsourced SRM model covers an alternative where a company decides to outsource (a part of) its SRM to a third party. Our case studies covered these structural models and showed examples of their practical implementation. The predominant in-house model was a hybrid (centralized-decentralized) structure, where IT organizations have established one or more centralized units for a part of the related activities, stressing the importance of IT SRM. Although a great variety of design and responsibilities of these centralized units appear to be in place in practice, two ways to efficiently structure the units emerged from our case companies: Separating either strategic and more operative tasks, or

separating units, dealing with suppliers contracted for IS development or IS operations.

The last section addressed the process layer of organization design and studied the core activities and stakeholders involved in IT SRM. Conceptually, we derived nine core activities from a generic process gained from SCM literature and the best-practice framework ITIL. These activities basically constitute a process, ranging from identification of potential suppliers through building relationships and performance monitoring to the termination of contractual relations. Owing to the process' wide scope, several competencies and skills need to be involved. Therefore, companies usually need to involve staff members from IT, purchasing, and legal departments etc. throughout the process. We shed some light on the distribution of IT SRM tasks, showing that IT and purchasing departments play the major role (from IT perspective) here. Formalizing SRM processes and relying on lateral connections, for example, purchasing teams, presented two predominant ways to bridge barriers between different organizational entities, that is, departments central to IT SRM (Galbraith et al. 2002).

Not reported so far, our study tried additionally to provide the total number of people (full time equivalents, FTE) involved in the described SRM process within the IT organizations. However, our case companies had great difficulties to provide such a number. Since we do not want the reader to be deprived of the 'lessons learned,' we try to briefly summarize the reasons, why our attempt did not prove successful. First of all, as already mentioned, companies that followed a hybrid approach and established central units, were able to provide us the number of people devoted to SRM centrally (10 people and more). When trying to get the number of people also involved in SRM, but active in more decentralized organizational entities, the key informants could only give us relatively little information. Even the attempt to estimate the number of people involved in SRM turned out to be difficult, but revealed some further characteristics of today's SRM implementation in practice. First, there still seems to be a large extent of people across the IT organization involved in the SRM process only part-time and temporary, which itself shows that the extent of people needed for SRM changes dynamically. Therefore, the need of people for SRM does not only depend on a given contract size, but seems also to be depending on, for example, type of contract (fixed-price, etc.), the subject of the contract and the activities that are retained in-house (IS operations, development, etc.), as well as the delivered quality and know-how level of the commissioned suppliers. Given the lack of transparency and the partially dynamic

involvement in SRM activities, it is likely that there is a further great potential for companies to streamline their SRM activities to reach a more mature IT SRM. Bundling and centralization of further SRM activities might be one way to do this, but we expect companies thereby facing a major challenge in finding their optimal degree.

2.5.2 Limitations and Future Work

To advance research in the field of IT SRM, we conducted a multiple case study into the IT organizations of five large-scale German enterprises, attempting to understand how IT SRM has been implemented from an organizational design perspective. The multiple case study pointed out the barely examined issues in research and we will now briefly discuss promising directions for future research in the field.

Although we did not conduct a single case study but studied a total of five cases, there is still a need for other studies to discuss, argue or confirm our findings. One major limitation arises from the fact that we applied the single key informant method. Despite our attempt to compensate this limitation by relying on, for example, data triangulation, future studies could extend research by for example adopting additionally a purchasing or legal perspective. Second, a larger empirical basis is needed to gain a representative picture of current shape and trends in IT SRM. Owing to our relatively small case number, we were, for example, not able to explore cultural or sectoral differences. Determining whether there is a remarkable trend towards a significant reduction in IT supplier bases, as well as studying the spread of centralized units appear to be worthwhile research areas. Future studies are needed to study, for example, conditions, success factors, risks and benefits of these concepts to support companies planning to implement them.

Further research efforts should be made to additionally consider the remaining two organizational elements of the star model, reward systems and people practices, along with the potential benefits companies might reap from an alignment of these organizational design facets. At this point, one should remember contingency theory which suggests that there is no universal best way of organizing, but that the optimal organization design is rather contingent upon various internal and external constraints (Donaldson 2001; Galbraith 1973). In this context, our case organizations suggest the following conclusions: Centralized units seem to 'fit' especially well into organizations with a certain size and favoring strategic conditions, such as a high outsourcing degree and/or a large supplier base. The most straightforward reasons might be the eventually increased ability to handle the complexity that arises out of

these aforementioned contingency factors. And secondly, given the variety of activities necessary for IT SRM and the number of different organizational entities needed to carry them out, they call for a clear regulation of responsibilities, or in other words, process formalization. To further generalize these initial and other assumptions, additional empirical studies are needed, elaborating on the applicability of organizational contingency theory in the context of IT SRM, and its influence on IS/IT outsourcing success.

Another field that is deemed to valuably contribute to IS outsourcing research is a thorough investigation of the organizational model of 'outsourced supplier relationship management,' that is, outsourcing (a part) of SRM activities to specialized third-party providers. Many pros and cons can be named for both alternatives, pure in-house vs. outsourced SRM. That is, for example, independency and control keeping on one side and the further leverage of economies of scale and concentration on business core competencies on the other. In our opinion, it would be worthwhile to view this model through different theoretical lenses and studying it in empirical studies, verifying it's potential to succeed in the IS/IT outsourcing market.

In the beginning, we pointed to the fact that SRM has already been well studied in SCM literature, albeit not with a focus on IT suppliers. Some principles known in SCM, for example, 'supplier base reduction' or 'tiering' were observed in our cases. Another interesting direction for future study would be to evaluate whether further SRM concepts from 'mature' industries, such as the automobile industry, can be applied to the IT/software industry. Furthermore, an additional look at differences between the industries, for example the fact that spatial proximity is less important in the software industry, could further point to particularities in the management of IT suppliers.

3 Paper B: Positioning Clients in Dyadic Dependence Structures of IS Outsourcing Relationships – Conceptualization and Empirical Findings[3]

3.1 Introduction

Today, many client companies have to a large extent outsourced their information systems (IS) to specialized IT suppliers. Since the early beginnings of IS outsourcing research, an excessive dependence on suppliers is perceived as a main risk for client companies (Gonzalez et al. 2005; Lacity et al. 2009). The concerns of being unable to switch to another IT supplier or subjected to a dictate of pricing, are only two of the aspects that clients associate with a strong dependence in IS outsourcing relationships. Compared to dependence research in other disciplines, investigations of dependence in IS outsourcing are, however, still in the early stages.

In other research disciplines, dependence has been identified as an essential attribute of a relationship between two or more organizations (Emerson 1962). Traditional dependence literature suggests to assess both, client and supplier dependence, i.e., taking a dyadic perspective, in order to draw adequate conclusions (Emerson 1962). The reason behind it is that the aspired power advantage by one party arises from a dependence asymmetry, i.e., the difference between the two organizations' dependencies (Emerson 1962). The opportunity to exercise such a power potential in an unbalanced dependence structure, represents a threat for the weaker party's business performance (e.g., Gulati and Sytch 2007; Lacity et al. 2009). For example, a more powerful position of the supplier might induce lower service quality to the detriment of the client. On the other side, supplier performance losses appear when a more powerful client bullies its supplier and puts pressure on prices.

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[3] This is the accepted author's version of the following article: Kaiser, J., Widjaja, T., and Buxmann, P. 2012. "Positioning Clients in Dyadic Dependence Structures of IS Outsourcing Relationships - Conceptualization and Empirical Findings," in International Conference on Information Systems Orlando, USA. The definitive publisher-authenticated version is available online at: http://aisel.aisnet.org/.

Losing sight of managing organizational dependencies, companies expose themselves to opportunistic behavior by their exchange partners or they fail to reap benefits by remaining in a disadvantageous dependence position. An understanding of dyadic dependencies enriches the stream of literature regarding the successful management of client-supplier relationships. Given the fact that IS outsourcing research has up to now treated this concept quite superficially, as will be outlined below, we focus on two main contributions: First, an extension of existing IS outsourcing relationship research by adopting the dyadic concept of dependence from other disciplines. This step will provide valuable conceptual and empirical insights which could not been obtained when addressing only one side of the dyad. Second, a comprehensive conceptualization of client dependence, paying attention to the peculiarities of the IS outsourcing domain. As a complex construct, dependence is determined by various factors which prior research has not clearly differentiated. The conceptual work presented herein will prove useful in future studies to explain, e.g., a) levels of perceived dependence, b) why companies remain in suboptimal relationships, c) differences in the levels of mutual trust and commitment to a relationship, as well as occurrence of conflicts and coercive strategies, which are assumed to influence d) relationship quality and IS outsourcing success.

This paper is organized as follows: The next section introduces the topic of dyadic dependencies, refers to dependence research and theoretical frameworks. In the third section, the chosen research approach is described. Subsequently, we propose a framework of dependence determinants and present findings for five client-supplier relationships in IS development/maintenance outsourcing. This article closes with a discussion of findings, limitations and possible directions for future research.

3.2   Theoretical Background

3.2.1 Dyadic Dependencies in Exchange Relationships

Contrary to IS outsourcing research, dyadic dependencies have received greater attention in supply management and relationship marketing literature (Frazier 1983; Kumar et al. 1995; Palmatier et al. 2007). Many contributions in this field have been inspired by the seminal work of Emerson (1962), who illustrated that the concepts of dependence and power are strongly interlinked: "The power of A over B is equal to, and based upon, the dependence of B upon A." Many researchers have built on Emerson's dependence conceptualization, in which each party's dependence is determined by (1) the importance of the relationship to achieve desired goals and (2)

the extent to which there are alternatives to achieve these goals. Studies based on this view usually adopt a pluralist perspective, in which involved parties pursue differing objectives and power is a party's ability to influence other's behaviors (Jasperson et al. 2002).

Investigations of the dyadic nature of dependence is very popular in these disciplines and has led to the distinction of two constructs, namely joint dependence, or the sum of two organizations' dependencies on each other, and relative dependence, i.e., the difference in the dependencies as described above (e.g., Casciaro and Piskorski 2005). Researchers have used them to measure the impact of dependence on e.g., relationship quality and the involved partners' performances in an exchange relationship (e.g., Palmatier et al. 2007). In a high joint dependence structure, i.e., both partners are highly dependent on each other, both face high exit barriers and can cause serious damage to each other. Thus, due to the mutual desire to maintain and perhaps further deepen the relationship, such dependence combinations usually show positive outcomes reflected in e.g., higher levels of joint action, commitment and trust (e.g., Gulati and Sytch 2007; Kumar et al. 1995). In contrast, dependence asymmetry has been shown to lead to decreasing trust and commitment as well as increasing conflict (Kumar et al. 1995). Diverging interests, opportunistic behavior and coercive use of power are more likely in asymmetric relationships and proved aversive to the development of relationship quality.

3.2.2 Dependence in IS Outsourcing Relationships

Turning to IS outsourcing, here understood as a "business practice in which a company contracts all or part of its information systems operations to one or more outside information service suppliers" (Hu et al. 1997), a different picture emerges. Prior research has acknowledged that dependence pertains to the 'behavioral dimension' (Currie and Willcocks 1998; Kern and Willcocks 2000) or to the 'attributes' (Goles et al. 2005) pervading the working atmosphere of an IS outsourcing relationship. Surprisingly, apart from studies that mention the term 'dependence,' mostly to refer to it as a risk for the client (e.g., Aubert et al. 2005; Gonzalez et al. 2005), literature is largely silent about its dyadic nature and its specific effects on outsourcing relationships.

Some exceptions, predominantly case-based research, lead us to assume that organizational dependence is highly relevant throughout the whole lifecycle of an IS outsourcing relationship. By signing the outsourcing contract, a specific dependence

setting is initialized, albeit quite often still on a small scale. Various factors usually lead to a change in dependencies over time. In the service delivery phase, dependencies are likely to influence the efforts put into the relationship, stipulating power-play and influencing relationship outcomes. For example, in an experimental setting, Swinarski et al. (2004) found a positive relationship between a client's power, i.e., a supplier's dependence on the client, on its motivation to comply with contractual obligations, its willingness to cooperate and to invest additional resources in the relationship (Swinarski et al. 2004). A similar study investigated the impact of an outsourcing deal's importance to a supplier on relationship quality and outsourcing success (Blumenberg et al. 2009). Additionally, a few case studies provided insights into the dynamics of dependence (Lonsdale 2001; Willcocks and Currie 1997; Willcocks and Kern 1998), indicating that the structure might often shift to an imbalance over time in favor of the supplier. Dependence and exercise of power are also highly relevant in the final phase of supplier switching and transition (see e.g., Chua et al. 2012; Whitten and Wakefield 2006). A client facing a high dependence on its supplier might be unable to terminate the contract due to high switching costs (Whitten and Wakefield 2006) or a lack of market alternatives (Pfeffer and Salancik 1978). Imbalanced relationships might also lead to opportunistic behavior by the outgoing supplier, posing a threat for the client's business in this critical phase (Chua et al. 2012). Dependence has also been discussed in the context of multi-sourcing. Relying on multiple suppliers instead of contracting a single supplier, is widely seen as a means to reduce a client's dependence on each individual IT supplier. However, often to the detriment of higher management and coordination costs (Huang et al. 2004; Levina and Su 2008; Sia et al. 2008; Willcocks and Lacity 1999).

A study that addressed dependence between client and supplier in a survey-based approach is of Lee and Kim (1999, 2005). Herein, a positive relationship between joint dependence and quality of outsourcing relationships was posited. Inconsistent to findings in other disciplines (Gulati and Sytch 2007; Kumar et al. 1995), a negative relationship was found which was argued to arise due to particularities in the Korean market. While comparing their measures with those used in relationship marketing and so forth, the findings might have also been affected by 1) a strong focus on client dependence without referencing to supplier side and 2) no differentiation between balance and imbalance of dependencies.

Based on our literature review, we argue that power and dependence contribute to the evolution, duration and success of IS outsourcing relationships, but are yet under-

researched and need further clarification in our field. The vast majority of IS outsourcing literature mentions 'dependence' in passing, without recognizing its more complex nature. This reasoning is underpinned by findings from an extensive literature review in ITO (Lacity et al. 2010) that identified only one article (Lee and Kim 1999) dealing with 'mutual dependency' as relationship characteristic. Especially, a dyadic perspective which includes a simultaneous incorporation of relative and joint dependence is needed. With a thorough conceptualization of client dependence within a dyadic outsourcing setting, we hope to lay a foundation for a more prospering use and analysis of these concepts in our discipline. Thereby, we will build on the profound dependence literature and traditional theories as being referred to in the following.

3.2.3 Theories to Explain Dependence

To explain dependence in relationships, several theories can be used, mainly, resource dependence theory (e.g., Pfeffer and Salancik 1978), transaction cost economics (e.g., Williamson 1981) and social exchange theory (Thibaut and Kelley 1959).

Dependence is a key element in resource dependence theory (RDT). Herein, firms are described as open systems that must transact with their environment in order to obtain resources necessary for survival. Dependence arises from the circumstance that an organization cannot possess all resources needed itself. Furthermore, dependence on another organization is influenced by the importance of the obtained resource and the degree to which that resource is controlled by relatively few organizations (Pfeffer and Salancik 1978).

Transaction cost economics (TCE) deals with the comparison of production and transaction costs to achieve economic efficiency (Coase 1937; Williamson, e.g., 1981). Transaction costs are defined as "comparative costs of planning, adapting, and monitoring task completion under alternative governance structures" (Williamson 1981, p. 552 f.). The theory describes the conditions of a transaction that lead to an optimal governance structure between market (external), hierarchy (internal) and hybrid. One major factor that influences the efficient governance form is the level of specific assets. Heide and John (1988) introduced transaction-specific investments as "those human and physical assets (tangible and intangible) required to support exchange and which are specialized to the exchange relationship" (p. 21). Specific assets cannot be redeployed in other exchange relationships without losing value. In

case of high specific investments, TCE suggests that internal production will enjoy greater advantages and will be more efficacious than markets (Williamson 1981). When still relying on the market option, however, asset specifity creates dependence for the investing party, opening up room for opportunistic behavior for the exchange partner and reducing its replaceability (Heide and John 1988).

Social exchange theory (SET), originally developed to investigate interpersonal relations (Thibaut and Kelley 1959), has also been used to study dyadic relationships between organizations (Anderson and Narus 1984). A central construct in SET are *outcomes* obtained from a relationship, reflecting the difference between rewards received and costs incurred. To evaluate these outcomes, two further constructs have been posited, namely the comparison level (CL) and the comparison level for alternatives (CL_{alt}). Whereas CL represents the expected outcomes from that kind of relationship based on experience, CL_{alt} reflects the average outcomes that are available from the best alternative relationship (Thibaut and Kelley 1959). If a firm obtains outcomes from an exchange relationship that exceed those available from alternatives, its dependence on the current partner increases (Anderson and Narus 1984; Thibaut and Kelley 1959). Even though, dependence arises here from more positive conditions (Scheer et al. 2010).

Besides these three theories, another related perspective but rarely explicitly mentioned, is the switching costs perspective (see e.g., Bourantas 1989; Kumar et al. 1995). The term 'switching costs' (SC) is often used to describe the costs incurred by a substitution of a supplier (Bourantas 1989; Caniëls and Gelderman 2005; Heide and John 1988). Today's literature defines and operationalizes "switching costs in terms of economic (i.e., monetary) expenditures and intangible (i.e., psychological or relational) costs associated with changing an exchange relationship" (Whitten and Wakefield 2006, p. 266). Switching costs thus also address barriers to switching that create dependence on a current exchange partner.

3.3   Research Approach

3.3.1 Research Design

To thoroughly investigate a client's dependence in dyadic IS outsourcing relationships, the case study approach was deemed particularly appropriate (Yin 2003, p. 13). Our research objectives are based on 'what, why and how' questions which render the case study approach as an advantageous research method. More precisely,

this study applies an inductive research approach with the aim to reach predominantly exploratory conclusions (Yin 2003). Recommendations and guidelines for case study research were considered to enhance the rigor of this study (Dubé and Paré 2003; Yin 2003).

To get access to dyadic outsourcing relationships, an IT organization of a large-scale client enterprise (over 40,000 employees) operating in the passenger transportation sector was initially chosen. This IT organization was well suited for our study, because it has sufficient experience in IT outsourcing (over 70% of IT budget outsourced in 2010) and follows a multi-sourcing strategy which renders it *representative* (Yin 2003) for a number of other client companies (Kaiser and Buxmann 2012a).

Table 3-1: Overview of Cases

	Case 1	**Case 2**	**Case 3**	**Case 4**	**Case 5**
Short Description	'Sales Platform'	'Self-Service Platform'	'Core Service System'	'CRM Platform'	'GUI for Customer Service'
Supplier Description (approx. values)	global presence, 400,000 employees, revenue 100 billion USD	presence across Europe, 1,300 employees, revenue 150 million Euro	global presence, 10,000 employees, revenue 2.5 billion Euro	international presence, 500 employees, revenue 200 million Euro	in-house provider, global presence, 3,000 employees, revenue 600 million Euro
Contract Period	2009–2015	2009–2011	2005–2020	2008–2020	2011–2015
Contract Type and Volume	usage-related, 20 million Euro	framework contract, 2.9 million Euro	framework contract, 400 million Euro	fixed price volume, n. a.	fixed price, > 10 million Euro
Current Phase in IS Lifecycle	maintenance	end of development	development/ maintenance	development	maintenance, supplier transition

Together with two contact persons directly reporting to the top-level management of the client's IT organization, current outsourcing relationships were screened. The contractual relationships, i.e. cases, were chosen for enabling literal and theoretical replication logics (Yin 2003). As a prerequisite it has been requested that the respective supplier is commissioned for the development and/or maintenance of one of the client's information systems. Furthermore, all contracts already had a minimum running time of at least one year at the time of investigation. In this way, we ensured that the basic settings of the contractual relationships were the same in each case

(literal replication). For theoretical replication, we aimed to include different levels of dependence asymmetry/symmetry as well as high/low values to see how variations in the determinants influence the overall dependence. This initial evaluation was based on the gatekeepers' perceived dependencies. This selection procedure resulted finally in five IS outsourcing relationships involving differing suppliers, which form respectively the unit of analysis. Since our study extends beyond the boundaries of a single company, it is best described as to follow a multiple-case design which ensures that findings are not fully idiosyncratic (Miles and Huberman 1994; Yin 2003). Table 3-1 gives a descriptive overview of the selected outsourcing relationships. Beside descriptive characteristics, the table shows the current lifecycle phase of the IS, i.e., development or maintenance. Please notice, that case 5 is specific in that sense that a supplier transition is currently taking place.

3.3.2 Data Collection and Analysis

The study was conducted in a time period of eight months, starting in September 2011. Since data triangulation is highly recommended in case study research, data collection was relied on multiple sources (Eisenhardt 1989; Yin 2003). Altogether, company documentation, in-depth interviews, and a questionnaire were used to raise confidence in our findings (Yin 2003). The study started with a screening of company documentation that provided background information of the five contractual relationships, i.e., details about the IS, engaged people and suppliers. This initial data collection phase was followed by two major waves. The first wave was of qualitative nature and the second one involved the collection of quantitative data to strengthen our findings (Miles and Huberman 1994).

In the first major wave, we conducted a total of 10 face-to-face interviews with 12 interviewees across five different sub-departments on client side. To complete the dyadic perspective, we then contacted the five suppliers. In total, seven interviewees, encompassing project managers, team members and key account managers were involved here. All interviews were based on a pre-tested interview guideline encompassing semi-structured, open-ended questions. Different aspects were addressed herein: First, general information about the contractual relationship and the background of the interviewees. Next, an estimate of client and supplier dependence was questioned along with an explanation whether the dependencies were perceived to be balanced or not. This was followed by a discussion of influencing factors, their interplay as well as consequences. Whenever appropriate, we relied here on the

laddering technique which follows a process of digging deeper by asking further questions (Reynolds and Olson 2001). This discussion was not limited to the chosen relationship, rather, interviewees drew on their experience already gathered in other contractual relationships (with other clients/suppliers) to enhance the generalizability of findings.

Table 3-2: Overview of Interviewees Across Cases

	Client side						Supplier side				
	Case 1	Case 2	Case 3	Case 4	Case 5		Case 1	Case 2	Case 3	Case 4	Case 5
Division manager	-	-	-	1/*	-	Project Manager	-	1/*	-	1/*	1/*
Team Member	1	1	1/*	-	1	Team Member	-	-	-	-	-
Team / Project Manager	2/*	1/*	-	1	1	Account Manager	1/*	1	1/*	-	1
Contract Manager	-	-	1	-	1/*						
Subtotal	*3*	*2*	*2*	*2*	*3*	*Subtotal*	*1*	*2*	*1*	*1*	*2*

Total: 19 interviewees in 16 interviews in first round and 10 questionnaires collected for second round (*participant)

Altogether, the interviews of the first round lasted about 20 hours and produced 382 pages of transcribed text. On average, one interview took 73 minutes. The text was encoded and structured using a qualitative data analysis (QDA) software. The coding procedure was undertaken as follows (Corbin and Strauss 1998; Miles and Huberman 1994): A coding list was initially developed by two researchers. During the coding process still omitted codes were added to the list after agreement. The interview data revealed a large set of factors influencing client dependence which were iteratively regrouped, aggregated and redefined. Different streams of literature and theories (see section 3.2) were used to facilitate the causal mapping and to raise the conceptual level of our work (Eisenhardt 1989). Within this analysis step, the main tasks were the separation into direct and indirect influencing factors, as well as to avoid an overlapping (mutual exclusiveness), while, at the same time, striving to reach a high degree of completeness (exhaustiveness). Case analysis meetings with a research assistant, previously involved in data collection, and the co-author, not involved in data collection, were frequently held, discussing the interpretations to create a common understanding of the respective cases and emerging categories (Miles and Huberman 1994).

A second wave of data collection involved a questionnaire survey which queried client and supplier dependence as well as the derived determinants with different items on a 7-point Likert scale. A pre-test of the questionnaire with two respondents was initially conducted, discussing reactions to questions form, wording, and order. In this final round, one representative of the five relationships on each side, client and supplier, was respectively asked to fill in the questionnaire (see Table 3-2). This procedure was accompanied by an interviewer who recorded the feedback and the reasons for a specific ranking.

3.4   Framework of Client Dependence in IS Outsourcing Relationships

To facilitate the presentation of our empirical results, we first pre-structure the concept of client dependence by proposing a generic framework of dependence determinants.

Reviewing literature in the field of dependence reveals that slightly differing perspectives on an organization's dependence evolved over time. Jacobs (1974), recalling Emerson's two-fold view, suggests differentiating between 'essentiality' of a resource and its 'availability' to assess dependence. For the latter, he proposes to take the number of available alternatives for supplying a product or service into account. However, the mere number of existing supply alternatives seems to fall short under some specific circumstances. Namely, when there are further barriers that bind an organization to its partner. It is stated that dependence is further influenced by the "difficulty involved in *replacing* the incumbent exchange partner" (Heide and John 1988). Scholars in dependence research have therefore incorporated factors to reflect barriers of a source's *substitutability*. For example, when the organization has made significant transaction-specific investments (Heide and John 1988) or when the outcomes associated with alternatives are lower than those in the current relationship (Anderson and Narus 1984), dependence is increased as a consequence of the difficulties to replace the exchange partner with an existing alternative. To estimate the dependence of an organization *A* on an organization *B*, with regard to a resource *R*, it is argued, that there is a multiplicative relationship between importance (or essentiality) of the resource *R* and its substitutability with a source other than *B* (Bourantas 1989, following Pfeffer and Salancik 1978):

$$\text{Dependence(A on B)}_R = \text{Importance}_{R,A} * (1 - \text{Substitutability}_{B,R})$$

Conceptually, both constructs, importance and substitutability, can be based on a scale from 0 to 1. Hence, the product, i.e., dependence, ranges also from 0 to 1, whereas a value of 0 signifies that there is no dependence and 1 reflects the maximum possible dependence (Bourantas 1989). If the resource R has no importance or the incumbent exchange partner is fully substitutable, the dependence will be close to or equal to zero, showing that it is very low or inexistent (Bourantas 1989; Pfeffer and Salancik 1978).

Basically, the two determinants proved to be also central facets of client dependence in our discipline. To capture, however, the peculiarities of IS outsourcing, we propose the following models. At the left of Figure 3-1, a single sourcing model is considered, in which the supplier delivers the whole functionality for the IS. This particular IS is further assumed to support one or more of the client's business processes. The covered functionality by the IS has a certain degree of importance ($Imp_{IS,Client}$) for the company. It is low, if, for example, a relatively unimportant back-office process is concerned, or very high, if the IS covers the company's sales process. To incorporate the second facet, the substitutability of the incumbent supplier (*Subst*), i.e., efforts to replace it with an alternative supplier to provide the IS functionality, is considered. In this regard, different options are possible, e.g., a supplier that takes over the current IS or even a supplier which brings in an alternate IS (different product, technology etc.) but with comparable functionalities. While not focused on in our study, apart from an in-house alternative (subsidiary company), backsourcing could also represent a valid supply alternative. For instance, when the IS turns out to be highly specific in the sense of TCE, managing the IS internally can be the most efficient solution. A decision maker will weigh up the viable options against each other, all of which, are determining the substitutability of the incumbent supplier.
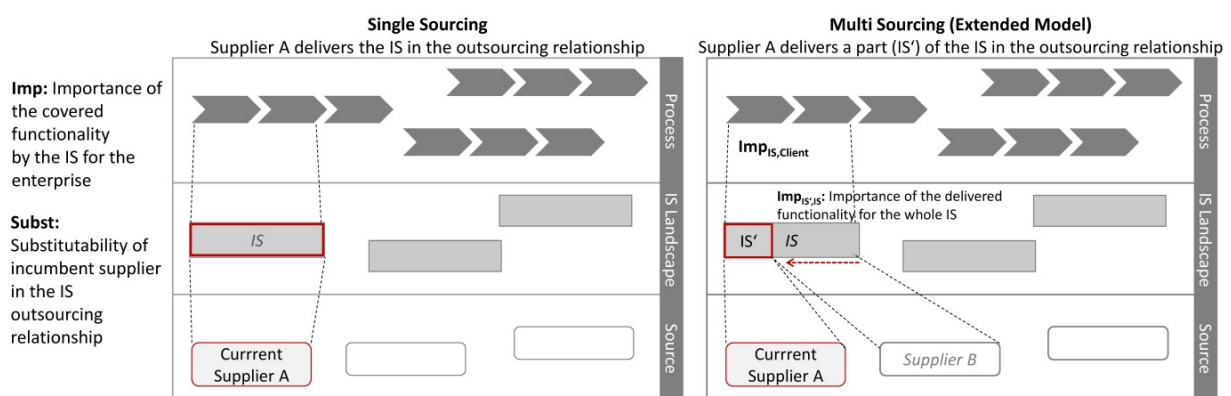
Figure 3-1: Framework of Client Dependence Determinants

Since multiple suppliers are often involved in developing an IS, we extend the model to reflect a multi-sourcing setting. Substitutability, *Subst,* is assumed to be higher in a multi-sourcing arrangement, since supplier A accounts for a smaller part of the IS compared to single sourcing. With regard to importance, we adjust the previous model slightly. The previous *Imp* expressed the importance of the covered functionality by the (whole) IS for the client company. To be more precise, we rename this variable to $Imp_{IS,Client}$. Components delivered by the supplier are called *IS'*. To express the importance of IS' for IS, we introduce a new variable $Imp_{IS',IS}$. Please note that the use of these two variables is not compulsory. Equally, the overall importance of supplied components to the client company can be measured directly. This separation is, however, helpful when a detailed breakdown across hierarchy levels is needed.

In this study, we focused on perceived dependence, e.g., client's self-perceived dependence, rather than on actual dependence. The latter is hard to gather since necessary data to establish a fully objective measure is seldom available. Despite a potential discrepancy, we don't see a big drawback in this point. Perceived dependence is assumed to govern a decision maker's behavior and is therefore of primary concern here. While, theoretically, a multiplicative relationship between the two determinants is plausible, we relax this condition for perceived dependence and use a still to be determined *function f* in our domain:

$$\text{Perceived dependence (Client on Supplier)}_{IS'} = f\left(\left(\text{Imp}_{IS,Client} * \text{Imp}_{IS',IS}\right), \left(1 - \text{Subst}_{Supplier,IS'}\right)\right)$$

$$f'\left(\text{Imp}_{IS,Client} * \text{Imp}_{IS',IS}\right) > 0 \text{ and } f'\left(1 - \text{Subst}_{Supplier,IS'}\right) > 0 \text{ and } \min f = f(0,0) = 0 \text{ and } \max f = f(1,1) = 1$$

3.5   Empirical Findings from IS Development/Maintenance Outsourcing

With our goal to *determine* and *explain* a client's position within a dyadic dependence structure, the empirical findings are structured into four parts, making extensive use of data collected from both perspectives, client and supplier. The first part uses relative and joint dependence with dyadic data to illustrate a client's positioning in comparison to its supplier's. The following sections then focus on explaining a specific client dependence position. In the second section, collected data is used to assess and verify the relationship between the two central determinants, IS importance and supplier's substitutability, as proposed by the previously provided framework of client dependence. In an exploratory manner, the third section presents identified factors to influence client dependence in our domain and refines our

conceptualization. Finally, these factors are quantified and used to explain in more detail the respective client dependencies across the cases.

3.5.1 Perception of Dyadic Dependence Structure

To obtain a dyadic perspective, we firstly incorporate a client's dependence on its respective suppliers and vice versa. Basically, to collect dyadic data, two ways have evolved in literature. First, data can be collected on only one side, i.e., client or supplier, but using estimated dependence values for the other side. The second approach, which has become known as 'full dyadic,' involves collection of dependence data on both sides of a dyad. We followed the latter which particularly allows for a comparison of perceptions between client and supplier.
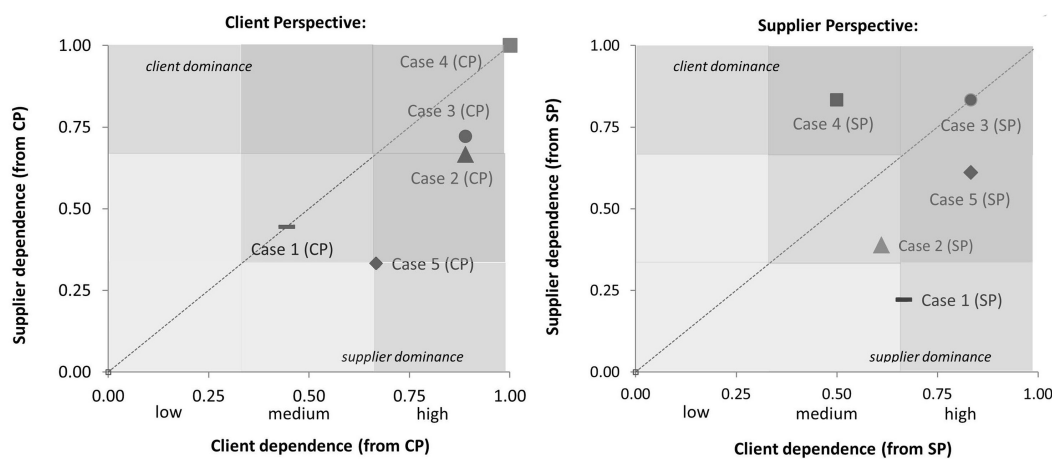
Figure 3-2: Dependence Maps from Client and Supplier Perspective

Figure 3-2 shows two dependence or power maps (Caniëls and Gelderman 2005; Cox et al. 2003) of the five outsourcing relationships investigated. The left one illustrates the client perspective (CP) on the dyadic dependencies, the right one the respective suppliers' perspective (SP). In both figures, the abscissa depicts the perceived client dependence, ranging from low ([0-0.33[), over medium ([0.33-0.66[) to high ([0.66-1]). Accordingly, perceived supplier dependence is shown along the ordinate. In this step, dependence was respectively measured by three reflective items (see Table 3-3). [4]

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[4] Supplier and client dependence are measured by taking the average score on three reflective measured items respectively. These were based on Frazier's and Emerson's conceptualization of dependence. A party's dependence is the "need to maintain the relationship in order to achieve desired goals" (Frazier 1983). Relative dependence is measured on a scale from - 1 (maximum

From the client perspective, own dependence currently ranges from medium, as in case 1 (0.44) to high, as in case 4 (1.00). Perceived supplier dependence is respectively lower or equal to the self-perceived dependence, whereas the highest gap is given in case 5 with 0.33. Thus, the relative dependence is quite small across the cases. There are even two cases (case 1 and 4) where a dependence symmetry is perceived on client side, i.e., the relative dependence is equal to zero. According to Emerson (1962), neither party should be able to obtain a power advantage in these two cases. In the remaining cases, the client perceives a structure in favor for the supplier with a relative dependence of 0.22 (in case 2) and 0.17 (in case 3). Consequently, there is no case in which the client sees himself in a more powerful position. Table 3-3 also shows values for joint dependence. The lowest joint dependence is given in case 1 with 0.89. In contrast, case 4 shows the highest possible joint dependence with 2.00. It is striking, that in three cases (2, 3 and 4) joint dependence is relatively high, reflecting that client and supplier face high exit barriers. Additionally, no case is positioned in the cell of low joint dependence (reflecting both, low client and supplier dependence), demonstrating that no relationship is loosely coupled and characterized by a mutual flexibility in switching to alternatives.

Table 3-3: Values of Perceived Client and Supplier Dependence, Relative and Joint Dependence

	Client perspective (CP)				Supplier perspective (SP)			
	(Self-perceived) Depend. (1)	Perceived Supplier Depend. (2)	Relative Depend. (1)-(2)	Joint Depend. (1)+(2)	Perceived Client Depend. (1)	(Self-perceived) Depend. (2)	Relative Depend. (1)-(2)	Joint Depend. (1)+(2)
Case 1	0.44	0.44	0.00	0.89	0.67	0.22	0.44	0.89
Case 2	0.89	0.67	0.22	1.56	0.61	0.39	0.22	1.00
Case 3	0.89	0.72	0.17	1.61	0.83	0.83	0.00	1.66
Case 4	1.00	1.00	0.00	2.00	0.50	0.83	-0.33	1.33
Case 5	0.67	0.33	0.33	1.00	0.83	0.61	0.22	1.44

Comparing the client's perception of the outsourcing relationship with the suppliers' perceptions (Figure 3-2, on the right), provides further insight. Whereas the interviewees on client side perceive balanced dependencies in cases 1 and 4, the respective suppliers observe an imbalance in favor for the client in case 4 and a supplier dominance in case 1. This means, for instance, that the supplier's dependence

supplier's dependence) to + 1 (maximum client's dependence). Joint dependence is measured on a scale from + 0 (minimum dependence) to + 2 (maximum dependence).

is perceived higher by the client (0.44) than in the self-perception of the supplier (0.22). In case 5, the supplier perceives its own and the client's dependence higher. The opposite applies to case 2, in which both sides received a lower rating. The case evidence reveals a significant incongruence in the perception of dependencies between client and supplier. In case 3, a high joint but balanced dependence structure is perceived on supplier side.

Since we investigated only five cases, any conclusions from their distribution in the map should be carefully drawn. However, it is striking that on both sides, client and supplier, medium to high dependencies were predominantly found. Low dependencies were rare, only the self-perceived supplier dependence in case 1 is located in the lower quadrant. Moreover, also from both perspectives, suppliers are mostly seen to be in a more powerful position. Our case study shows that the dyadic perspective being common in dependence research is transferrable to our domain and extends the prevailing unilateral view. To know whether a client has a low or high dependence is essential, but the integration of supplier dependence is more accurate and completes the dependence structure. It further reveals power potentials and the degree of joint dependence, which cannot be elucidated when addressing only one half of the dyad.

3.5.2 Assessment and Impact of Client Dependence Determinants

With our second goal to conceptualize client dependence, the next sections are dealing with a better understanding of the different client positions in the dependence structures. Based on our derived framework in the previous section, Table 3-4 shows the values of the dependence determinants that were respectively assessed by representatives of the contractual relationships.

Table 3-4: Assessment of Client Dependence Determinants from Client and Supplier Perspective

	Case 1		Case 2		Case 3		Case 4		Case 5	
	CP	SP	CP	SP	CP	SP	CP	SP	CP	SP
Overall Importance ($Imp_{IS,Client}$, $Imp_{IS',IS}$)	0.50	0.83	0.83	0.83	1.00	0.83	0.83	1.00	0.83	1.00
(1-Substitutability)	0.33	0.67	0.83	0.67	1.00	1.00	1.00	0.67	1.00	1.00
Client Dependence	0.44	0.67	0.89	0.61	0.89	0.83	1.00	0.50	0.67	0.83

Again, we tried to include both assessments, from client (CP) and supplier perspective (SP). The first row shows perceived overall importance, reflecting the importance of delivered IS components. While we will present the disaggregated values later on, the results here show that the overall perceived importance in all cases

is very high except for case 1, ranging from 0.83 to 1.00. With regard to substitutability efforts necessary to switch to an alternative supplier, case 1 also has a special position in our case selection. Whereas the effort was assessed as moderate (0.33) from the client perspective, it was substantial in the remaining four cases. From the data in Table 3-4, it is apparent that perceptual differences between client and supplier also occur on the level of determinants.

To analyze the relations between importance, substitutability and client dependence in our cases, we use the scatterplot logic (Miles and Huberman 1994). Figure 3-3 includes our two determinants, 1-substitutability and importance, on the axis and perceived client dependence is denoted by size and color of the circle.
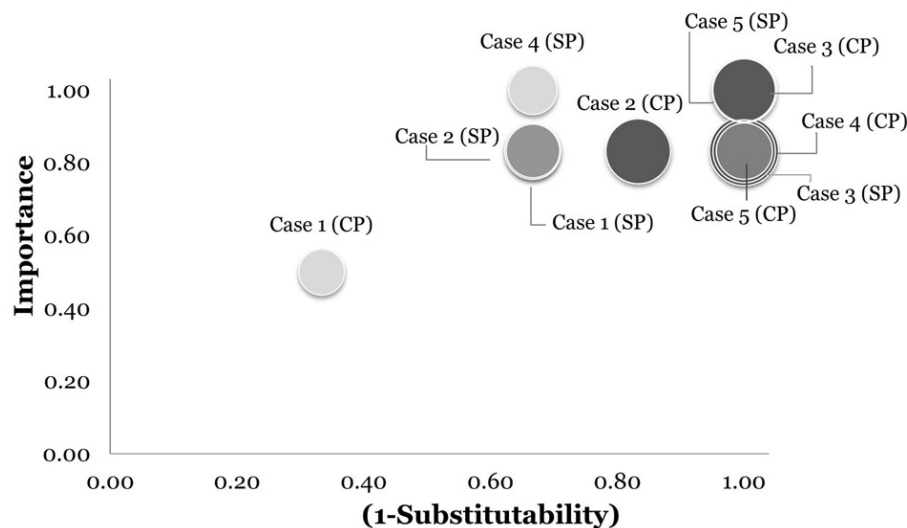
Figure 3-3: Scatter Plot of Client Dependence and its Determinants

Figure 3-3 shows that the expected logic, namely the multiplicative relationship between the dependence determinants (see section 3.4, framework), largely applies to our investigated cases: The majority of cases shows a higher perceived dependence, when importance and 1-substitutability increase. Deviations to this reasoning, can be found in case 4 (SP) and in case 5 (CP). In the latter, the client observes a high importance (0.83) and very limited substitutability (1.00). Surprisingly, self-perceived dependence is, however, lower rated (0.67). However, this rating can be explained by exceptional conditions, since the client is currently switching to an alternative supplier. Our recordings revealed that dependence was assessed as medium, reflecting the *remaining* dependence on this supplier. Inconsequently, the substitutability efforts were assessed as very high (1.00), while not equally reflecting here that a significant amount has already been incurred. Here, we would have expected a smaller *remaining*

value as well. Particular attention should be paid to this point in future studies, especially with regard to measurement items. An outlier is given with case 4 (SP) where the divergence could not be explained with interview data. A higher value of client dependence would have led to a better fit.

3.5.3 Decomposing Client Dependence

So far, we considered dependence as a composite construct of two determinants, importance and substitutability. However, the framework fails short when a more detailed analysis is needed. In particular, what are the salient underlying facets of the two determinants? This section will draw on our case study interviews as well as on the different general theories described in the beginning.

3.5.3.1 Importance

As mentioned before, scholars in dependence research argue that the 'importance' of a resource is a relevant determinant of dependence (Pfeffer and Salancik 1978). The predominant dimensions discussed in literature are the magnitude of exchange and its cruciality. Our findings confirm their relevancy in IS outsourcing relationships and suggest their occurrences on both levels, IS ($Imp_{IS',IS}$) and company ($Imp_{IS,Client}$).

Relative magnitude

Grounded in RDT, relative magnitude corresponds to how large the share of this resource is of an organization's total inputs or of a category of the total (Bourantas 1989). The proportion of total purchasing volume is one way to express the relative magnitude accounted for by a supplier (Gulati and Sytch 2007). For example, on IS level, it is conceivable that the relative magnitude could be well assessed by comparing single vs. multi-sourcing options (e.g., Levina and Su 2008). Basically, if there is more than one supplier involved in the, e.g., IS development, and the purchasing volume is equally shared, the client's dependence on *one* of the multiple suppliers decreases compared to the single sourcing model. In our cases there was mostly either only one supplier involved or the supplier acted as a prime contractor. Case 1, however, depicts an example where the importance of the supplier's contribution was diminished with the cancellation of a general contractor agreement. The supplier's relative magnitude was reduced in this way.

"Our dependence on that supplier declined, when we cancelled the general contractor agreement and commissioned directly a former subcontractor of an important system component." Case 1 (CP)

Relative value contribution

Whilst relative magnitude is in most cases relatively easy to assess, it is not sufficient, at least conceptually, to determine the whole importance of an obtained resource. Recalling Emerson (1962), the relationship's contribution to the focal company's desired goals needs to be considered. Next to relative magnitude, Pfeffer and Salancik (1978) therefore introduced 'criticality' which reflects "the ability of the organization to continue functioning in the absence of the resource". Bourantas (1989) broadened this idea, distinguishing a strategic criticality next to the more (functional) criticality, reflecting a resource's contribution to achieve a competitive advantage. In marketing channel literature, the resource's contribution to sales and profit are often used as a measure (Geyskens et al. 1996; Heide and John 1988; Kumar et al. 1995). In IS research, IS importance is more difficult to assess and different value categories have been discussed (Melville et al. 2004; Shang and Seddon 2002; Tallon et al. 2000). These include cost reduction, improving quality and speed, enhancing overall firm effectiveness as well as reaching new markets with the use of IS. Equally relevant is finance and regulatory compliance, which can lead to cost avoidance.

Besides magnitude of the IS, we need to incorporate the relative value contribution. This is based on the assumption that the importance (or overall value contribution) of an IS can be high, while accounting only for a relatively small purchasing magnitude or vice versa. That is, an IS relative value contribution can differ from its relative magnitude. For example, maintenance services of a sales system might be more crucial to the company's success than similar services to a back-office system, even if the financial magnitude of exchange is equal ($Imp_{IS,Client}$). Similarly, two suppliers can account for a comparable relative purchasing volume, but the components of one supplier can contribute above-average to the client, leading to a higher benefit-cost ratio ($Imp_{IS',IS}$). The importance of an IS or a component of the IS is thus a function of the relative magnitude and the relative value contribution (see e.g., El-Ansary and Stern 1972).

"The more critical our system, the higher is our dependence on the supplier.[…] If a system is less critical, our dependence is low." Case 3 (CP)

"If we stopped working, there would be a high risk that a central application would crash, [leading to high financial damage]. In this regard, client's dependence is high." Case 5 (SP)

3.5.3.2 Substitutability

In IS outsourcing, a supplier's substitutability is synonymous with a multitude of factors. Analysis of the case study interviews and an on-going comparison with prior contributions in the switching cost (Jones et al. 2002; Whitten and Wakefield 2006) and dependence field led to the following factors.

Supplier alternatives

As RDT proposes, a client's dependence on a supplier is interrelated to the number of supplier alternatives (Pfeffer and Salancik 1978). A limited number of alternatives lowers the substitutability of the incumbent supplier and therefore increases the perceived dependence. The number of alternative sources has been identified as a crucial dimension of client dependence and has been used in several contributions (e.g., Ganesan 1994; Gulati and Sytch 2007). In IS outsourcing relationships, the existence of alternatives seems to influence the client's dependence as well:

> *"The reason for our low dependence… I think, there are enough suppliers on the market, who could deliver the same as our current supplier." Case 1 (CP)*

> *"I think, at the moment we are fully dependent on our supplier. […] Second, there are not many companies on the market, who offer such a CRM application." Case 4 (CP)*

Evaluation and selection efforts

Even if there are known market alternatives, there are still further reasons that hamper a substitution of the exchange partner in IS outsourcing. In case of a large information system, for example, supplier switching usually requires a substantial amount of resources, know-how and time to conduct the phases from preselecting and evaluating alternatives to finally selecting an appropriate new supplier. To do so, the client needs, among other things, to be aware of the requirements of the incumbent IS and to compare it with existing supply alternatives. When the client has lost this critical know-how over time, selecting an alternative becomes a challenging task. Furthermore, the acquisition of lacking resources and expertise represent costs or at least opportunity costs, since the value of an alternate use of the resources is foregone. This facet also includes efforts to set up and review a new contract. Put together, evaluation and selection efforts represent transaction costs and are supposed to be an important facet.

> *"The effort to evaluate the market alternatives was immense. People would not want to go through this again in the next years." Case 3 (CP)*

"Efforts to understand and specify the today's system functionality should not be underestimated in case of a new bidding." Case 1 (SP)

Performance uncertainty of alternative suppliers

A further barrier arises from the uncertainty associated with the performance level of alternative suppliers (Whitten and Wakefield 2006). In IS outsourcing, the supplier's capability and performance level is an important success factor (Grover et al. 1996). However, clients might face the challenge that the performance and capability levels of an alternative supplier are unknown and hard to predict in advance. Even if a high degree of evaluation efforts can lower the gap between expectation and knowledge, we argue that the remaining uncertainty is a switching barrier. The following quotes emphasize its relevance:

"There are others who could manage our system, but if they could do this in the same quality, I dare to question." Case 1 (CP)

"Basically we could transfer this service to supplier X. But would this really provide an advantage? It is not per definition proven, that the service of supplier X is really better than what we have today." Case 2 (CP)

Sunk costs

Sunk costs encompass the client's perception of non-recoverable time, money and effort invested in the outsourcing relationship (Jones et al. 2002; Whitten and Wakefield 2006). Sunk costs are seen as irrelevant according to classical economic and normative principles of economy (Whyte 1994). The reason is that historical sunk costs cannot be changed by future action and only future costs and benefits should be taken into account in the sense of a rational decision making model (Arkes and Blumer 1985; Whyte 1994). However, sunk costs can lead to a bias in decision-making and explain why a decision-maker perseveres with e.g., an unproductive IS development project (Keil et al. 1995). In an environment of high asset specificity, a significant amount of transaction-specific sunk costs of a non-redeployable variety is present (Whyte 1994). Typical sunk costs in IS outsourcing relationships might be past costs for training employees for a specific IS (Vetter et al. 2010) or development costs, when the client is not granted the right to transfer the current IS to an alternative supplier for the maintenance phase. Our findings suggest that the amount of sunk costs negatively influences the substitutability of an incumbent supplier, adding to perceived dependence.

"So, then we have invested more money, more resources, and more know-how. You don't change the supplier so easily, you know?" Case 4 (CP)

"Of course, if we had possessed the software ownership, we could have talked about a scenario such as: We look for another supplier, which continues with the development. But in this case, the prior developments would have been in vain." Case 5 (CP)

Lost benefits

The need to maintain a relationship can also arise from more positive motivations, resulting from the benefits received from the incumbent relationship. Especially if the replaceability of these benefits are limited, a so called benefit-based dependence arises (Scheer et al. 2010). These considerations trace back to SET (Thibaut and Kelley 1959), which compares the outcomes of a current relationship to those available from alternatives. Outcomes or benefits include e.g., high service quality, discounts, or special support services, such as technical assistance and consulting (Anderson and Narus 1984). Benefits lost upon contract dissolution are seen as crucial components of the substitutability construct (Jones et al. 2002; Whitten and Wakefield 2006) and are hypothesized to positively influence perceived dependence. However, if the currently obtained outcomes are lower than those expected from alternate exchange partners, lost benefits are not present and do not bind the client to its current supplier.

"With regard to the contract extension, the cooperation with our supplier is exemplary. They keep deadlines and their side of a bargain. We do not experience that with our other partners." Case 1 (CP)

"This supplier offers us many more functionalities. We can also exploit synergy effects that another supplier could not provide us." Case 3 (CP)

Post-selection client side costs

With the decision to switch to an alternate supplier, the client encounters further costs to stem the switching process. For example, the client usually needs to make personnel available to transfer requirements and to upscale the new supplier. Direct expenses and investments in human resources, such as training of employees, or even the hiring of additional IS expertise will increase this facet. Also worth mentioning are overhead costs on client side, which are needed to coordinate the whole switching process. Switching to a new supplier, might incur additional time and effort to learn and adapt to new policies, procedures and routines deployed by the new supplier (Jones et al. 2002; Whitten and Wakefield 2006). If the new supplier has a strong power position, these costs may be particularly significant for the client, since the supplier will try to dictate the procedures and routines prospectively used in the relationship.

"The time needed to switch to another supplier increases the dependence. This switching duration means we have to set up a project and efforts are needed to migrate from A to B. If there is much to migrate, inhibition thresholds are high." Case 1(CP)

"One should not underestimate the time needed for the bidding process and the final replacement. These efforts would create a decline in innovation, since - under constant resources - the maintenance of the current system would suffer." Case 1 (CP)

Set-up costs of alternate supplier

Set-up costs include economic and relational investments in a new supplier to enable a fulfillment of its contract, namely to (further) develop and possibly operate the IS. In particular, as a prerequisite, requirements and business knowledge needs to be transferred to the supplier. To reach the latest work state, new set-up costs will arise on supplier side, depending on the degree of reusability, which the client usually has to bear. These costs also include learning costs, such as understanding interfaces to surrounding systems in the client's system architecture. An indication of a long switching duration often expresses the magnitude of the supplier related set-up cost. In IS outsourcing, the time needed for supplier learning should not be underestimated. In case of maintenance of an existing system, the time needed to understand the functional and technical conditions might be immense.

"This system requires a lot of specific functional know-how. It would be very difficult to put another supplier in the position to further develop our system." Case 5 (CP)

"As a client, when I would like to switch my supplier, the new one needs a training period, he is not so efficient in the first years." Case 4 (SP)

3.5.3.3 Spillover Effects

So far, we have encountered nine different underlying facets of importance and substitutability which are summarized in Table 3-5. However, during data analysis another factor emerged – here referred to as *spillover effects* – which is assumed to influence perceived client dependence. Spillover effects are specific in the sense that they result from other exchange relationships present between the client and its supplier. They represent *potential, undesirable consequences* which a supplier might cause as a reaction to a terminated relationship by the client or to its plan to do so. Taking revenge or a backlash due to contract termination were also posited in marketing channel relationships by Weiss and Anderson (1992). Even though, the supplier might react negatively within the current relationship, for example, by delaying the switching process to the competing supplier, the scope for negative reactions increases with further exchange relationships; especially, if the supplier

possesses therein an untapped power potential. In that sense, dissatisfaction with the client's contract termination can *spill over* to other exchange relationships.

Table 3-5: Underlying Facets of the Client Dependence Construct

Higher-level Factor	Influencing Factor	Description
$Imp_{IS,Client}$, $Imp_{IS',IS}$	1 Relative magnitude (+)	Share of magnitude, e.g., purchasing volume, related to the IS/IS'.
	2 Relative value contribution (+)	Degree of value contribution of the covered functionality (by the IS/IS') in relation to relative magnitude.
Substitut-ability	3 Supplier alternatives (+)	Number of supplier alternatives for the IS/IS' or a similar IS/IS'.
	4 Evaluation and selection efforts (-)	Perception of time and effort needed for evaluating and selecting a new supplier.
	5 Performance uncertainty of alternative suppliers (-)	Uncertainty or perception of risk surrounding the performance of alternative suppliers.
	6 Sunk costs (-)	Perception of non-recoverable time, money and effort invested in the outsourcing relationship.
	7 Lost benefits (-)	Perception of benefits resulting from the current relationship and which are lost upon contract termination.
	8 Post-selection client side costs (-)	Perception of time, effort and financial outlays needed to conduct the switching process on client side.
	9 Set-up costs of alternate supplier (-)	Perception of upcoming investments in the alternate supplier necessary to reach the previous work state (related to the IS/IS').
Dependence	10 Spillover effects (+)	Perception of magnitude of negative reactions by the supplier in other exchange relationships caused by a (planned) termination of the focal relationship.

Spillover effects have often been mentioned in the case study interviews. Examples include price increases in interconnected systems provided by the same supplier. They can also arise in non-IT related exchange relationships, e.g., when the supplier has gained a significant purchasing power of the client's products. Revenues which are then in danger to be diminished might also hamper a termination of the focal exchange relationship. This factor might add to an explanation why clients, although able to substitute a current supplier, and unsatisfied, have to further maintain the exchange relationship. Therefore, we argue that the client's perceived dependence is increased by the perception of negative spillover effects.

"The problem is, we have not only selected a core provider, we are also dependent on the interfaces… the supplier has the opportunity to do a prohibitive pricing, or to create barriers, that we have to say, [a replacement] does not make sense." Case 3 (CP)

"Supplier A is not just a supplier, he is also our customer. Supplier A has also a significant purchasing volume and in this particular year, they withdrew volume on purpose and gave it to our competitor." Case 1 (CP)

3.5.4 Assessment of Dependence Facets

In the final wave on client side, we used the derived influencing facets to analyze client dependence in detail across the cases (see Figure 3-4). In accordance to our framework, overall importance (see Table 3-4) was disaggregated into the importance of the covered functionality by the IS for the company ($Imp_{IS,Client}$) and the relative importance of the supplier's delivered functionality for the whole IS ($Imp_{IS',IS}$).

		Case 1	Case 2	Case 3	Case 4	Case 5	Average
Importance	$Imp_{IS,Client}$	0.83	1.00	1.00	0.83	1.00	0.93
	$Imp_{IS',IS}$ (Rel. magn., Rel. value contr.)	0.17 (0.3;<1)	0.83 (1;1)	0.83 (0.95;1)	0.83 (0.7;>1)	1.00 (1;1)	0.73
Substitutability	Lack of supplier alternatives (reverse)	0.00	0.17	0.67	0.50	0.67	0.40
	Evaluation and selection efforts	0.33	0.67	0.83	0.83	1.00	0.73
	Performance uncertainty of alternatives	0.33	0.17	0.33	0.83	0.67	0.47
	Sunk cost	0.83	0.67	0.67	0.67	0.33	0.63
	Lost benefits	0.67	0.50	0.83	0.17	0.83	0.60
	Post-selection client side costs	0.67	0.83	0.83	1.00	1.00	0.87
	Set-up costs of alternate supplier	0.67	0.83	0.83	0.67	1.00	0.80
Dependence	Spillover effects	0.50	0.83	0.67	0.00	0.33	0.47

Figure 3-4: Subfacets of Client Dependence Determinants (Client Perspective)

As Figure 3-4 shows, IS importance ($Imp_{IS,Client}$) is very high across all cases. The investigated systems are core or front-end systems to the customer. As indicated earlier, the respective suppliers mostly account for the major part of the entire development of the system, which is reflected in high values of $Imp_{IS',IS}$. The subfacets, relative magnitude and value contribution, facilitate a detailed analysis here. In case 1, the supplier accounts for 30 percent of the total purchasing volume for the IS, a second supplier for 70 percent. However, the relative value contribution is favoring the second supplier, since disproportionate valuable components are delivered here. Thus, the relative value contribution of the considered supplier was rated below-average (<1). Consequently, the supplier's importance for the system was rated 0.17 and thus below the 30 percent share of financial magnitude. Case 4 represents an example where the reverse appeared (0.7;>1). Note that we were only able to derive these values for the $Imp_{IS',IS}$ hierarchy. While it is theoretically appealing that the two facets are equally relevant on the higher level, empirical values could not be collected due to two restrictions: 1) relative financial magnitude could not be determined reliably, 2) the

information basis for a more fine-grained assessment of the value contribution in comparison to other systems was missing.

Turning to the substitutability facets, the ratings suggest that a lack of supplier alternatives is in three cases (cases 3, 4 and 5) a substantial barrier to switching. In the remaining cases, the procurement market is characterized by a sufficient number of alternatives. However, it has to be noted, that both, availability of alternatives and the associated performance uncertainty varies significantly across the cases. Sunk costs are perceived as high in almost all cases. Moreover, in some cases the client obtains benefits that could not be realized in alternative relationships, which increases the positive side of dependence. In all cases, the remaining three factors, evaluation and selection efforts, post-selection client side and supplier set-up costs were rated very high (on average 0.73, 0.87 and 0.80). A moderate rating was given on average for expected spillover effects, ranging from 0.00 in case 4 to 0.83 in case 2. However, in case 4 spillover effects were simply not relevant, because there was just one exchange relationship to this supplier. If this extreme case is ignored, the mean average increases to 0.58.

At the end of the second data collection phase, interview partners on client side were asked if they considered the list of factors as relevant and complete to assess client dependence. The relevance was confirmed for each factor (>4 on a scale from 1 to 7). On average, the factors received a rating of 5.27. Moreover, our interview partners had the impression that the list was complete and able to reflect client dependence in IS outsourcing.

3.6 Conclusion

3.6.1 Summary of Key Findings

Over the last years, the management of client-supplier relationships in an IS outsourcing setting has received increasing attention in research as well as in practice (Hirschheim et al. 2008; Kaiser and Buxmann 2012a; Oshri et al. 2011a; Rottman 2008). As a crucial relationship aspect, the focus was here set on a detailed analysis of dependencies between clients and suppliers in IS outsourcing dyads.

To contribute theoretically, we drew on dependence research and extended the still prevailing simplistic view on this concept in IS outsourcing research. Conceptually and empirically, we did not only assess the magnitude of client dependence, but incorporated the supplier side and its dependence as well. We used two central

constructs, relative and joint dependence, to adequately describe a dependence structure in a dyad. While collecting assessments from both sides, a significant perceptual incongruence was observed.

To provide reasons for different client positions in the dependence map, a framework from prior research in reference disciplines was initially derived. Dependence was presented as a composite construct of the outsourced IS components' importance and the substitutability of the supplier, currently developing or maintaining them. Moreover, several theories were integrated to describe the constituting elements. The transfer of these general theories and linking them with specialties of our domain were facilitated by our dyadic case study approach. As a result, 10 underlying facets were retrieved that our interviewees considered as adequate to assess client dependence in our study context. As an unanticipated aspect 'spillover effects' emerged which extended the previous two categories. Dissatisfaction with a client's decision to terminate a relationship can spill over to other relationships between the partners and lead to an exploitation of an untapped power potential. Since the dependence facets were identified in an exploratory manner, involving several expert interviews and supported by literature, a high degree of generalizability is expected. A first 'proof-of-concept' was presented with their quantification in our cases which further underlined their usefulness and explanatory power.

Our research also provides managerial implications: The conceptualization of client dependence offers companies involved in IS outsourcing insights into how to influence their dependence position in current and future exchange relationships. Furthermore, the dyadic perspective presented has various implications for both sides. To keep an eye on partner's dependence and on the own dependence can prove valuable in the long-run. Perceptual incongruences can trigger a critical investigation of the self-perception and can help to reveal untapped potentials to increase outsourcing success. The dependence map used herein was assessed as a powerful visualization tool by the practitioners involved in our study.

3.6.2 Discussion, Limitations and Future Research

We hope that the proposed conceptualizations bring us closer to rigorous, empirical analysis of dependence and power in IS outsourcing relationships. Nevertheless, the findings are subject to limitations. Although we tried to get access to different cases, also including those with low dependence, our cases showed mostly medium-to-high levels. Further studies are therefore needed to investigate the full range of possible

dependence combinations. The exact composition, i.e., the weighting coefficients for the presented determinants and their facets, is still to be determined for the wide range of IS outsourcing relationships.

Although full dyadic data is much harder to access, it is exceptionally valuable in the context of dependence. Since matched pair surveys are also rare in other research disciplines (Gulati and Sytch 2007; Kumar et al. 1995), especially when it comes to investigations of perceptual differences, such studies have the potential to contribute back to dependence research in reference disciplines. Some interesting questions are e.g.: Are there systematic patterns of over-/underestimation? And also, what are consequences of a great mismatch of perceived dependencies on the use of power and relationship quality? With our introduction of the two constructs, relative and joint dependence, we hope to have inspired future studies to incorporate them in other research models in our domain, e.g., to study their impacts on relationship quality and business performance. Although this study focused on the conceptualization of client dependence within dyadic outsourcing relationships, a few hints can be given for future research at this point. Among the most mentioned 'negative' consequences resulting from powerful IT suppliers were price increases, decrease of service quality (especially responsiveness of supplier's personnel) and loss of innovative potential for clients. A few interviewees confirmed that symmetric dependence relationships are more beneficial for both parties. However, interviewees perceived differences in the degree to which IT suppliers exploited power potentials. Further research could, for instance, investigate whether a power potential directly translates into the use of power and what possibly hinders IT suppliers from making extensive use of power.

Besides profiting from a higher explanatory power for theoretical models in the IS domain, dependence research in IS could potentially inform reference disciplines about unnoticed relationships or peculiarities in our context. With regard to this piece of research, the 'spillover effects' can be exemplarily mentioned here, which seemed to influence perceived dependencies. Since it is most likely that outside the IS domain also embedded, multiple relationships between same exchange partners exist, our findings suggest to pay more attention to potential spillovers in general. Furthermore, we would argue that the IS domain's inherent distinction from other domains in terms of market structures and exchange of digital instead of physical goods, generally turns it into an interesting and different field of inter-organizational dependence research.

While this paper focused on the firm level to investigate inter-firm dependence, future research could also adopt an embedded view, applying social theories (e.g., social exchange theory, social capital theory) on the individual level and theorizing how these impact in turn inter-firm dependencies. Since also medium-to-high values of supplier dependence were partially observed, a detailed conceptualization of the supplier side could further add to our understanding of dependencies.

4   Paper C: A Two-Sided Perspective on Supplier Dependence in IS Outsourcing Dyads[5]

4.1   Introduction

Dependence, or the extent to which it is necessary to maintain an exchange relationship to achieve desired goals (Frazier 1983), is seen as a central attribute of relationships between organizations in various disciplines (Casciaro and Piskorski 2005; Emerson 1962; Gulati and Sytch 2007). Likewise, prior IS literature has acknowledged that dependence pertains to the 'behavioral dimension' (Currie and Willcocks 1998; Kern and Willcocks 2000) or to the 'attributes' (Goles et al. 2005) pervading the working atmosphere of an outsourcing relationship.

However, when compared to research in other fields, such as marketing channels or industrial relationships, very few efforts have been made to bring forward these concepts in IS research. Apart from studies that simply mention the term 'dependence,' mainly to refer to it as a risk for the client, literature remains largely silent about its dyadic nature. In traditional dependence research, it is common practice to incorporate both organizations' dependencies in order to identify the one with the greater power base in a relationship (Casciaro and Piskorski 2005; Emerson 1962; Gulati and Sytch 2007). A difference in a dependence structure represents a threat for the weaker party's business performance (e.g., Gulati and Sytch 2007; Lacity et al. 2009). For example, a more powerful supplier might deliver lower service quality to the detriment of the client, but also IT suppliers might suffer when a powerful client bullies them and puts pressure on prices.

While, for example, Heiskanen et al. (2008), Lonsdale (2001) and Willcocks and Currie (1997) analyze different issues related to client dependence, especially, the

supplier side of a dependence structure is generally barely emphasized and rarely understood in IS outsourcing relationships. This is a shortcoming, since today's global outsourcing market does not only show large-players such as IBM, Accenture or SAP, which will most likely have very low dependency on any single client. On the business-to-business market, small-and mid-size firms rather coexist with global-players. IT suppliers usually vary in organizational maturity, in offered IT solutions (e.g., IS development, operations, software-as-a-service), as well as in served client portfolios and markets. For example, some suppliers act on niche markets facing oligopolistic demand structures or on markets with high competition, all of which influence a supplier's dependence and power position with regard to a particular client. Given that prior research on the supplier side is rare, capturing supplier dependence is a crucial building block towards a better understanding of dyadic dependencies in IS outsourcing.

To sum up, this paper focuses on the supplier side of bilateral dependencies and contributes in two ways: (1) by applying dependence research to fully describe a dependence structure between IT suppliers and their clients, (2) by providing a conceptualization of supplier dependence specific to IS outsourcing relationships. Thus, our results will complement existing literature and allow a full dyadic dependence approach on IS outsourcing relationships. Thereby, next to a client perspective, a supplier perspective is adopted – identified as a view point generally less examined by previous literature reviews (Dibbern et al. 2004).

4.2   Related Literature

4.2.1 Dependence in Exchange Relationships

In other research disciplines, like relationship marketing and supply management, it is common to consider client dependence along with supplier dependence (Gulati and Sytch 2007; Kumar et al. 1995). Many researchers have built on Emerson's dyadic dependence conceptualization (Emerson 1962), suggesting that dependence and power are strongly interlinked: "The power of A over B is equal to, and based upon, the dependence of B upon A" (p. 33). Investigations of the dyadic nature of dependence led to two constructs, namely joint dependence, or the sum of two organizations' dependencies on each other, and relative dependence, i.e., the difference in the dependencies as described above (Casciaro and Piskorski 2005; Gulati and Sytch 2007).

Researchers have used both constructs to measure the impact on, for example, relationship quality and the partners' performances in an exchange relationship. High joint dependence usually shows positive outcomes due to a mutual desire to maintain the relationship and, for example, higher levels of joint action, commitment and trust (e.g., Gulati and Sytch 2007; Kumar et al. 1995). In contrast, dependence asymmetry has been proven to lead to decreasing trust and commitment as well as increasing conflict (Kumar et al. 1995). These constructs were also embedded in larger causal models to investigate their interplay with further antecedents of relationship quality and business performance (Palmatier et al. 2007).

4.2.2 Dependence in IS Outsourcing Relationships

IS outsourcing is herein understood as a "business practice in which a company contracts all or part of its information systems operations to one or more outside information service suppliers" (Hu et al. 1997, p. 288). Turning to dependencies in IS outsourcing relationships, prior research has here shown that dependence can be linked to the field of 'relational governance,' i.e., the softer practices associated with managing client-supplier relationships, as a determinant of client's outsourcing success (Lacity et al. 2009). Combined with findings from reference disciplines, dependence can be seen as a 'contextual' variable and thus, as antecedent of relational governance facets, like trust, commitment and conflict (Goles et al. 2005; Gulati and Sytch 2007; Palmatier et al. 2007). While contextual factors are crucial for understanding exchange relationships, they have been largely disregarded in outsourcing research (Blumenberg et al. 2009).

Throughout an outsourcing relationship, dependencies are likely to influence the efforts put into the relationship, stipulating power-play and influencing relationship outcomes. For example, in an experimental setting, Swinarski et al. found a positive relationship between a client's power, i.e., a supplier's dependence on the client, on its motivation to comply with contractual obligations, its willingness to cooperate and to invest additional resources in the relationship (Swinarski et al. 2004). A similar study investigated the impact of an outsourcing deal's importance to a supplier on relationship quality and outsourcing success (Blumenberg et al. 2009). Additionally, a few case studies provided insight into the dynamics of dependence (Heiskanen et al. 2008; Lonsdale 2001; Willcocks and Currie 1997; Willcocks and Kern 1998), indicating that the dependence structure might often shift to an imbalance over time in favor of the supplier.

Thus, prior research approaches let us assume that dependencies are highly relevant throughout the whole lifecycle of an IS outsourcing relationship. However, especially, the supplier side remains elusive. Understanding a supplier's dependence is valuable for both parties in order to draw adequate conclusions from a specific dependence position, with regard to relative and joint dependence, in a dyad. For a client, supplier dependence represents an opportunity to ensure supplier bonding and to optimize the relationship in its favor (assuming that its own dependence is lower). Conversely, a high dependence on a client represents a risk for the IT supplier and can cause financial or strategic damage. To clarify supplier dependence in our field, we will build on the profound dependence literature and traditional theories as being referred to in the following.

4.2.3 Theories

Apart from Emerson's generic conceptualization (Emerson 1962), several classical theories can be used to explain a party's dependence in a bilateral relationship; mainly, resource dependence theory (Pfeffer and Salancik 1978), transaction cost economics (Williamson 1981) and social exchange theory (Thibaut and Kelley 1959).

Dependence is a key element in resource dependence theory (RDT) (Pfeffer and Salancik 1978). Herein, firms are described as open systems which have to transact with their environment in order to obtain resources necessary for survival. Dependence arises when an organization cannot possess all required resources itself. Furthermore, dependence on another organization is influenced by the importance of the obtained resource and the degree to which that resource is controlled by relatively few organizations (Pfeffer and Salancik 1978). While the traditional way is to apply RDT on the client side, it can also be turned around, since clients also possess valuable resources for suppliers, such as compensation for delivered services (see e.g., Blumenberg et al. 2009).

Transaction cost economics (TCE) deal with the comparison of production and transaction costs to achieve economic efficiency (Coase 1937; Williamson 1981). Transaction costs are defined by Williamson (1981, p. 552 f.) as "comparative costs of planning, adapting, and monitoring task completion under alternative governance structures." The theory describes the conditions of a transaction that lead to an optimal governance structure between market (external), hierarchy (internal) and hybrid. One major factor which influences the efficient governance form is the level of specific assets. Heide and John (1988) introduced transaction-specific investments as "those

human and physical assets (tangible and intangible) required to support exchange and which are specialized to the exchange relationship" (p. 21). Because of their specificity, these assets are non-redeployable in other exchange relationships and are assumed to create dependence for the investing party (Heide and John 1988).

Social exchange theory (SET), originally developed to investigate interpersonal relations (Thibaut and Kelley 1959), has also been used in the marketing literature to study dyadic relationships between organizations (Anderson and Narus 1984). A central construct in SET are *outcomes* obtained from a relationship, reflecting the difference between rewards received and costs incurred. To evaluate these outcomes, two further constructs have been posited, namely the comparison level (*CL*) and the comparison level for alternatives (*CL$_{alt}$*). Whereas *CL* represents the expected outcomes from that kind of relationship based on experience, *CL$_{alt}$* reflects the average outcomes that are available from the best alternative relationship (Thibaut and Kelley 1959). If a firm obtains outcomes from an exchange relationship that exceed those available from alternatives, its dependence on the current partner increases (Anderson and Narus 1984; Thibaut and Kelley 1959), even though, dependence arises here from more positive conditions (Scheer et al. 2010).

Besides these three theories, another related perspective is the switching costs perspective (e.g., Bourantas 1989; Gulati and Sytch 2007). The term 'switching costs' (SC) is often used to describe the costs incurred by a substitution of a supplier (Bourantas 1989; Caniëls and Gelderman 2005; Heide and John 1988). Today's literature defines and operationalizes "switching costs in terms of economic (i.e., monetary) expenditures and intangible (i.e., psychological or relational) costs associated with changing an exchange relationship" (Whitten and Wakefield 2006, p. 266). Switching costs thus also address barriers to switching that create dependence on a current exchange partner.

4.3   Research Approach

With the aim to study supplier dependence in IS outsourcing dyads, we investigated outsourcing relationships between different IT units within a client organization, operating in the passenger transportation sector, and five different IT suppliers. Note that a closer look at the client side of dependencies is given in Kaiser et al. (2012). The study was set up to follow a multiple-case design to derive in-depth, exploratory and generalizable findings (Miles and Huberman 1994; Yin 2003). Table 4-1 gives a descriptive overview of the investigated cases. Literal and theoretical replication logics

were applied for the selection of the five outsourcing relationships (Yin 2003). To have similar basic conditions, all five IT suppliers are strongly involved in development and/or maintenance phases of one of the client's information systems (literal replication). For theoretical replication and to increase variance, relationships were selected to include different combinations of dyadic dependencies (low vs. high, symmetry vs. asymmetry). This initial evaluation was based on estimates of two client's representatives.

Table 4-1: Overview of Cases

	Case 1	**Case 2**	**Case 3**	**Case 4**	**Case 5**
Supplier Description (approx. values)	global presence, 400,000 employees, revenue 100 billion USD	presence across Europe, 1,300 employees, revenue 150 million EUR	global presence, 10,000 employees, revenue 2.5 billion EUR	international presence, 500 employees, revenue 200 million EUR	in-house provider, global presence, 3,000 employees, revenue 600 million EUR
Contract Period, Type and Volume	2009–2015, usage-related, 20 million EUR	2009–2011, framework contract, 2.9 million EUR	2005–2020, framework contract, 400 million EUR	2008–2020, fixed price volume, n. a.	2011–2015, fixed price, > 10 million EUR
IS Lifecycle Phase	maintenance	end of development	development/ maintenance	development	maintenance, supplier transition

We did not only conduct interviews with IT suppliers, but also included the respective clients' opinions and evaluations to derive a more complete and adequate picture of supplier dependence. In total, 19 interviewees participated in our study. Whenever possible, we followed a multi-informant approach, i.e., we interviewed persons with different responsibilities and on different hierarchy levels (see Table 4-2).

Table 4-2: Overview of Interviewees Across Cases

	Supplier side						**Client side**				
Case	C1	C2	C3	C4	C5		C1	C2	C3	C4	C5
Project Manager	-	1	-	1	1	Division Manager	-	-	-	1	-
Team Member	-	-	-	-	-	Team Member	1	1	1	-	1
Account Mgr.	1	1	1	-	1	Team/Project Manager	2	1	-	1	1
						Contract Manager	-	-	1	-	1
Subtotal	*1*	*2*	*1*	*1*	*2*	*Subtotal*	*3*	*2*	*2*	*2*	*3*
In total: 19 interviewees in 16 interviews											

All interviews were based on a pre-tested interview guideline and a short questionnaire to triangulate data collection (Eisenhardt 1989; Yin 2003). Also, an estimate of dependencies in the respective relationship as well as determinants and influencing factors of supplier dependence were investigated. To enhance the generalizability of findings, this particular discussion was not limited to the chosen relationship, rather, interviewees drew on their experience gathered in other exchange relationships with different partners.

Altogether, the interviews lasted about 20 hours and produced 382 pages of transcribed text. The subsequent coding process was followed using guidelines (Corbin and Strauss 2008; Miles and Huberman 1994) and supported with a qualitative data analysis (QDA) software. Different streams of literature and theories (see section 4.2.3) were used to facilitate this process of concept development (Eisenhardt 1989). During analysis, the main challenge was to avoid an overlapping (mutual exclusiveness) of the identified determinants and facets, while, at the same time, striving to reach a high degree of completeness.

Worth mentioning is that we focused on the clients' and suppliers' perceptions of supplier dependence rather than on actual dependence. The latter is hard to assess, since necessary data to establish a fully objective measure is rarely available. We consider perceived values as an adequate proxy, since perceptions govern a decision maker's behavior and are widely used in other disciplines (Kumar et al. 1995; Noorderhaven et al. 1998).

4.4   Case Study Findings

4.4.1 Suppliers' Dependence and Power Positions

To determine each supplier's dependence and power position within the respective outsourcing relationship, we queried the supplier's perceived dependencies, i.e., its own dependence and the perceived client dependence. Figure 4-1 shows the resulting dependence map (e.g., Caniëls and Gelderman 2005) from supplier perspective (SP). The abscissa depicts the suppliers' perceived client dependencies, ranging from low ([0-0.33[), over medium ([0.33-0.66[) to high ([0.66-1]). Accordingly, perceived own dependence is shown along the ordinate. Table 4-3 shows the corresponding numbers.

Client and supplier dependence was measured by taking the average score on three reflective measured items respectively.[6]
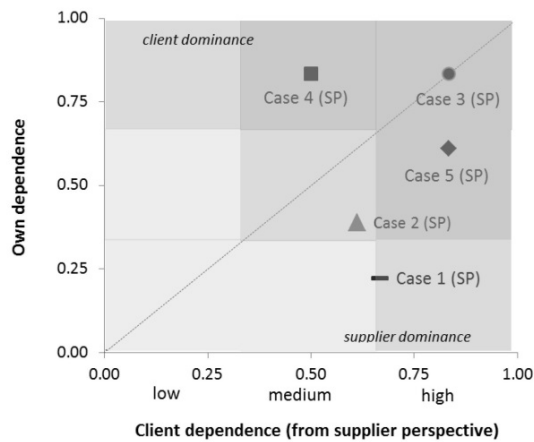
Figure 4-1: Dependence Map (SP)

In accordance with traditional dependence research, the map can be analyzed in at least three ways: by the degree of supplier dependence, relative dependence and joint dependence. First, the extent of supplier dependence varies across the five cases. In our sample, case 1 reaches a low dependence position with 0.22. Cases 2 and 5 show medium levels, 0.39 and 0.61, and in cases 3 and 4 a high dependence of 0.83 is given.

Table 4-3: Assessments of Dependencies (SP)

	Perceived Client Dependence (1)	**Perceived Own Dependence (2)**	**Relative Dependence (1)-(2)**	**Joint Dependence (1)+(2)**
Case 1	0.67	0.22	0.44	0.89
Case 2	0.61	0.39	0.22	1.00
Case 3	0.83	0.83	0.00	1.66
Case 4	0.50	0.83	-0.33	1.33
Case 5	0.83	0.61	0.22	1.44

From supplier perspective, a dependence symmetry is only perceived in case 3, i.e., relative dependence here is equal to zero. In cases 1, 2, and 5 the respective suppliers perceive a supplier dominance. The power advantage ranges from 0.22, in cases 2 and 5, to 0.44 in case 1, on a scale from -1 (maximum supplier dependence) to +1 (maximum client dependence). Case 4 is the only case, where the supplier perceives a structure favoring the client in the relationship (-0.33). With regard to joint

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[6]   Based on Frazier's and Emerson's conceptualization, a party's dependence is the "need to maintain the relationship in order to achieve desired goals" (Frazier 1983, p. 158).

dependence, we encounter medium to high levels, ranging from 0.89 (case 1) to 1.66 in case 3. These high values also result from the medium to high perceived client dependencies.

In summary, with the help of the two constructs suggested by traditional dependence research, relative and joint dependence, we are able to adequately position a supplier vis-à-vis its client and fully describe a dyadic dependence structure. However, these constructs cannot explain how specific positions of suppliers arise or how they can be actively influenced. For this purpose, a conceptualization of supplier dependence, addressing determinants and influencing factors, is developed in the following.

4.4.2 Conceptualization of Supplier Dependence

In related research disciplines, Emerson's power-dependence-theory is widely used to conceptualize dependence (e.g., El-Ansary and Stern 1972; Geyskens et al. 1996). Herein, a party's dependence is determined by, (1) its motivational investment in goals mediated by the client and (2) the degree to which alternatives exist to achieve these goals. Motivational investment involves the value of the outcomes mediated by the other party (Geyskens et al. 1996), which is similar to 'resource importance' in RDT (Pfeffer and Salancik 1978). For the second category, Emerson adds that the costs associated with alternatives have to be taken into account (Emerson 1962). Or, in other words, dependence is influenced by the "difficulty involved in *replacing* the incumbent exchange partner" (Heide and John 1988).

In general, our explorative study confirmed the applicability of Emerson's broad conceptualization to our field and showed that supplier dependence in IS outsourcing relationships is determined by (1) the importance of the outsourcing relationship in achieving a supplier's goals, and (2) the substitutability of the current client with an alternative outsourcing company. Conceptually, a multiplicative relationship between the two determinants exists, reflecting that dependence is not present when either importance or substitutability is close to zero (Bourantas 1989; Pfeffer and Salancik 1978).

In the following, we will report on the important underlying facets of the two determinants in IS outsourcing relationships. This section will draw on our case study interviews as well as on the different general theories described in section 4.2.3. Furthermore, the description of the identified supplier dependence facets are substantiated with statements from client (CP) and supplier perspective (SP).

4.4.2.1 Importance of the Outsourcing Deal

Our data analysis suggests two factors determining a supplier's perceived importance of a relationship: relative financial magnitude and strategic impact of the outsourcing relationship.

Relative financial magnitude

Given that key goals of suppliers are sales and profit, they are relatively dependent on outsourcing relationships that account for a significant fraction of their turnover and profit. This measurement has already been widely used in studies of channels (e.g., El-Ansary and Stern 1972; Geyskens et al. 1996) and industrial relationships (e.g., Noorderhaven et al. 1998). Relative financial magnitude is also seen as a central component of an organization's dependence in RDT (Pfeffer and Salancik 1978). Apart from current levels of total sales or profit, anticipated future sales and profits pertaining to this deal as a percentage of total sales and profits also influence a relationship's importance (Blumenberg et al. 2009; Noorderhaven et al. 1998). In our IS outsourcing cases, relative financial magnitude was also closely linked to importance and thus further strengthens earlier predictions (Blumenberg et al. 2009), hypothesizing a positive relationship between them.

"As a supplier, I am dependent on a customer, because I would like to make profit." Case 2 (CP)

"Additionally, the future business we will have with this customer is important. Well, yes, I think financial dependence is very high here." Case 4 (SP)

"In the past, we made a lot of turnover with this project, dependence was much higher in the past." Case 5 (SP)

Strategic impact

While the sales and profit approach is widely used in other research disciplines, it is not sufficient to determine the whole importance of a relationship in our domain. A second crucial facet we encountered in our cases addresses the 'strategic' importance of a deal. Some suppliers ascribe a high importance to an exchange relationship, even if the current and future relative financial magnitude herein are low. This is in accordance with RDT which introduces a second facet - 'criticality' - alongside the relative magnitude of a resource (Bourantas 1989; Pfeffer and Salancik 1978). In such cases, suppliers usually expect the current relationship to have a significant influence on their medium- to long-term business development. Frequently, IT suppliers try to access important industry or domain knowledge within an exchange relationship,

which presents another kind of compensation. Essentially, strategic intents associated with a relationship can be twofold: On the one hand, the expectation of lucrative follow-up jobs in other units within the client company stimulates the importance of the current deal. Figuratively speaking, 'having a foot in the door' is here a motivating factor and almost all interviewees hoped that the current client department endorses them to other IT projects and tenders of the client company.

On the other hand, strategic intents can also move beyond the client's company and reflect the expectation to generate further business in a market as a consequence of the current deal. Here, the access to a not yet tapped market sector, an increase of reputation or the interest in receiving crucial references contribute to relationship importance (see also Blumenberg et al. 2009).

While deals are usually envisioned to be successful, the opposite can take place as well. A negative outcome may discourage other potential clients and can result in a severe damage for the supplier's reputation and business development. Altogether, the strategic impact encompassing the gain or loss of future deals as a result of the current relationship proffers a facet of crucial importance.

"It also has a strategic reason. This client has a high reputation in this particular market. And of course, if we successfully complete this project and the client is satisfied, other clients will get interested in our product. And yes, thus, there is a kind of dependence." Case 4 (SP)

"We need this client. They are important for us to convince other customers.[..] I'd say we are dependent." Case 3 (SP)

"So far they [supplier] had the interest to place this product on the market, they were dependent on us. Once they decided to leave this market, there was no dependence anymore." Case 5 (CP)

4.4.2.2 Substitutability

Substitutability reflects the costs and efforts needed to achieve financial and strategic goals in alternative exchange relationships.

Client alternatives

As RDT (Pfeffer and Salancik 1978) and Emerson's power-dependence theory (Emerson 1962) propose, an organization's dependence on an exchange partner is interrelated to the number of alternatives. A limited number of alternatives lowers the current client's substitutability and increases perceived dependence. Case analyses suggest that in IS outsourcing relationships the existence of alternatives equally influences a supplier's dependence. Suppliers facing monopolistic or oligopolistic market structures might have greater efforts to identify alternate exchange partners.

Furthermore, if suppliers act on saturated markets the perception of potential alternatives is likely to decrease. In contrast, suppliers with diversified client portfolios, i.e., serving different markets might perceive a higher number of client alternatives.

"The supplier planned to sell this product to other clients. But when it became clear that this solution cannot be sold to others, their dependence on us increased." Case 5 (CP)

"There are others who build their software only for certain clients. We do projects and our projects are not dependent on any client.[…] The market is big." Case 2 (SP)

"This client is one we would never want to lose, never. We could survive without them, yes. But there are not many customers like them in the market." Case 3 (SP)

Degree of amortization

Non-recoverable investments in terms of time, efforts and money in outsourcing relationships are sunk costs which have a binding effect on the current exchange partner (Jones et al. 2002; Whitten and Wakefield 2006). Sunk costs are seen as irrelevant according to classical economic and normative principles of economy (Whyte 1994). The reason is that historical sunk costs cannot be reversed and only future costs and benefits should be taken into account for the purpose of a rational decision making model (Arkes and Blumer 1985; Whyte 1994). However, in practice, decision-makers find it usually hard to ignore past costs (Arkes and Blumer 1985; Whyte 1994). The degree of amortization of investments was found to be highly relevant for a supplier. Interviewees explained that in IS development projects, IT suppliers often go into advance payment and are first paid after reaching certain milestones. In phases, in which they have not reached an amortization of their investments, termination of the relationship is considered to be particularly painful. Thus, the lower the degree of amortization the higher is the perceived need for the supplier to maintain this business relation and the higher should be its perceived dependence.

"In the beginning, we had a negative financial impact. In these phases, our dependence on that client was very high. You don't like to leave a relationship with an unprofitable contract. That would have been a disaster." Case 1 (SP)

"Dependence is high, when the financial damage caused by a contract termination is high. Sometimes we outlay in advance and payment milestones are much later. An exit of the project in such phases would have an extremely serious impact on our business." Case 4 (SP)

"In the beginning, the supplier was relatively dependent on us. They offered a fixed-price contract, but they underestimated their internal efforts. Dependence declined or was very low, when the project was refinanced with maintenance payments." Case 1 (CP)

Acquisition and set-up costs

Grounded in TCE, the costs of a supplier to acquire an alternate customer hamper the substitutability of the incumbent client. When awarding IS outsourcing contracts, bidding processes are a widely used method to select the 'best fit' IT supplier among competitors. For participating suppliers, bids can be a costly and time-consuming affair, in particular when the competition among suppliers is strong. Once an alternate client has been won, efforts for contract negotiation and initial project set-up create further costs which delay and hamper the achievement of the financial and strategic goals. Frequently, the staff needs train-up phases before becoming productive. Set-up costs further increase when new employees with specialized know-how or expertise have to be hired in.

Depending on the contractual agreements, the costs incurred in these phases might be partially covered by payments from the 'new' client. For example, costs for tailoring a software solution might be charged back. Overall, additional efforts, costs and time borne by the supplier to achieve again the lost financial or strategic goals decrease the substitutability of the current client.

"From one day to another we would not be able to staff the project members to a totally different project. There would be train-up phases and yes, we would have to generate new business." Case 2 (SP)

"Substitutability of a client is much easier when your systems are customizable [which induces lower set-up efforts]." Case 5 (SP)

"When the client decided to switch to another supplier a few years ago, we tried to get new deals. But we had great problems. [..] We had to identify a larger number of smaller clients, there are not many as big as this client. You need higher contract volumes. All this meant more costs, for contract negotiations and to handle the number of clients. We did not manage to substitute the lost volume." Case 5 (SP)

Lost benefits

A further binding instrument are benefits received from the incumbent relationship. Especially, if the replaceability of these benefits is limited, a so called benefit-based dependence arises (Scheer et al. 2010). These considerations trace back to SET (Thibaut and Kelley 1959) which compares the outcomes of a current relationship to those available from alternatives.

A client's attractiveness can originate from different sources. Benefits include the access to important technical or market information (Noorderhaven et al. 1998) or a client's support to build up rare, but valuable capabilities or know-how. Furthermore,

suppliers might prefer clients that are very innovative and 'push them forward.' Good inter-personal relationships and a client staff's quality were also mentioned as potential benefits on team-level.

Thus, perceived benefits are multi-faceted, but we argue that they can act as a binding mechanism. Namely, when the perceived net-benefits are higher than the second-best client alternative. However, if the currently obtained benefits are lower than those expected from alternate exchange partners, lost benefits are not present and do not bind the supplier to the incumbent client.

"I would say there is a high emotional dependence. In our team there are many people who showed high levels of commitment to this client over the last number of years. They are really happy with their job here – and I think they could relatively easy find a job somewhere else." Case 1 (CP)

"Their dependence on us is reflected by their innovation boost we give them." Case 3 (CP)

Termination costs

In accordance with the logic of TCE, a termination of a business relation can induce follow-up costs detrimental to the supplier. While there might be efforts and costs related to handle the termination of the focal outsourcing contract, additional costs and efforts can be incurred for terminating the relationships to other contractual partners so far involved in the service delivery.

For example, those employees that have hitherto delivered the service to the customer and cannot be staffed to other projects, e.g.: due to special-purpose know-how and expertise, will either result in on-going idle costs or costs of layoffs. Interviewees also mentioned that employees themselves might terminate their employment contract when a particular client or a site are lost. Especially, the loss of valued employees can be harmful, e.g.: when they possess good technical and functional knowledge, which is hard to replace.

Furthermore, there can be running costs for unused physical assets (e.g., servers), license fees, or contractual penalties in case of premature termination. In the same way, IT suppliers that have further commissioned other IT suppliers, e.g., offshore centers, can face additional costs when ongoing contracts have to be cancelled. Appropriate contractual safeguards help to pass such costs on to the client or to other contractual partners. However, anticipated termination efforts and costs, which the supplier has to bear, decreases the substitutability of the incumbent client.

"At a later point, dependence is higher. You have hired a lot of developers and perhaps offshore IT suppliers. [..]A reversal can be very hard." Case 4 (SP)

"I think, our dependence is not so high since we are used to project business and that we have to deploy our employees quickly to other projects. [...] But this depends much on the number of projects we have and the number of employees in the given project. It is harder to staff a large number anywhere else." Case 5 (SP)

"When the client terminates a contract ... maybe we have know-how we cannot use anymore ... sometimes you lose project members who are specialized to a certain market or customer. They switch to the client or to other suppliers in the field." Case 4 (SP)

4.4.2.3 Spillover Effects

During data analysis another factor emerged – here referred to as 'spillover effects.' This factor is assumed to influence perceived supplier dependence but did not fit very well in the two traditional dependence categories. Spillover effects are specific in the sense that they result from other exchange relationships existing between the two exchange partners. In IS outsourcing, it is not uncommon that IT suppliers develop, operate or maintain more than one information system per client. Spillover effects then reflect potential, undesirable consequences, which a client might employ as a reaction to a terminated relationship by the supplier or to its plan to do so.

When considering the extreme case in which a supplier is basically able and willing to terminate a contract with the client, because it does neither contribute to the financial nor to the strategic business goals and the involved resources could be better used in alternate relationships: Anticipated negative consequences in other outsourcing relationships with this client – especially, if the client possesses therein an untapped power potential – can lead to a continuation of this disadvantageous business relation. Expected reactions of a client include, e.g.: tougher price negotiations, withholding of information, delaying of contract renewals or even termination of other contractual relationships by the client.

Case study analysis suggests the following relationship: The higher the perceived magnitude of spillover effects, the higher is the need to maintain the relationship and thus the dependence on this client.

"If you have one system with a client and this is not profitable, you won't expire the contract. But mostly, you have more than one system with a client. For example, we could not terminate the contract X, because the client would complain. It is not very common, but a good account manager adopts a total perspective as well. Then, maybe you better give in [in this relationship] to safeguard your other investments [with this client]." Case 5 (SP)

"If we stopped our service tomorrow, we would face negative consequences in other relationships with this client." Case 2 (SP)

4.4.3 Cross-case Analysis

To facilitate a cross-case analysis, we used a predictor-outcome matrix (Miles and Huberman 1994) (see Table 4-4). Apart from a short description of the eight factors, Table 4-4 shows in which cases the factors were mentioned respectively (denoted by an x). Here, we used both perspectives, that is, clients (CP) were asked as well to name determinants of supplier dependence. Whenever possible, we used the interview data to evaluate the factors' extent (low L, medium M, high H). In some cases, a factor was mentioned as a sub-determinant of supplier dependence, but not evaluated in the contractual relationship at hand (see e.g., factor 5 in case 5, CP). To provide a clear overview, please note that multiple mentions on client or supplier side (in different interviews) were only counted once.

The cross-case analysis shows that the importance facets, relative financial magnitude and strategic impact, were the most mentioned factors to justify a specific dependence level. Next in line are the aspects of substitutability, client alternatives, degree of amortization and spillover effects. In our case selection, acquisition and set-up costs, lost benefits and termination costs were less commonly mentioned. In particular, it is striking, that these factors are barely mentioned as relevant factors influencing a supplier's dependence from client perspective. One reason for that could be that clients have less insight in these sub-determinants of supplier dependence. The high values of strategic impact across all cases can be explained by the client's good reputation in the specific market.

Whilst more data would be needed to reliably evaluate the goodness of the determinants to explain a certain level of supplier dependence, the collected case data should not be disregarded. Figure 4-1 showed the different levels of supplier dependence. Overall, we see a good fit between these values and the factors' evaluations. In case 1, overall dependence was assessed as low, which is also reflected in low levels of relative financial magnitude, a sufficient number of client alternatives and a high degree of amortization. Strategic importance, lost benefits and termination costs were rated medium to high, resulting in a low, but not absolutely insignificant dependence of 0.22. Similar, the deal in case 2 accounts for a small financial magnitude but the strategic impact is high. Alternatives are rather sufficient, merely acquisition and set-up costs are assessed as medium. This largely fits to the dependence estimated as moderate.

Table 4-4: Predictor-Outcome Matrix Across Cases

Higher-level factor	Influencing factor	Description	Case 1		Case 2		Case 3		Case 4		Case 5	
			SP	CP	SP	CP	SP	CP	SP	CP	SP	CP
Imp.	1 Relative financial magnitude (+)	Share of financial output, i.e., turnover or profit, accounted for by this deal today and in the future.	x L	x L	x L	x M	x M	x M	x H	x H	x (H)L/M	x L
	2 Strategic impact (+)	Importance of this deal to achieve IT supplier's strategic goals.	x H	x H	x H	x H	x H	x H	x H	- -	x (H) L	x (H) L
Subst.	3 Client alternatives (+)	Number of client alternatives to achieve these financial and strategic goals.	- -	x H	x H	- -	x L	x M	x M	x L	x L	x L
	4 Degree of amortization (+)	Perceived degree to which the non-recoverable time, money and effort invested in the outsourcing relationship have been amortized.	x (L)H	x (L)H	- -	x -	- -	- -	x L	x L	- -	- -
	5 Acquisition and set-up costs (-)	Perceived time, cost and effort needed to acquire alternatives and reach again an efficient level to compensate for affected goals.	- -	- -	x M	- -	- -	- -	x H	- -	x H	x -
	6 Lost benefits (-)	Perception of benefits resulting from the current relationship and which are lost upon termination.	x H	- -	x -	- -	x H	x H	- -	- -	- -	- -
	7 Termination costs (-)	Perception of additional time, effort and financial outlays needed for handling termination of the focal and related contracts (e.g., with IT suppliers and staff).	x M	- -	- -	- -	- -	- -	x -	- -	x L	- -
Supplier Dep.	8 Spillover effects (+)	Perceived magnitude of negative reactions by the client in other exchange relationships caused by a (planned) termination of the focal relationship.	- -	- -	x H	- -	x H	x M	x L	- -	x -	x M

Case 5 is particular in our selection, since the client is currently switching to an alternate supplier and the current contract will expire in the near future. The deal's contribution to the supplier's financial and strategic goals has changed from high to medium/low. The IT supplier has had time to react to the lost revenues, but faces few alternatives and high acquisition and set-up efforts. Perceived supplier dependence has dropped from very high to a medium remaining dependence, reflecting that revenue has already been either lost or safeguarded by countermeasures.

Case 3 and 4, which received high values of supplier dependence, also show medium-to-high levels in the sub-determinants. In case 3, the relationship's contribution to revenue and profit is medium, but strategic importance is high. The supplier has very few alternate clients to substitute the incumbent exchange partner. In addition, in case 3 there is more than one exchange relationship and potential spillover effects with a strong magnitude are perceived. Case 4 is similar, in addition, a low degree of amortization acts here as a further binding mechanism.

4.5 Conclusion

4.5.1 Discussion of Findings and Implications

The conceptualization of supplier dependence provides insights for both sides, client and supplier, on how to explain and influence the supplier side of dyadic dependencies in an IS outsourcing relationship. The findings have several theoretical and practical implications.

As a *theoretical* contribution, we grounded our work on dependence and power research from reference disciplines (e.g., Emerson 1962; Gulati and Sytch 2007; Kumar et al. 1995) and incorporated supplier dependence next to client dependence to fully describe a dyadic dependence structure. Suppliers evaluated their own dependence and perceived clients' dependence. In this way, we were able to identify the party with the higher power potential – at least from the suppliers' viewpoint. It has to be noted that potential and actual degree of power use might differ (e.g., Gulati and Sytch 2007), i.e., parties might not fully exercise a power advantage. Different reasons are conceivable. Since perceptions largely affect behavior and attitudes, one reason might be that perceptual differences exist and 'incorrect' evaluations of the own and/or the partner's dependence are made.

Since in business-to-business marketing literature operationalization of dependence varies widely (e.g., Kumar et al. 1995; Scheer et al. 2010), the second aim was to

receive a reliable picture of supplier dependence in our field. Several theories and a dyadic case study were used to decompose the two broad and generic determinants, i.e., importance and substitutability, of dependence. Our approach enabled us to set crucial accentuations in the conceptualization of supplier dependence: First, we included the strategic importance right next to the financial importance of a contractual relationship. Furthermore, companies involved in IS outsourcing often face challenges in the clear specification of services and during the estimation of costs, which is reflected in the substitutability facets, degree of amortization and termination costs. Spillover effects were added as a third determinant, reflecting that a client might use its power in other exchange relationships as a reaction of a supplier's (planned) termination of the focal relationship. Since the various facets of dependence were identified in an exploratory manner, involving several expert interviews and supported by literature, a high degree of generalizability is expected.

Furthermore, our research provides *managerial* implications: Since a partner with a larger power base is always a risk, both parties should monitor not only their own but also their partner's dependence. However, case study interviews suggest that managing dependence is not easy, especially due to its dynamic nature and the variety of sources of influence. Interviews revealed that a dependence structure favoring a client can result in negative outcomes for a supplier. Too tight markets, low diversification and the risk that an IT solution cannot be sold to other clients represent serious concerns of IT suppliers. When the client terminates an important contract, lost revenues and profits might be hard to substitute and can even threaten the company's long-term survival. However, a high own dependence needs not always to be disadvantageous, at least when the client's dependence is equally high. Then, a mutually high joint, but balanced dependence relationship might result, facilitating the evolvement of a strategic partnership.

Overall, a higher supplier dependence can act as binding mechanism, bringing the client in a favorable position to benefit from better relationship outcomes and higher supplier commitment and loyalty (Blumenberg et al. 2009; Gulati and Sytch 2007). In parts, suppliers frankly reported that a high importance or dependence on a client leads to more motivation, easier access to resources from concurrent projects and a higher senior management's commitment within their company.

4.5.2 Limitations and Further Research

The proposed conceptualizations of supplier dependence enriches the stream of IS outsourcing relationship research. In particular, we adopted two central constructs, relative and joint dependence, from reference disciplines to fully describe dependence structures in our domain. While we relied on multiple cases and applied a multi-informant approach, there still is the need for future research to discuss, argue and confirm our findings for the variety of IS outsourcing relationships. A limitation might be that, despite five distinct IT suppliers, only one client organization was involved in our study. In parts, we managed to weaken this limitation by incorporating different IT units (thus, different people and projects) within this organization. Whilst collecting dyadic data is difficult, especially when it comes to such a sensitive topic like 'dependencies,' future research providing additional case studies in other industries would still be very valuable. To derive an exact composition of the supplier dependence construct, i.e., the weightings of the presented determinants and their facets, is seen as an interesting subject for a cross-sectional survey. Overall, we hope that this research stimulates further investigations into the dyadic nature of dependence. To move beyond a dyadic view and to investigate dependencies on a network level is further seen as a promising avenue for future research.

5   Paper D: Unfolding Dyadic Dependencies in IS Outsourcing Relationships – Development of Two Multidimensional Constructs[7]

5.1   Introduction

Dependence has been identified as a crucial aspect of exchange relationships in various contexts and disciplines (e.g., Bode et al. 2011; Casciaro and Piskorski 2005; Gulati and Sytch 2007). IS outsourcing relationships can also be understood as sets of interdependent organizations, involved in developing and operating information systems. Since the early days of outsourcing, a high dependence on IT suppliers has been identified as a major business risk for client firms (e.g., Gonzalez et al. 2005; Lacity et al. 2009). However, the converse fact – that IT suppliers might also run the risk of a critical dependence on their clients, for example, through voluminous, long-term contracts with those clients – has been largely disregarded (Kaiser et al. 2013a). Although dependence research in many disciplines is already advanced and has produced interesting results by studying phenomena such as the impact of dyadic dependencies (i.e., the dependencies of both parties) on exchange relationship performance, the nature and consequences of dependence are under-researched in the IS outsourcing field.

The few publications that treat dependence in our domain are predominantly case-based but substantiate its critical role. The publications relate e.g., to the risk of dependence imbalance favoring the supplier (Willcocks and Kern 1998), the impact of the supplier's perceived importance of outsourcing deals on the relationship quality (Blumenberg et al. 2009), barriers and power plays that arise during supplier switching and transitions (Chua et al. 2012; Whitten and Wakefield 2006), and multi-sourcing as a means to reduce client dependence on each individual supplier (Levina and Su

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[7]   This is the accepted author's version of the following article: Kaiser, J., Widjaja, T., and Buxmann, P. 2013. "Unfolding Dyadic Dependencies in IS Outsourcing Relationships – Development of Two Multidimensional Constructs," in International Conference on Information Systems, Milan, Italy. The definitive publisher-authenticated version is available online at: http://aisel.aisnet.org/.

2008). A shortcoming of these studies is that they usually do not adopt the dyadic approach, which simultaneously considers the client's and the supplier's dependence. Yet such an approach could answer important questions, such as: is it always advantageous to decrease dependence on a partner or can relationships characterized by strong joint dependence have beneficial consequences due to both parties' mutual interest in the relationship? To enable our discipline to unfold the full potential of dependence research, a thorough conceptualization and operationalization of client *and* supplier dependence can be considered as necessary pre-conditions. Our paper tries to fill this research gap by identifying and validating key facets of dependence.

Our overall research agenda aims to 1) extend the existing literature on outsourcing relationships with a conceptualization of organizational dependence grounded on theoretical considerations and empirical investigations, 2) provide validated measurement instruments useful for future research, and 3) identify for practitioners key aspects of their own and their partner's dependence that should be useful for monitoring and influencing the overall dependence structure. In this research-in-progress paper, we follow established guidelines (MacKenzie et al. 2011) and rely on a multi-method approach to develop two multidimensional 'dependence' constructs that capture client as well as supplier dependence.

The remainder of our paper is structured as follows: First, we provide the theoretical background for our work and describe related work on exchange and IS outsourcing relationships. We then describe our process of conceptualization and scale development. Finally, we discuss expected theoretical, methodological, and practical contributions of our work along with promising avenues for future research.

5.2   Theoretical Background and Related Literature

5.2.1 Related Work on Dependence in Exchange Relationships

In contrast to the IS outsourcing domain, there is a long tradition of research on dependencies in related research fields, such as supply chain management and relationship marketing. Also recently, various articles have investigated the role of dependence in exchange relationships (Bode et al. 2011; Gulati and Sytch 2007; Palmatier et al. 2007; Scheer et al. 2010). According to Frazier (1983, p. 158), *dependence* is the need to maintain a relationship to achieve desired goals. While its crucial role is beyond doubt, researchers have proposed different operationalizations to capture dependence, producing contradictory findings and often leaving the researcher

confused about which is best to use in a specific context. Proposed measures include the role performance approach (Frazier 1983), a replaceability scale (Heide and John 1988), the concentration and importance of a relationship as reflected in the sales and profit approach (El-Ansary and Stern 1972), global dependence measures (Noordewier et al. 1990) and several variations on these. Emerson (1962) also offered a pioneering conceptualization in which each party's dependence is determined by *both* the importance of the relationship for achieving desired goals *and* the extent to which there are alternatives for achieving these goals.

5.2.2 Related Work on Dependence in IS Outsourcing Relationships

   Prior IS outsourcing literature has linked dependence to the field of 'relational governance,' i.e., the softer practices associated with managing client-supplier relationships, as a determinant of clients' outsourcing success (Lacity et al. 2009). Combining this with findings from reference disciplines, dependence can be seen as a 'contextual' variable and thus as an antecedent of relational governance facets like trust or conflict (e.g., Goles et al. 2005; Palmatier et al. 2007). Although various studies point to the relevance of dependence in IS outsourcing relationships (Aubert et al. 2005; Chua et al. 2012; Lee and Kim 1999; Levina and Su 2008; Willcocks and Kern 1998), little research to date has been directed towards its conceptualization, taking into account findings from reference disciplines, and studying dependence on both sides of an outsourcing dyad. Table 5-1 lists a selection of related concepts and operationalizations in the IS outsourcing domain.

Table 5-1: Related Concepts and Operationalizations

Source	Concept	Operationalization
Lee and Kim 1999	Mutual dependency	In our relationship, our service provider 1. is responsible for lots portions of our system development and 2. supports and manages most core information technologies we need.
Goo et al. 2007	Extent of substitution	The average annual contract amount with your IS vendor as a percentage of total IS.
Sia et al. 2008	Ease of exit	1. If our outsourcing relationship was discontinued we would have difficulty finding a replacement for the outsourcing vendor (R). 2. Changing our outsourcing vendor will significantly affect our future operating performance (R). 3. We are heavily dependent on this outsourcing vendor (R).

Table 5-1 (continued)

Swinarski et al. 2008	Client power (=supplier dependence)	1. If your company decided to stop supplying application services to SouthBank, you could easily replace their profit contribution with application service supplied to other customers (R). 2. If the relationship with SouthBank were terminated, it would not hurt our operations (R). 3. Finding new buyers for the application services currently supplied to SouthBank would not have a negative impact on our costs (R). 4. It would be relatively easy for us to find other buyers for the application services currently supplied to SouthBank (R).
Lee et al. 2008	Client's mutual dependency	1. It would be difficult for us to replace the service provider with others. 2. My company would suffer greatly if we lost our relationship with the service provider. 3. The support of the service provider is crucial to our ability to manage ISs. 4. We are relying on the service provider's expertise for managing ISs. 5. The relationship with the service provider is important to our business.
Goo et al. 2009	Mutual dependence	Both parties in the relationship 1. share the risks that can occur in the process of business, 2. have collective responsibility of benefits and risks, and 3. effectively carry out services that the other is dependent on.
Bahli and Rivard 2013	Bargaining power	1. There is not a sufficient number of reputable external IT vendors who can potentially provide IT facilities and services to us for this outsourced operation. 2. There is not a sufficient number of trustworthy external IT vendors who can potentially provide IT facilities and services to us for this outsourced operation. 3. If we decided to terminate the current contract with the IT vendor, there would be no other external service providers who could provide us with the same level of IT facilities and services for this outsourced operation.
Bahli and Rivard 2013	Holdup problem	1. If our relationship was discontinued with our IT vendor, we would have difficulty making up for our IT operation. 2. This IT vendor is crucial to our future performance. 3. It would be difficult for us to replace this IT vendor. 4. We are dependent on this IT vendor (and four more items).

Reviewing the related concepts, considerable differences in their operationalizations are evident. While we acknowledge the existing research efforts in our field (and of course, dependence was not the central focus in those studies), we are not aware of a 'dependence' construct that has undergone a thorough scale development process. Many prior operationalizations of related concepts raise critical questions with regard to content validity, its exhaustiveness as well as the transferability of items developed in other disciplines.

5.3   Conceptualization and Scale Development

To address the lack of prior scale development for client and supplier dependence in our domain, our research aims at developing two scales that allow for domain particularities. To date, we have conducted a comprehensive literature review, 19

interviews, 2×2 Q-sort experiments, extensive questionnaire pre-tests with 10 experts, and a two-sided pre-study with 44 responses from 367 companies. Following multidimensional construct development guidelines (Diamantopoulos and Winklhofer 2001; MacKenzie et al. 2011; Polites et al. 2012), Figure 5-1 shows our process, comprising five essential stages.

1 Conceptualization	2 Generation and Validity Assessment of Items		3 Model Specification	4 Scale Evaluation and Refinement	5 Validation (planned)
Conceptualization of Constructs' Domains	Item Generation	Validity of Items	Specification of Measurement Model	Pre-study and Scale Refinement	Empirical Survey
Activities: Review of previous research on focal and related constructs (also in related disciplines) Multiple case study including interviews among 19 experts Development of constructs' content domains	Formulation of items based on literature review and expert interviews	Q-Sorting exercise with 12 experts Refinement of wording and confirmation of clustering of items to dimensions	Formal model specification Based on guidelines for conceptualizing multi-dimensional constructs	Quantitative study with a pre-test sample of 44 responses Preliminary reliability and validity assessment Adding, rewording and eliminating items where appropriate	Quantitative study among app. 3,000 client and 3,000 supplier companies Final validation of the developed client and supplier dependence constructs
Outcomes: Identification and initial clustering of facets to dimensions by 3 researchers 2 multidimensional constructs, comprising *importance, substitutability, spillover effects*	Set of 59 items proposed to measure client and supplier dependence	Construct and content validity of items confirmed	Specification of dependence as formative first-order (Imp. & Subst.), reflective first-order (Spill.), formative second-order	Refined scales for client and supplier dependence	Objectives: Establish reliability and validity of the scales Evaluate model fit

Figure 5-1: Conceptualization and Scale Development Process

5.3.1 Stage 1 Conceptualization of Client and Supplier Dependence

Our conceptualization of client and supplier dependence began with a literature review in IS and related disciplines. Since this review revealed a lack of profound dependence conceptualizations in our domain as well as different approaches used in reference disciplines, we conducted an explorative multiple case study with a dyadic approach.[8] Building on company documentation and 19 expert interviews on the client and supplier sides (totaling 20 hours and 382 pages of transcribed text), we aimed to provide an understanding of dependence in the IS outsourcing context and to identify key aspects of the construct's domain (MacKenzie et al. 2011).

Both theoretical considerations (Emerson 1962) and our interviews suggest that when client dependence is attributed to a client organization, it must be done so *with regard to* a specific client-supplier exchange relationship. In our context, an exchange relationship covers development and/or supply of an information system, for which the supplier is compensated. Reference to a specific relationship is important since several

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[8] An earlier version of our conceptualization efforts (Stage 1) appeared in Kaiser et al. (2012, 2013a). Here, conceptualization has been refined and elaborated to satisfy requirements for multidimensional construct development (MacKenzie et al. 2011). The process stages 2-4 are completely new to the present research-in-progress paper.

exchange relationships can coexist between the same client and supplier (for example, other IS outsourcing relationships). Note that supplier dependence can be specified analogously.

Two *dimensions* emerged from our case study analysis, confirming the general applicability of Emerson's twofold conceptualization in our field. Dependence is determined by (1) importance of the resource obtained and (2) its source's substitutability (Bourantas 1989; Emerson 1962; Jacobs 1974). Conceptually, a multiplicative relationship between the two determinants was proposed, as dependence is absent when either importance or substitutability is close to zero (Bourantas 1989; Pfeffer and Salancik 1978). More specifically, client dependence in our domain comprises (1) the importance of the delivered information system (component) (IS) for the client company and (2) the substitutability of the incumbent supplier. Supplier dependence comprises (1) the importance of the outsourcing relationship for achieving the supplier's goals and (2) the substitutability of the client with an alternative outsourcing company.

Grounded on case study interviews, related literature (e.g., on IT business value, (Melville et al. 2004; Tallon et al. 2000), and theories, such as *resource dependence theory* (Pfeffer and Salancik 1978)*, transaction cost economics* (e.g., Williamson 1981), *social exchange theory* (Thibaut and Kelley 1959), and *switching cost perspective* (e.g., Whitten and Wakefield 2006), the salient *facets* of the two dimensions shown in Tables 5-2 and 5-3 were identified.[9] Here we strived for exhaustiveness and mutual exclusivity of the facets.

Table 5-2: Facets of the Client Dependence Construct

Dimension	Facet	Description
	1 Relative magnitude (+)	Share of magnitude, e.g., purchasing volume, related to the IS.
	2 Revenue enhancements (+)	Business value generated by IS in form of revenue enhancements in, e.g., supported business processes.
Importance	3 Cost savings (+)	Business value generated by IS in form of cost savings.
	4 Regulatory requirements (+)	Contribution of IS to fulfilling official and legal requirements.
	5 Strategic advantages (+)	Contribution of IS to achieving strategic advantages.

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[9]   Due to space constraints of the conference proceedings, not every facet can be described here in detail. Details can be found in Kaiser et al. (2012, 2013a).

Table 5-2 (continued)

	6 Supplier alternatives (+)	No. of supplier alternatives for the IS.
	7 Evaluation and selection efforts (-)	Time and effort needed for evaluating and selecting a new supplier.
	8 Performance uncertainty of alternative suppliers (-)	Uncertainty or perception of risk surrounding the performance of alternative suppliers.
Substitut-ability	9 Sunk costs (-)	Non-recoverable time, money, and effort invested in the outsourcing relationship.
	10 Lost benefits (-)	Benefits from the current relationship that would be lost upon contract termination.
	11 Post-selection client-side costs (-)	Time, effort, and financial outlays that would be needed to conduct the switching process on client side.
	12 Setup costs for alternative supplier (-)	Investments in the alternative supplier that would be necessary to reach the previous work state (related to the IS).
Spillover effects (+)		Expected negative reactions in other exchange relationships with this supplier caused by a (planned) termination of the focal relationship.

Table 5-3: Facets of the Supplier Dependence Construct

Dimension	Facet	Description
Importance	1 Relative revenue (+)	Share of current turnover accounted for by this relationship.
	2 Relative profit (+)	Share of profit achieved with this relationship (expresses margin).
	3 Fut. financial magnitude (+)	Relative magnitude of future revenues expected with this relationship.
	4 Strategic impact (+)	Importance of this relationship to achieve supplier's strategic goals.
Substitut-ability	5 Client alternatives (+)	No. of client alternates for achieving these financial and strategic goals.
	6 Sunk costs (-)	Investments made in this relationship that could not be applied to other relationships.
	7 Acquisition and setup costs (-)	Time, cost, and effort that would be needed to acquire alternate clients and again reach an efficient level to compensate for affected goals.
	8 Lost benefits (-)	Benefits from the current relationship that would be lost upon contract termination.
	9 Termination costs (-)	Additional time, effort and financial outlays needed for handling termination of focal and related contracts (e.g., with IT suppliers/staff).
Spillover effects (+)		Expected negative reactions in other exchange relationships with this client caused by a (planned) termination of the focal relationship.

During data analysis, another *unanticipated dimension* emerged that is assumed to influence perceived dependence in the focal relationship: we call this *spillover effects*. Spillover effects are specific in the sense that they result from other exchange relationships between the client and supplier. They represent *potential, undesirable consequences* that a partner might cause in reaction to a (planned) termination of the focal relationship. Even though, for example, a supplier might react negatively within the focal relationship by delaying the process of switching to a competing supplier, the scope for negative reactions increases with additional exchange relationships, especially if the partner possesses untapped power potentials in this regard.

5.3.2 Stage 2 Generation and Validity Assessment of Items

5.3.2.1 Generating Items

To capture all essential aspects of the dependence constructs' domains, we generated items that directly reflect the focal constructs, their dimensions, and the underlying facets (MacKenzie et al. 2011). Here we relied on prior literature and statements from expert interviews. The process produced a total of 59 items, as shown in Table 5-4:

Table 5-4: Initial Set of Items

Client Dependence (CDep, 5 items)		Supplier Dependence (SDep, 5 items)	
Importance (CImp)	5 items + 5 items for facets	Importance (SImp)	5 items + 4 items for facets
Substitutability (CSubst)	4 items + 7 items for facets	Substitutability (SSubst)	4 items + 5 items for facets
Spillover (CSpill)	5 items	Spillover (SSpill)	5 items

5.3.2.2 Validity of Items

Q-sorting is a widely recognized technique used in IS research to ensure content, convergent, and discriminant validity, by asking domain experts to group items according to their similarity (Petter et al. 2007; Straub et al. 2004). We applied a 2×2 Q-Sort with 12 judges (4 practitioners, 8 researchers) in each round, following procedures set forth by Moore and Benbasat (1991). To avoid bias, judges were not engaged as coders or interviewees in the first stages of our research process. We divided the 12 judges equally into two expert groups, one for client dependence and the other for supplier dependence. To avoid confounding judges with our different aggregation levels, we conducted each round *in two steps*. The first step was dedicated

to dimensions and the second step explored the validity of facets. In the first round (step 1), the judges were asked, without being told what the underlying constructs were, to categorize items into groups and to label them (e.g., Moore and Benbasat 1991). Our proposal of three underlying major dimensions (importance, substitutability, spillover effects) was confirmed (in 83% of the cases), although, of course, judges described the categories in their own words. In step 2, the judges were asked to sort the facet items into two categories, importance and substitutability. As a check, we included two very similar but 'false' items, which were successfully discovered (in 83% of the cases). In each round, judges had the option to sort out items that were ambiguous or not clearly assignable to one of the provided categories.

Table 5-5: Statistics for Q-Sort Rounds

	Client						Supplier					
	Item Placement Ratio				Avg. Raw Agree-ment	Avg. Cohen's Kappa	Item Placement Ratio				Avg. Raw Agree-ment	Avg. Cohen's Kappa
	CImp	CSubst	CSpill	Avg.			SImp	SSubst	SSpill	Avg.		
R 1.1 Dim.	0.93	0.96	0.97	0.95	0.92	0.87	0.83	0.88	1.00	0.90	0.84	0.77
R 1.2 Facets	0.90	0.98	-	0.93	0.88	0.80	0.97	0.70	-	0.81	0.76	0.60
R 2.1 Dim.	0.97	0.96	0.97	0.96	0.96	0.93	0.97	0.92	1.00	0.96	0.94	0.91
R 2.2 Facets	0.93	0.98	-	0.94	0.88	0.80	0.97	0.90	-	0.93	0.86	0.75

To assess construct validity, we used Moore and Benbasat's item placement ratio, which reflects the overall frequency of judges placing items within the intended theoretical constructs. Both raw agreement and Cohen's Kappa were used to assess inter-rater reliability. For the client expert group, the items on the dimension level received an average item placement ratio of 0.95, average raw agreement of 0.92, and average Cohen's Kappa of 0.87 (see Table 5-5). Sorting of facets resulted in an average placement ratio of 0.93, average raw agreement of 0.88 and average Cohen's Kappa of 0.8. Although the results were acceptable after the first round, we further scrutinized the items – in this case two – that were not sorted into the intended categories more than once and consequently reworded them. This improved the figures in the second sorting round. Items for supplier dependence were analogously assessed and reworded.

5.3.3 Stage 3 Model Specification

Based on our conceptualizations, we modeled client and supplier dependence as composite latent constructs comprised of three dimensions: importance, substitutability, and spillover effects. Importance and substitutability present themselves as composite constructs of several facets. To decide how to model the relationship between identified facets and their dimensions, we applied Jarvis et al.'s (2003) decision rules, which all call for formative measurement (direction of causality is from items to dimensions; indicators need not to be interchangeable; not necessary for indicators to covary with each other; nomological net for the indicators may differ). Jarvis et al.'s rules also indicate that the dimensions are in turn formative indicators of the second-order focal constructs. Therefore, we treat our (second-order) focal constructs, client and supplier dependence, as functions of their (first-order) dimensions (see, e.g., Polites et al. 2012). To avoid identification problems in models with formative indicators, it is recommended that at least two global reflective indicators of the latent constructs be included (Diamantopoulos 2011; MacKenzie et al. 2011). With the inclusion of (reflective) indicators (see Table 5-4), the resulting model in Figure 5-2 shows a complete MIMIC (multiple indicators, multiple causes) structure.
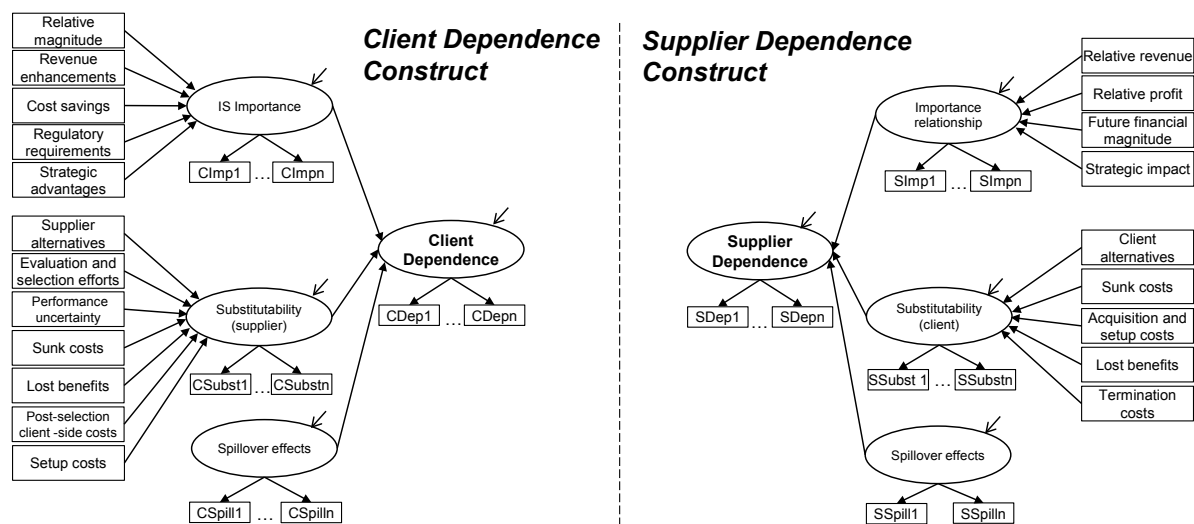
Figure 5-2: MIMIC Structure of Client and Supplier Dependence Constructs

5.3.4 Stage 4 Pre-study and Scale Refinement

Personalized invitations for our pre-study were sent via an online social business network to 367 randomly selected IT professionals in client and supplier firms of different sizes. Participation was encouraged by offering a results report and a raffle

for a tablet device. Reminder emails were sent two–three weeks later to all non-respondents who had initially indicated interest. A total of 44 completed questionnaires were received, 20 from the client side and 24 from the supplier side, yielding a response rate of 12%. The majority of client participants were supplier managers (45%) and project managers (40%), whereas the suppliers were mainly (key) account managers (38%) and project managers (25%).

The purpose of our pre-study was to (1) ensure the questionnaire's comprehensibility, (2) conduct preliminary reliability and validity assessments, and (3) shorten scales where appropriate.[10] We included an open question allowing respondents to comment on content, wording, and questionnaire length. We assessed reliability with traditional techniques discussed in the literature: we checked for the unidimensionality of our constructs' reflective indicators using exploratory factor analyses (EFA); we assessed internal consistency through Cronbach's alpha (alpha) and corrected item-total correlations (CITC), and we tested for formative indicator redundancy using the variance inflation factor (VIF). Furthermore, average variance extracted (AVE) and Fornell and Larcker's criterion of discriminant validity was assessed (Fornell and Larcker 1981). We tried to identify candidates for elimination from reflective item pools by analyzing inter-item correlations, CITC, 'Cronbach's alpha if item deleted' statistics, and standard deviation scores (e.g., Sun 2012).

5.3.4.1 Assessment and Purification of Client Dependence Scale

We confirmed unidimensionality for the client dependence scale's sets of reflective indicators with an EFA (principal axis factoring, promax rotation, extraction based on factors with eigenvalues greater than 1). The reliability test results exceeded commonly suggested thresholds (alpha 0.7; minimal CITC 0.5): CDep (0.834; 0.609), CSubst (0.931; 0.811) and CSpill (0.900; 0.696). Only the results for importance (CImp) have not yet been sufficient: Cronbach's alpha at 0.668 was slightly below the threshold of 0.7. Hence, we tried to improve the items by rewording to avoid small standard deviations and skewness in the items' distributions (e.g., the ceiling effect).

Although a larger sample is needed to provide final evidence for reflectively measured constructs' validity, two criterions were used to early reveal potential threats to validity. Convergent validity was initially assessed by calculating AVE[11]. Except for

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[10] The revised sets of items can be found in Tables A-2 and A-3 in the appendix.
[11] SmartPLS was used for calculation (Ringle et al. 2005).

CImp (0.448), AVE values of remaining constructs exceeded the critical value of 0.5 (Fornell and Larcker 1981): CDep (0.753), CSubst (0.834) and CSpill (0.761). Furthermore, the square roots of AVE were greater than the respective correlations with other constructs, suggesting discriminant validity according to Fornell and Larcker's criterion (see appendix, Table A-4).

Assessing the formatively measured items, we found that the VIFs for the importance dimension ranged from 1.386 to 2.843, all below the cutoff level of 10 (Diamantopoulos and Winklhofer 2001) and the more conservative level of 3 (Diamantopoulos and Siguaw 2006). At this stage, therefore, there is no indication to remove or change any of the importance facets. However, multicollinearity might arise in our substitutability dimension, as the VIF value for *setup costs for alternative supplier* (item #12) exceeded the cutoff level of 10. An in-depth analysis revealed a high inter-item correlation for evaluations of the two client-side cost facets, *post-selection client side costs* (item #11) and *setup costs for alternative supplier* (item #12). So although they are conceptually distinguishable, it seems unlikely that these two facets are independent in their magnitude. To ensure content validity, we decided to merge these facets and draw them on a higher abstraction level. The final instrument will include one item for the client's total costs and will no longer distinguish between direct and indirect costs. We pre-tested this approach by merging (arithmetic mean) the items' responses in our pre-study sample, with resulting VIF values all below 3.

5.3.4.2 Assessment and Purification of Supplier Dependence Scale

The supplier dependence scale was assessed analogously, identifying candidates for elimination and, where deemed appropriate, changing the questionnaire. Reduced reflective indicator sets for SDep (0.903; 0.674), SImp (0.852; 0.686), SSubst (0.853; 0.648), and SSpill (0.85; 0.591) met the unidimensionality and reliability criteria. Furthermore, strong indications for convergent validity were found: AVE of all dimensions clearly exceeded the threshold of 0.5: SDep (0.781), SImp (0.799); SSubst (0.695); SSpill (0.680). In addition, a preliminary discriminant validity analysis was also here conducted (Fornell and Larcker 1981). For all constructs, square roots of AVE were greater than the respective correlations with other employed constructs (see appendix, Table A-4). Thus, tentative results of this pre-study equally suggest convergent and discriminant validity of the supplier dependence scale.

Again, we checked the formative indicators of our substitutability and importance dimensions. The VIF values for the formative indicators for importance ranged from 1.233 to 1.515, with no indication of multicollinearity. Formative indicators for substitutability received VIF values from 1.042 to 4.019, slightly exceeding the conservative threshold of 3 but still well below the cutoff value of 10. While this result could be considered satisfactory, we critically analyzed the items and modified them slightly to potentially yield even better results in our main survey.

5.4   Conclusion

5.4.1 Main Survey as Final Stage of Scale Development

While our pre-study was a valuable research step, we will gather a new, larger-sized sample to obtain conclusive empirical proof for the validity and reliability of the developed scales. Final tests will be performed through an online survey directed to IT professionals in client and IT supplier firms. Thus, two separate studies will be launched; the 'client study' will have client organizations as the primary source, while the 'supplier study' will be sent to supplier firms in the first instance. Reliability and validity tests will be repeated for the new sample; in particular, direction, magnitude, and significance of indicators will be analyzed. The main study will address nomological validity by showing that our measures of focal constructs can be related to other constructs in the expected way (MacKenzie et al. 2011). Furthermore, evaluation of overall model fit (e.g., assessing goodness of fit, model comparisons and model parsimony) is expected to be a central analysis step. The final analysis will also include control variables, such as contract duration, firm size, and type of outsourcing (IS development, maintenance and/or operations).

5.4.2 Expected Contributions, Limitations, and Future Research

Management of client-supplier relationships has recently received increasing attention in IS outsourcing research and practice (e.g., Hirschheim et al. 2008; Kaiser and Buxmann 2012a; Oshri et al. 2011a). We have focused on a crucial aspect of these dyadic relationships, the dependencies between clients and suppliers. To refine the rather simplistic prevailing view of these dependencies in our field, we applied a plurality of methods to identify, structure, and evaluate their constitutive elements. While reflective and formative measures have different strengths and weaknesses, such as parsimony versus richness and generality versus precision (Barki et al. 2007), misspecification should in any case be avoided (Jarvis et al. 2003). Two dependence dimensions, importance and substitutability, emerged, for which a multiplicative

relationship has been theoretically discussed in literature (Bourantas 1989; Pfeffer and Salancik 1978). Moreover, and interestingly, spillover effects emerged as an unexpected dimension. In 70% of our cases on the client side, the client-supplier relationship under consideration was one of several exchange relationships between that client and supplier. Of these clients, 42.9% feared an exploitation of untapped power potentials in their other relationships with the supplier. Even on the supplier side, 56.2% indicated moderate to high levels of potential spillovers (66.7% were nested relationships). If spillover effects are confirmed as a substantial dimension in our main survey, this may serve as an important contribution to general dependence research and can inform related disciplines.

While our proposed client and supplier dependence scales can be used to assess individual firm-level dependencies, they can also be combined to address dependencies on the relationship-level. Two constructs primarily evolved in reference disciplines: relative dependence (i.e., the difference of the individual dependencies) and joint dependence (i.e., the sum of the dependencies) (Casciaro and Piskorski 2005; Gulati and Sytch 2007). The developed client and supplier dependence scales, used either individually or in combination, should be useful for a variety of established and emerging IS themes. For example, they might inform and extend inter-organizational IS studies on relationships and outsourcing success (Gulati and Sytch 2007), innovation generation (Jean et al. 2012) and on influence strategies, adoption, and compliance (Hart and Saunders 1998; Payan and McFarland 2005). Future research might transfer our dyadic dependence conceptualization to complex exchange networks or study intercultural differences. Our findings also have practical relevance, offering client and supplier firms insights into how to influence dependence positions. The facets we have identified provide a basis for fully assessing and monitoring their own and their partner's dependence.

6 Paper E: Relative and Joint Dependence in IS Outsourcing Relationships – A Model of Effects on Relational Facets and Exchange Performance[12]

6.1 Introduction

Information systems (IS) outsourcing has become a common practice in many client companies. As a result, client organizations must increasingly rely on collaboration with IT suppliers to achieve their business goals. This development has generated a large amount of research interest over the last few decades. Since the early days of outsourcing, client firms have been warned to avoid dependence on suppliers, as it would pose a major business risk (Gonzalez et al. 2005; Lacity et al. 2009). However, the converse fact – that IT suppliers might also run the risk of a critical dependence on their clients, for example, through voluminous, long-term contracts with those clients – has largely been disregarded (Kaiser et al. 2012; Kaiser et al. 2013a). Furthermore, apart from considering dependence as a (client-side) risk, little attention has been paid to the consequences of the parties' dependencies in outsourcing relationships. This article is therefore motivated by the question: What is the impact of dependence on outsourcing relationships and their exchange performance?

Clear motivation for this research question arises from prior, very fundamental, reflections on this topic in other disciplines concerning, e.g., social relations, marketing channels, and inter-organizational relationships. Traditional dependence literature suggests adopting a dyadic perspective, assessing both client and supplier dependence in a dyad in order to draw adequate conclusions (Emerson 1962). One reason behind this is that the desired power advantage of one party arises from a dependence asymmetry, i.e., a difference between the two parties' dependencies

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(Emerson 1962). The opportunity to exercise a power advantage in an unbalanced dependence structure represents a threat to the weaker party's business performance (e.g., Gulati and Sytch 2007). For example, a supplier in a more powerful position might provide a lower quality of service, to the client's detriment. Conversely, supplier performance losses might occur if a more powerful client bullies its supplier and exerts pressure on pricing. In addition to relative dependence, a dyadic perspective enables the examination of joint dependence, which is the sum of two organizations' dependencies on each other (e.g., Casciaro and Piskorski 2005). In a high joint-dependence structure where each partner is highly dependent on the other, both face high exit barriers and each partner can seriously damage the other. However, this combination can also provide the basis for a relationship of mutual trust and commitment (Kumar et al. 1995). As such, the degree of joint dependence provides a further critical characteristic of dyadic relationships.

Against this theoretical background, several questions arise: To what extent is it reasonable for a more powerful party to exploit its position of power? How can power-balanced relationships influence relationship outcomes? Can relationships characterized by a high joint dependence have beneficial consequences due to both parties' mutual interest in the relationship?

This conceptual paper considers relative and joint dependence as two central constructs that can facilitate a differentiated examination of these questions. We offer a causal research model describing anticipated effects of relative and joint dependence on the relationship quality and performance outcomes for both, the client and the supplier. Overall, our work aims to contribute to IS outsourcing research in several ways: (1) by advancing the conceptualization of dyadic dependencies in our field, (2) by revealing their role in outsourcing relationship performance, and (3) by equally integrating both client and supplier perspectives and interests into our model. In doing so, we transfer previous results from other research disciplines to our research field and aim to extend the current state of dependence research.

The rest of this paper is organized as follows. In the next section, we provide a theoretical background for our research topic. Following that, we present our research model and hypotheses. We then address methodological issues and present the procedures and results of our initial pretests. Finally, we close the paper with a discussion of the expected findings from our main survey.

6.2   Related Literature

6.2.1 Dependence in Related Disciplines

In contrast to the IS outsourcing domain, dyadic dependencies have received greater attention in related research fields such as supply chain management and relationship marketing (Bode et al. 2011; Gulati and Sytch 2007; Palmatier et al. 2007; Scheer et al. 2010).

Many contributions in reference disciplines have been inspired by the seminal work of Emerson, who illustrated that the concepts of dependence and power are strongly interlinked: "the power of A over B is equal to, and based upon, the dependence of B upon A" (Emerson 1962, p. 33). Many publications have built on Emerson's conceptualization of dependence, in which each party's dependence is determined by *both* the importance of the relationship for achieving desired goals *and* the extent to which there are alternatives for achieving these goals. Studies based on this conceptualization usually adopt a pluralist perspective in which parties involved pursue different objectives and power consists of a party's ability to influence the other's behaviors (Jasperson et al. 2002).

Dependencies between parties, either individually or in combination, i.e., as relative or joint dependence, have been related to various concepts such as, inter-organizational relationships and exchange performance (Gulati and Sytch 2007; Hibbard et al. 2001), mergers and acquisitions (Casciaro and Piskorski 2005), innovation generation (Jean et al. 2012), and influence strategies, adoption, and compliance (Hart and Saunders 1998; Payan and McFarland 2005).

6.2.2 Dependence in IS Outsourcing Relationships

Turning to IS outsourcing, which we understand as a "business practice in which a company contracts all or part of its information systems operations to one or more outside information service suppliers" (Hu et al. 1997, p. 288), the picture is rather incomplete. Prior IS outsourcing research has linked dependence to the field of 'relational governance,' i.e., the softer practices associated with managing client-supplier relationships, as a determinant of clients' outsourcing success (Lacity et al. 2009). Combining this with findings from reference disciplines, dependence can be viewed as a 'contextual' variable and thus as an antecedent of facets of relational governance such as trust or conflict (Goles et al. 2005; Palmatier et al. 2007). Surprisingly, apart from studies that mention the term 'dependence,' mostly to refer to

it as a risk for the client (e.g., Aubert et al. 2005; Gonzalez et al. 2005), current literature is largely silent about its dyadic nature and its specific effects on outsourcing relationships.

The few publications that treat dependence in our domain are predominantly case-study based but substantiate its critical role. The publications relate, e.g., to the risk of dependence imbalance favoring the supplier (Currie and Willcocks 1998; Willcocks and Kern 1998), the impact of the supplier's perceived importance of outsourcing deals on the relationship quality (Blumenberg et al. 2009), barriers and power plays that arise during supplier switching and transitions (Chua et al. 2012; Whitten and Wakefield 2006), and multi-sourcing as a means to reduce client dependence on individual suppliers (Levina and Su 2008; Tan and Sia 2006).

In an experimental setting, Swinarski et al. (2004) found a positive relationship between a client's power, i.e., a supplier's dependence on the client, and its motivation to comply with contractual obligations as well as its willingness to cooperate and to invest additional resources in the relationship. Sia et al. (2008) consider 'ease of exit,' a construct conceptually related to dependence, to be a fundamental dimension of flexibility in outsourcing endeavors. Lee et al.'s empirical study explores the moderating role of mutual dependence on trust and knowledge sharing between two outsourcing parties (Lee et al. 2008).

Combining dyadic dependencies and relationship quality in a survey-based approach, Lee and Kim's study (Lee and Kim 1999; Lee and Kim 2005) posited a positive relationship between mutual dependence and the quality of outsourcing relationships. However, inconsistent with findings in other disciplines (e.g., Gulati and Sytch 2007; Kumar et al. 1995), they found a negative relationship and argued that this was due to particularities in the Korean market. Comparing their measures with those used in relationship marketing and other fields, it appears that their findings might also have been affected by 1) a strong focus on client dependence without reference to the supplier side and 2) a lack of differentiation between a balance and an imbalance of dependencies. In contrast, a more recent survey (Goo et al. 2009) was able to provide evidence for the positive effect of mutual dependence on at least trust and commitment between parties in the IS outsourcing context.

   Our literature analysis revealed that the great majority of the IS outsourcing literature mentions 'dependence' in passing, without studying its dyadic nature or its interrelations with other constructs. This is underscored by findings from an extensive literature review in outsourcing relationships (Lacity et al. 2010) that identified only one article (Lee and Kim 1999) dealing with 'mutual dependency' as a relationship characteristic. As discussed above, the prevalent unilateral view of dependence in IS outsourcing research conflicts with the view found in traditional dependence research. To advance research in our field, a simultaneous incorporation of both relative and joint dependence is needed, as well as a thorough analysis of their impact on outsourcing relationships.

6.3   Research Model and Hypotheses

In this section, we propose a research model that allows us to analyze the effects of dyadic dependencies on exchange performance in IS outsourcing relationships (see Figure 6-1). In the model, we assume that both the client and the supplier have a certain degree of dependence (ranging from low to high) on their exchange partner. As motivated in the introduction to this paper, our model distinguishes between relative and joint dependence based on the individual client and supplier dependencies. We refer to relative dependence (i.e., the difference between the client and supplier dependence) as a party's *dependence advantage*. Thus, either the client or the supplier in a dyad can possess a dependence advantage, when its dependence is less than its partner's. Joint dependence is the sum of the two dependencies.
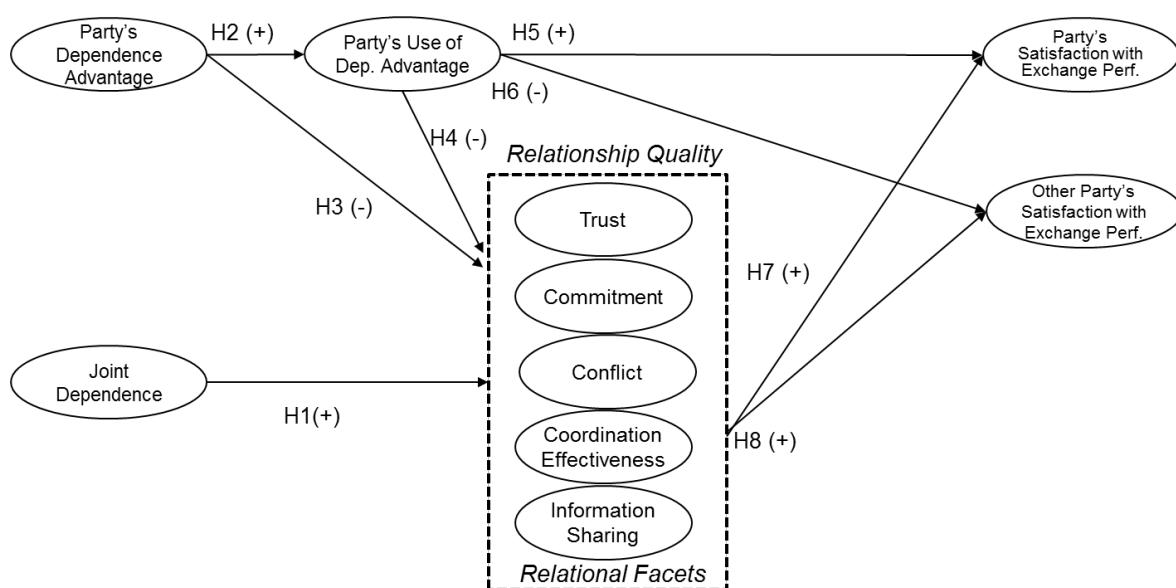
Figure 6-1: Research Model (from the Perspective of the Power-dominant Party)

The causal research model developed in this paper draws on and extends Kumar et al.'s model for marketing channels (Kumar et al. 1995) and Gulati and Sytch's model for the automotive industry (Gulati and Sytch 2007). The causal ordering of the constructs is based on recent results in the field of relationship marketing (Gulati and Sytch 2007; Palmatier et al. 2007). We will summarize the main anticipated effects before illustrating them in more detail in the following section.

We posit that high joint dependence leads to higher relationship quality in several ways, namely, by increasing inter-organizational trust, commitment, coordination effectiveness and information sharing and by decreasing conflicts between the parties (H1). In contrast to this positive effect, an imbalance in the second component of interdependence, relative dependence, is hypothesized to produce a negative impact on the relational facets. First, we assume that the greater a party's power potential is, i.e., the dependence advantage of one party, the greater the extent of power used by this dominant party will be (H2). Second, however, as the dependence advantage or the exercise of power increases, the relational spirit of the relationship will decrease (H3 and H4).

While the use of a power advantage is posited to increase the performance received by the more powerful party (H5), it decreases the outcomes for the weaker party, which is pressured and exploited as a consequence (H6). Last, but not least, an increase in the quality of the relationship (increased trust, commitment, etc.) usually increases the exchange performance for both parties and, as a consequence, both client *and* supplier satisfaction with the exchange performance (H7 and H8).

The proposed research model captures the questions posed in this paper's introduction. Assuming a dominant party in a relationship and empirical evidence for the posited relationships, an important trade-off arises. Is it reasonable to exercise a power advantage when power use has a simultaneous negative impact on the relationship quality, which might diminish the dominant party's outcomes? Also of interest is the effect of joint dependence on the exchange performance as well as the impact of fully balanced relationships (i.e., relationships where the parties' relative dependence is zero). The next section elaborates our proposed hypotheses.

6.3.1 Joint Dependence and Relational Facets

A high joint-dependence structure is one in which both partners are highly dependent on the other. In contrast to a highly asymmetric relationship, both parties in such a

relationship face high exit barriers and each can cause serious damage to the other. This lays the ground for a successful business relationship, since its success is critical to and desired by both parties (Gulati and Sytch 2007). These circumstances promote the development of relational facets such as trust, commitment, and information sharing (Gulati and Sytch 2007; Kumar et al. 1995).

Our research model consists of five different constructs that are a) deemed to be relevant relational characteristics of IS outsourcing relationships (Goles et al. 2005; Kern and Willcocks 2000; Lee and Kim 1999), and b) posited as the result of joint dependence (Gulati and Sytch 2007; Kumar et al. 1995). In the following, we will explain each relational facet in detail and describe the associated research hypothesis.

6.3.1.1 Trust and Commitment

Trust and commitment are seen as critical pillars of strong relationships that have the ability to promote the performance of the exchange (Morgan and Hunt 1994; Palmatier et al. 2007). Since their mechanisms in business relationships are very similar, we address them jointly in this section. Inter-organizational trust includes the expectations that the partner organization can be relied upon to fulfill its obligations, to behave predictably, and to act and negotiate fairly even when the possibility of opportunism exists (Zaheer et al. 1998). Definitions of commitment in marketing channels as well as in IS outsourcing relationships usually incorporate three facets: affective commitment (i.e., a desire to continue a relationship because of positive affect toward the partner), willingness to invest (i.e., a willingness to become more deeply involved in the relationship through investment of capital and effort), and relationship stability (i.e., an expectation that both parties intend to remain in the relationship) (Goo et al. 2009; Kumar et al. 1995).

Researchers have argued that trust and commitment are less widespread in relationships with low joint dependence (Gulati and Sytch 2007; Kumar et al. 1995; Uzzi 1997). This is because in such relationships, both parties have a very low dependence on their current exchange partner. Such loosely-coupled relationships are often characterized by short-term contracts and a mutual flexibility to leave the relationship (e.g., Dwyer et al. 1987; Kumar et al. 1995). However, recalling that in a high-joint dependence structure, both parties have much at stake for both parties and exit barriers are very high, the parties in such a situation are more likely to both be committed to the relationship, with a strong motivation to satisfy the exchange partner's requirements and desires, which fosters the sentiment of trust (Dwyer et al.

1987; Geyskens et al. 1996; Kumar et al. 1995). Furthermore, in a high joint-dependence setting, both parties have an incentive to devote more effort to the relationship, and opportunistic behavior or negative tactics should be less prevalent because each partner can be greatly damaged by the other (Kumar et al. 1995). We therefore posit the following hypotheses:

H1a: Joint dependence is positively related to the level of trust between client and supplier in an IS outsourcing relationship.

H1b: Joint dependence is positively related to the level of commitment between client and supplier in an IS outsourcing relationship.

6.3.1.2 Conflict

Similarly to other inter-organizational relationships, there are usually many potentials for conflict in IS outsourcing arrangements due, for example, to goal divergence, technology complexity, incompatibilities and the dynamics of the business environment (Goles et al. 2005; Goo et al. 2009; Lee and Kim 1999). Actual conflict involves an overall level of disagreement between the exchange partners, often termed 'manifest' conflict (Palmatier et al. 2006). Manifest and dysfunctional conflict can be very destructive for a business relationship, and thus, it is advised that such conflict be resolved harmoniously and turned into agreement and consensus (Goo et al. 2009).

Drawing on previous work (Dwyer et al. 1987; Gundlach and Cadotte 1994; Kumar et al. 1995), we hypothesize that joint dependence has a diminishing effect on the level of conflict. To substantiate this causal relationship, we can apply bilateral deterrence theory (Lawler et al. 1988; Lawler and Bacharach 1987). According to this theory, an actor's desire to engage in or instigate conflict is a function of the actor's fear of retaliation and expectation of attack. As joint dependence increases (holding the dependence asymmetry constant), *both parties* have an increased fear of a severe retaliation. Further, since each party fears retaliation and knows the partner does so as well, the actual expectation of being attacked is low and the suppression of conflicts is high (Kumar et al. 1995). Thus, joint dependencies usually increase the motivation of both parties to resolve conflicts cooperatively and quickly (Dwyer et al. 1987; Gundlach and Cadotte 1994; Kumar et al. 1995).

H1c: Joint dependence is negatively related to the level of conflict between client and supplier in an IS outsourcing relationship.

6.3.1.3 Coordination Effectiveness

Coordination effectiveness has been discussed as another mediator of joint dependence's influence on performance (Gulati and Sytch 2007; Jap 1999). Coordination effectiveness indicates the degree to which the client and supplier effectively work together to fulfill collective tasks in an outsourcing relationship (Fang et al. 2008b; Van de Ven et al. 1976). Coordination effectiveness can be realized by enabling synergistic ways to do business together, by effectively coordinating the work to create and utilize unique business opportunities and by engaging in projects tailored to both companies' needs (Fang et al. 2008b; Jap 1999).

The need and motivation to achieve coordination effectiveness are mainly driven by joint dependence, since both parties recognize that success depends in part on their partner (Jap 1999). Joint dependence complicates a simplistic exit strategy, forcing firms to work out problems and giving direct feedback, which fosters learning and innovation (Uzzi 1997). Coordination effectiveness is further facilitated by an increased convergence of interests and goals between the firms, which is more likely in a high joint-dependence structure (Jap 1999; Kumar et al. 1995).

H1d: Joint dependence is positively related to the level of coordination effectiveness between client and supplier in an IS outsourcing relationship.

6.3.1.4 Information Sharing

Information sharing refers to the extent to which both parties effectively communicate and exchange critical information about important tasks and the environment along with supplementary information to support the business planning of each (Anderson and Narus 1984; Fang et al. 2008b; Lee and Kim 1999). It is essential for the development of the relationship that information sharing is bilateral and that it goes beyond the daily information exchanges of routine processes (Goles et al. 2005; Heide and John 1992).

Mutual dependence and heightened attention to the exchange partner are important antecedents to open communication and the exchange of critical information. Recalling that much is at stake for both parties, withholding important information poses a risk for both. Thus, joint dependence creates an environment that is conducive to developing long-term cooperative ties, encouraging the exchange of unique fine-grained information, and promoting economic opportunities for the relationship (Gulati and Sytch 2007; Uzzi 1997).

H1e: Joint dependence is positively related to the level of information sharing between client and supplier in an IS outsourcing relationship.

6.3.2 Relative Dependence, Use of Dependence Advantage, and Relational Facets

In contrast to joint dependence, dependence asymmetry has been argued to have a negative impact on relational facets (Hibbard et al. 2001; Kumar et al. 1995; Palmatier et al. 2007). Diverging interests, opportunistic behavior, and coercive use of power are more likely to occur in asymmetric relationships and are adverse to the development of relationship quality.

When a party is more dependent on its exchange partner than vice versa, the partner has a dependence advantage and is in a position of relative power (Emerson 1962). Generally, a power advantage offers a situation where the more powerful organization can exploit the other party to structure the exchange relationship in its own favor (Cook 1977). Guided by prior contributions from other domains (Gaski and Nevin 1985; Kim et al. 2005; Provan et al. 1980), we distinguish between a *potential* power advantage and its *actual use*. In other words, the possession of a power advantage should not be equated with its use. Although it seems theoretically plausible that, all else being equal, a greater power potential will lead to enhanced exploitation (Gaski and Nevin 1985), there might be further moderators that regulate its exercise. For instance, contractual safeguards (e.g., detailed price clauses or service level agreements (Barthélemy and Quélin 2006)) in the weaker party's interest might hinder the stronger party from making unlimited use of its power advantage (Wuyts and Geyskens 2005). Similarly, the fear of damaging one's own market reputation might result in a restraint of power (Wang 2008).

H2: The greater the relative dependence in an outsourcing relationship, the greater the stronger party's actual use of power will be.

Differentiating between potential and actual use of a power advantage has several implications for our research model. While some authors argue that relative dependence has a negative impact on relationship quality (Kumar et al. 1995), others argue that the actual use of power is of greater interest or at least has a greater effect (Gaski and Nevin 1985). The question is whether the mere *presence* of a power advantage matters, or whether it is rather the *exercise* of a power advantage that produces behaviors that are damaging to the relationship quality. Theoretically, both effects are possible and can coexist. Thus, we hypothesize that there is direct negative

effect of increased dependence asymmetry on relationship quality. The concomitant mechanism is an indirect effect, where the dependence asymmetry is mediated by the stronger party's actual use of power.

A remaining question is: How exactly does dependence asymmetry (or exercise of a power advantage) damage the relational facets?[13] With an increasing dependence asymmetry, the more powerful firm can use its power in a self-serving and coercive manner to obtain compliance from the more dependent party (Hart and Saunders 1997; Kumar et al. 1995). Dependence asymmetry (or exercise of a power advantage) produces a vicious effect on *trust* and *commitment* (Kumar et al. 1995): The more powerful firm is less dependent on the weaker firm's trust and commitment, since it can use coercion to achieve its goals. Additionally, the more powerful firm has less need to be committed to the relationship or to trust its partner, since its own dependence is relatively low. Furthermore, it is unlikely that trust and commitment are developed unilaterally (Anderson and Weitz 1992), resulting in an asymmetric dependence relationship characterized by relatively low levels of overall trust and commitment. According to this logic, it also seems reasonable that dependence asymmetry and self-serving and exploitative exercises of power diminish *coordination effectiveness* and the extent of *information sharing*. The more dependent party is less motivated to identify with the dominant party and to invest more than is necessary in the relationship. Equally, an increasing dependence asymmetry increases the level of *conflict* by promoting hostility, destructive actions, and aggression within the relationship (Hibbard et al. 2001; Kumar et al. 1995). According to bilateral deterrence theory, the dominant party fears less and weaker retaliation, so its motivation to avoid conflicts decreases. Additionally, the theory states that the weaker party, expecting more attacks from its partner, is less likely to quietly accept this danger, but to oppose it instead (Kumar et al. 1995; Lawler et al. 1988; Lawler and Bacharach 1987). Thus, under dependence asymmetry and exploitative power use, the level of conflict in the relationship will be relatively high. In summary, our argumentation leads to the following hypotheses:

H3: Relative dependence in an outsourcing relationship is negatively related to relationship quality in terms of a) trust, b) commitment, c) diminished conflict, d) coordination effectiveness, and e) information sharing.

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[13] Since we have already introduced the relational facets in detail when describing H1a-e, we will keep the following discussion brief.

H4: The dominant party's use of a dependence advantage is negatively related to relationship quality in terms of a) trust, b) commitment, c) diminished conflict, d) coordination effectiveness, and e) information sharing.

6.3.3 Impact on Exchange Performance

Relative dependence, or use of power, and joint dependence result in two rival mechanisms affecting the outsourcing relationship's performance. To illustrate these, we look at how value is created and appropriated in business relationships (Jap 1999; Jap 2001; Wagner et al. 2010), using a 'pie model.' First, joint dependence can be argued to be a driver of value creation, i.e., increasing the size of the 'pie' that can be shared by both partners, through increased relationship quality (Gulati and Sytch 2007; Jap 1999). The second mechanism, value appropriation, concerns how the pie or the value created in the relationship is shared between the parties. In the following, we argue that relative dependence, i.e., a dependence asymmetry, influences this mechanism to a great extent, and we will elaborate on the corresponding theoretical hypotheses.

Starting with relative dependence, we can state that the greater the dependence asymmetry, the greater the potential is for the stronger party to structure the relationship in its own favor and to capture greater value in the relationship at the expense of the weaker party ('ensuring a bigger share of the pie') (Blau 1964; Cook 1977; Gulati and Sytch 2007). In the case of a more powerful client, the supplier might be pressed to provide a high quality service but at a low price. Similarly, client organizations can be exploited by powerful suppliers and be subjected to dictation of pricing or to low service quality. In contrast, in a balanced dependence structure, the parties interact at eye-to-eye level, and unequal value appropriation should be less severe. This does not mean that the use of power is totally nonexistent in these relationships, but rather that theoretically, a dominant party should not emerge (Emerson 1962). Thus, we posit the following hypotheses for client and supplier satisfaction in an outsourcing setting:

H5: The dominant party's (client's or supplier's) use of a dependence advantage is positively related to its own satisfaction with the exchange performance.

H6: The dominant party's (client's or supplier's) use of a dependence advantage is negatively related to its partner's satisfaction with the exchange performance.

By enhancing the relationship quality, joint dependence increases a relationship's value-generating potential and thus promotes both partners' exchange performances ('increasing the overall pie size') (Gulati and Sytch 2007). The reason lies in the strengthened relational facets, which lead to a beneficial relationship climate. In the IS outsourcing context, trust, information, and knowledge sharing have frequently been found to lead to better outcomes for client organizations (Lacity et al. 2010). For example, Poppo and Zenger (2002) found support for the positive effect of relational governance on a client's satisfaction with the exchange relationship in terms of overall cost, output quality, and the supplier's responsiveness. Research in other fields has viewed this topic from a broader perspective. For instance, Jap (1999) showed that coordination efforts enhance profit performance and competitive advantages for both parties in a buyer-supplier dyad. For the automotive industry, Gulati and Sytch (2007) argued that greater trust, a higher level of information exchange, and dyadic cooperation and coordination lead to superior results for manufacturers and suppliers. Long-lasting, dysfunctional conflicts have been argued to decrease the satisfaction of exchange partners (Anderson and Narus 1990). Uzzi's research on inter-firm networks showed that, compared to loosely coupled, arm's-length ties, 'embedded' exchange relationships can result in economic advantages for both parties by fostering trust, information transfer, and joint problem-solving arrangements (Uzzi 1997). Thus, we posit:

H7: The higher the relationship quality in terms of a) trust b) commitment, c) diminished conflict d) coordination efforts, and e) information sharing, the higher a client's satisfaction with relationship exchange performance.

H8: The higher the relationship quality in terms of a) trust, b) commitment, c) diminished conflict, d) coordination efforts, and e) information sharing, the higher a supplier's satisfaction with relationship exchange performance.

6.4   Methodology and Research Process

To provide empirical evidence for our research model, we plan to conduct a survey involving experts in client and IT supplier firms of different sizes. To date, we have conducted a comprehensive literature review, 19 interviews in case studies, extensive questionnaire and scale pre-tests with 16 experts, and a two-sided pre-study with 43 participants. Our overall research process follows a three-step approach, as depicted in Figure 6-2.

1 Development of Model and Measures	2 Assessment and Refinement of Measurement Model	3 Final Validation of Structural and Measurement Model
Review of previous research on focal and related constructs (also in related disciplines) Multiple case studies including interviews with 19 experts Formulation of items based on literature review and expert interviews Development of questionnaires Pre-tests of questionnaires and scales with 16 experts	Two-sided pre-study with 43 responses from 367 companies Preliminary assessment of scales Refinement and elimination of items where appropriate	Quantitative study with a sample of approximately 400 client and IT supplier companies Assessment of measurement and structural model Hypothesis testing and analysis of results

Figure 6-2: Research Process

6.4.1 Conceptualization and Development of Measures

Two different versions of the questionnaire have been prepared, one addressing the client side and one the supplier side in an outsourcing relationship. Measures were developed based on a review of the literature and interviews with 19 practitioners. We then pre-tested the questionnaires and further refined them using comments collected from IT experts and scholars during the pre-tests.

We measured *client dependence* by asking participants to assess the client's dependence on a particular supplier in a specific IS outsourcing relationship. The measure for client dependence was based on several interviews with IT experts (Kaiser et al. 2012; Kaiser et al. 2013a) and prior studies in marketing channels (Frazier 1983; Hibbard et al. 2001; Kumar et al. 1998). The measure of *supplier dependence* was developed similarly.

To reflect *relative* and *joint dependence*, we plan to follow approaches suggested by prior articles in dependence research (Casciaro and Piskorski 2005; Gulati and Sytch 2007; Kumar et al. 1995). For a *client's dependence advantage*, the difference between supplier and client dependence (D_S-D_C) is calculated. This variable is then recoded to equal (D_S-D_C) if ($D_S > D_C$) and zero otherwise. Similarly, a *supplier's dependence advantage* is coded to (D_C-D_S) if ($D_C > D_S$) and zero otherwise. Assuming a sufficient sample size, our research model might then be analyzed for different cases, either a) when the client possesses a dependence advantage or b) when the supplier possesses a dependence advantage or c) on an aggregated level, including a *partner's dependence advantage* as depicted in Figure 6-1. For *joint dependence*, we sum the client and supplier dependence scores.

To measure the actual *use of a dependence advantage* by the dominant party, we used four newly developed items. Wording of the items was based on literature in the field (Cook 1977; Emerson 1962) and was closely tied to the construct 'restraint of power use' introduced by Heide and Miner (Heide and Miner 1992).

Measures for our relational variables were adopted from the following sources: *trust* (Fang et al. 2008a), *commitment* (Goo et al. 2009; Kumar et al. 1995), *conflict* (Kumar et al. 1992), *information sharing* (Goles et al. 2005; Lee and Kim 1999; Wüllenweber et al. 2008), and *coordination effectiveness* (Fang et al. 2008b; Jap 1999).

Measures for *client satisfaction with exchange performance* were based on (Kumar et al. 1992; Poppo and Zenger 2002; Zaheer et al. 1998). Measures for *supplier satisfaction with exchange performance* were adopted from the extant literature (Corsten and Kumar 2005; Kumar et al. 1992; Palmatier et al. 2006; Palmatier et al. 2007). All constructs were assessed on a seven-point Likert scale.

6.4.2 Assessment and Refinement of Measurement Model

To pre-validate our measures, we conducted a pre-study and obtained data from respondents in our target group. Personalized invitations were sent via an online social business network to 367 randomly selected IT professionals in client and supplier firms of different sizes. Participation was encouraged by offering a results report and a raffle for a tablet device. Reminder emails were sent two to three weeks later to all non-respondents who had initially indicated interest. A total of 43 completed questionnaires were received, 19 from the client side and 24 from the supplier side, yielding a response rate of 12%. The majority of the client participants were supplier managers (45%) and project managers (40%), whereas the suppliers were mainly (key) account managers (38%) and project managers (25%).

The purpose of our pre-study was to (1) ensure the questionnaire's comprehensibility, (2) shorten scales where appropriate, and (3) conduct preliminary reliability assessments. With regard to the first objective, we included an open question allowing respondents to comment on content, wording, and questionnaire length, and we adjusted the questionnaire accordingly.

We tried to identify candidates for elimination from reflective item pools by analyzing inter-item correlations, CITC, 'Cronbach's alpha if item deleted' statistics, and standard deviation scores (e.g., Sun 2012). When we had the impression, based on the statistics, that item formulations could be improved, we modified them slightly.

Item means and variances were inspected (DeVellis 2003, pp. 93-94). We assessed reliability with traditional techniques discussed in the literature. We confirmed unidimensionality for all our reflectively measured constructs with exploratory factor analysis (principal axis factoring, promax rotation, extraction based on factors with eigenvalues greater than 1). The reliability test results exceeded commonly suggested thresholds (Cronbach's alpha 0.7; minimal corrected item-total correlation 0.5): client dependence (0.842; 0.599), supplier dependence (0.923; 0.720), power use (0.891; 0.732), commitment (0.880; 0.526), trust (0.896; 0.777), conflict (0.926; 0.796), coordination effectiveness (0.895; 0.701), information sharing (0.867; 0.604), client satisfaction (0.856; 0.670), and supplier satisfaction (0.854; 0.646).

6.4.3 Main Survey

While our pre-study was a valuable research step, we will gather a new larger sample to provide conclusive, empirical validation of our research model. The main survey will use cross-sectional data and will be directed to client and IT supplier firms of different organizational sizes. Two separate studies will be launched; the 'client study' will have client organizations as the primary source, while the 'supplier study' will be sent to supplier firms in the first instance. We aspire to a total sample size of approximately 400 respondents.

We plan to test our hypotheses with structural equation modeling (SEM), a second-generation statistical method (Bagozzi and Yi 2012). More precisely, we plan to use covariance-based SEM, since it provides certain advantages over partial least squares (PLS) regression, for example, estimating models incorporating error terms (Diamantopoulos 2011). The final analysis will also include control variables such as contract duration, firm size, and type of outsourcing (IS development, maintenance, and/or operations).

6.5   Discussion and Expected Contributions

Our research project aims to contribute to IS outsourcing relationship and dependence research. With our transfer of dyadic dependencies to a 'new' application domain, the IS outsourcing field, our research model addresses expected effects of relative and joint dependence on the quality of outsourcing relationships (in terms of trust, commitment, and so forth) and exchange performance. One unusual characteristic of this study is that we do not merely focus on client outcomes; we also incorporate suppliers' satisfaction with exchange performance. This approach will

allow particular interpretations to benefit both parties. With this dyadic approach and the inclusion of power use, we also try to contribute back to the dependence research in reference disciplines (Gulati and Sytch 2007; Kumar et al. 1995). In particular, this study answers calls in the research literature to study in detail the role of interdependence as an inter-organizational relationship aspect in value appropriation and creation (Gulati and Sytch 2007; Wagner et al. 2010). To summarize, our research project aims to extend prior related models in reference disciplines by (1) distinguishing between the potential and the exercise of a power advantage, (2) exploring in detail the concomitant effects of dependence asymmetry and joint dependence on relationship quality and exchange performance, and (3) incorporating both parties' outcome evaluations.

A central question that our research focuses on is: To what extent is it beneficial to exercise a power advantage that has been achieved? Power usage at the expense of the weaker party has been argued to damage the relationship quality and thus to significantly endanger the value-creating potential of the exchange relationship. So it might happen that a more powerful party gets the bigger piece of the pie, but the pie itself has been dramatically diminished. In the worst case, the dominant party could even be confronted with a net loss (Gulati and Sytch 2007). Another important question is: what prevents powerful IT suppliers and clients from making extensive use of their power?

Our research model has also practical implications. Assuming that client and supplier dependencies can vary across relationships, different combinations of relative and joint dependence can emerge. Which strategy should companies involved in IS outsourcing pursue with regard to dependencies? Is it always advantageous to decrease one's own dependence, or can it also be beneficial to increase the partner's dependence, thereby boosting the joint dependence in the relationship? Knowing the positive and negative aspects of power use should provide practitioners with valuable insights. For that purpose, a detailed analysis of dependence asymmetry (or power usage) on relational variables should complete the picture.

Our main study will also enable us to analyze in more detail the characteristics of the IS outsourcing market. The study has the potential to provide insight into dependence structures that are 'common' to different kinds of outsourcing, e.g., IS development and operations, and to analyze the impact of relationship duration on the development of interdependence.

7 Dependence Asymmetry, Power Use, and Joint Dependence in IS Outsourcing Arrangements – A Structural Equation Model

To test the previously developed model (chapter 6), data about IS outsourcing relationships were collected through an online survey. In this chapter, the methodology used is first discussed in detail in section 7.1. The chapter continues with an evaluation of the measurement model in section 7.2.1, followed by a presentation of common dependence structures found in the observed outsourcing relationships in section 7.2.2 and a discussion of the partial least square analysis that was used to validate the structural model and test the hypotheses in section 7.2.3. The chapter closes with a discussion of the findings and implications in section 7.3 and of limitations and directions for future research in section 7.4.

7.1 Methodology

7.1.1 Data Collection

To investigate the causal model, data were collected from IS outsourcing relationships covering a range of IS outsourcing activities, such as development, maintenance, and operations. A total of 1,235 IT professionals were invited to respond to an online survey with regard to an outsourcing relationship they were personally involved in. Candidates from different client and supplier firms were randomly selected via a large online social business network. Selection was not restricted with respect to firm size or specific industries in the case of client firms (supplier firms all belong to the IT and software industry). Nevertheless, all participants had to pass a screening process and fulfill the following inclusion criteria: 1) they had to be employed at a company, excluding one-person enterprises, at the time of the survey; 2) they had to occupy a position relevant to the study's topic, with a sufficient involvement in an outsourcing relationship and adequate knowledge to respond to the study's questions; and 3) they had to have been in that specific position within the company for at least one year.

Requests for participation, including a short study description, were sent via the social network. Participation was encouraged by offering a results report and a raffle for a tablet device. Reminder emails were sent about two weeks later to all non-respondents who had initially indicated interest. A total of 100 completed questionnaires were finally received (50 on the client side and 50 on the supplier side), yielding a response rate of 8.1%.[14]

7.1.2 Sample Characteristics

The final data set of participants yielded the descriptive details shown in Table 7-1. Each outsourcing relationship was evaluated from either a client or a supplier perspective. First, the table shows the distribution of client and supplier firm sizes. For each relationship, respondents indicated the number of employees in their own company as well as in their partner firm (partner firm size is depicted in parentheses). In 36% of the outsourcing relationships investigated, client firms had 500 or fewer employees (statements from clients and suppliers equally considered). About 56% of the relationships involved supplier firms with 500 or fewer employees. In the case of client side responses, the number of IT employees was also gathered. Approximately 36% of the client companies had IT departments with 50 employees or less. Table 7.1 also lists the industries covered as well as the respondents' job titles. The majority of the client participants were project managers (40%) and supplier managers (22%), whereas the supplier-side participants were mainly project managers (44%) and (key) account managers (32%). On average, the survey respondents had 12 years of outsourcing experience.

To assess nonresponse bias in the sample, the first 25% and the last 25% of the responses were compared based on the response time in days (Armstrong and Overton 1977). This procedure assumes that late respondents tend to be similar to non-respondents in their characteristics. Utilizing t-tests, no significant differences with regard to the research model variables were found. Thus, nonresponse bias does not appear to be an issue.

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[14] This sample was collected as one part of a large-scale survey. The analysis here is based on data from 100 IS outsourcing relationships that were collected in the first phases of continuous data collection efforts.

Table 7-1: Sample Characteristics

Client Company Data		Supplier Company Data	
Client Company Size	**Frequency (Partner Frequency)**	**Supplier Company Size**	**Frequency (Partner Frequency)**
≤100	6% (14%)	≤ 50	20% (24%)
101–200	6% (12%)	51–100	20% (10%)
201–500	20% (14%)	101–200	10% (4%)
501–1,000	8% (8%)	201–500	14% (10%)
1,001–5,000	24% (18%)	501–1,000	4% (4%)
5,001–10,000	6% (10%)	1,001–5,000	18% (8%)
> 10,000	28% (24%)	> 5,000	14 % (36%)
n/a	2% (0%)	n/a	0% (4%)
Client Company IT Employees	**Frequency**		
≤ 10	26%		
11–50	10%		
51–200	14%		
201–500	12%		
501–1,000	12%		
>1,000	12%		
n/a	14%		
Industry Sector	**Frequency**	**Industry Sector**	**Frequency**
Manufacturing	22%	IT Consulting	18%
Wholesale and Retail Trade	12%	System Integration	6%
Transportation and Storage	12%	Individual Software Development	12%
Information and Communication	12%	Standard Software	6%
Financial and Insurance Activities	22%	Hosting Services	8%
Public Administration, Education and Human Health	14%	IT Services	28%
Other	6%	Other	22%
Client Respondents' Job Positions	**Frequency**	**Supplier Respondents' Job Positions**	**Frequency**
IT Department Manager (e.g., CIO)	16%	IT Department Manager	2%
Supplier Manager	22%	(Key) Account Manager	32%
IT Project Manager	40%	IT Project Manager	44%
IT Operations Manager	12%	IT Operations Manager	6%
IT Demand Manager	8%	IT Demand Manager / Consultant	8%
Other	2%	Other	8%

Because a single method was used to collect the data, a series of tests was conducted to analyze common method bias (CMB) in the dataset. A popular statistical approach that addresses CMB in partial least squares was developed by Liang et al. (2007). However, though it has frequently been applied in the last few years, a recent analysis concluded that this approach neither detects nor controls for common method variance (Chin et al. 2012). Consequently, it was decided to use two other approaches discussed in the literature: Harman's single factor test (Podsakoff et al. 2003) and the PLS marker variable approach recently introduced by Rönkkö and Ylitalo (2011).

Harman's single factor test using exploratory factor analysis was used to check whether the majority of the variance can be explained by a single factor (Podsakoff et al. 2003). The test was performed with principal axis factoring and by restricting the factors to extract to one. The results showed that a single factor accounted only for 35% of the variance, which is below the critical value of 50%.

In addition, the study followed the steps recommended by Rönkkö and Ylitalo (2011) to perform a marker variable approach in PLS models. In step 1, two marker items which were not part of the research model were used from the empirical dataset (e.g., 'my needs and desires are taken into account in planning the company's benefit program'). Ideal marker variables are theoretically unrelated to the study variables or at least show low correlations with the indicators of the study variables, but they must be subject to the same measurement effects (Bagozzi 2011; Lindell and Whitney 2001; Rönkkö and Ylitalo 2011). To conduct an initial diagnosis of the degree of common method variance in the data, the mean correlation between the marker items and the study items was calculated (Rönkkö and Ylitalo 2011). Ideally, these two groups should be related to each other only because they are affected by a common method factor. Correlations between marker items and study items ranged between -0.232 and 0.192, and most of these were positive. Since these values are within the 99% confidence interval of Pearson's correlation coefficient for a sample size of 100, there is no indication that any marker item has a stronger association with a study item than the correlation raised by the same method variance. This resulted in a mean correlation of 0.02 between marker items and study items, which is already below the suggested threshold of 0.05 (Rönkkö and Ylitalo 2011). Nevertheless, to be conservative, the analysis was continued by including the marker variable with regression paths to all the endogenous constructs in the structural model. A comparison of the baseline model (without marker variable) and the CMB model (with marker variable) showed no signs of serious common method bias in the dataset (see Table 7-4, p. 133). First, the marker

variable shows no significant effect on the endogenous variables. In addition, all parameter estimates which are significant in the baseline model show no significant difference between the two models ($\Delta \leq 0.015$), and none of these change to a lower significance class in the CMB model. Thus, both approaches indicate that it is unlikely that a common method bias distorts the results, and therefore both increase the confidence that valid effects have been found.

7.1.3 Measures

As discussed in section 6.4.2, measures were developed based on a comprehensive literature review and interviews with 19 practitioners. An extensive survey-based pre-study was then conducted to perform preliminary reliability and validity assessments. The final set of items appears in Table A-5 in the appendix.

All constructs follow a reflective measurement perspective (Jarvis et al. 2003). The questionnaire included the client and supplier dependence variables, the relational facets (commitment, trust, conflict, coordination effectiveness, and information sharing), use of a dependence advantage (or power use, PUSE for short), and the client's and supplier's satisfaction with the exchange performance. Measures for relative and joint dependence, as introduced in section 1.3.2, were calculated based on the individual client and supplier dependencies, following prior research from reference disciplines (Casciaro and Piskorski 2005; Gulati and Sytch 2007; Kumar et al. 1995). For joint dependence, the means of client dependence (five items) and supplier dependence (five items) were added together. To assess the degree of relative dependence, the absolute difference between the average client dependence and the average supplier dependence was calculated. A further binary variable was added to indicate whether the client (0) or the supplier (1) was the dominant party in the relationship. Variables for the dominant party's satisfaction and the weaker party's satisfaction were also created. For each data row, the construct dominant party satisfaction received either the values of client satisfaction (when the client was found to be the dominant party) or the values of supplier satisfaction (when the supplier was in a more powerful position). The construct of weaker party satisfaction was similarly created.

The questionnaire also included single-item measures of several extraneous elements that have been discussed as impacting exchange partners' satisfaction. First, the duration of the relationship has frequently been controlled for in studies of exchange performances (Gulati and Sytch 2007; Palmatier et al. 2007; Poppo et al.

2008). Relationship duration is measured as the longevity of the outsourcing relationship (for the particular information system) in years. The study further controlled for a characteristic of the information system involved – the degree of IS specificity. This variable might affect not only interdependence but also the need for relational variables like information sharing and trust (Gulati and Sytch 2007). It was measured as the degree to which the IS had been adapted to the client firm's characteristics (Alvarez-Suescun 2010; Saarinen and Vepsäläinen 1994). Additionally, the questionnaire included two characteristics of the relationship's contract – contract size and contract extensiveness – frequently found to positively impact outsourcing outcomes (Lacity et al. 2010). Contract size was measured as the total contract volume in Euro (Lacity et al. 2010). To control for contract extensiveness, respondents were instructed to assess the level of detail with which the contract describes the roles and responsibilities of each party (based on Lusch and Brown 1996; Wuyts and Geyskens 2005). The effects of these control variables on both exchange partners' satisfaction and on the model's mediating variables were examined.

7.1.4 Data Analysis

The research model presented in chapter 6 was operationalized as a structural equation model, using PLS as implemented in SmartPLS version 2.0 M3 (Ringle et al. 2005). PLS-SEM is a variance-based approach that maximizes the explained variance of the dependent variables by estimating partial model relationships in an iterative series of ordinary least squares regressions (Hair et al. 2012). The PLS technique is appropriate and well suited for this study, because it has modest requirements regarding sample size in contrast to its covariance-based counterpart (CB-SEM, Reinartz et al. 2009).

With n=100, the obtained sample meets the rule of thumb for robust PLS estimations that requires a minimum sample size of ten times the maximum number of paths aiming at any variable (Barclay et al. 1995; Hair et al. 2012). A PLS bootstrapping technique with individual sign changes and 500 resamples consisting of the same number of cases as the original sample was used to determine the statistical significance of the parameter estimates (Hair et al. 2012).

Although PLS, in contrast to CB-SEM, does not impose any assumptions regarding the distribution of the indicators and has been shown by prior research to be robust in situations where data are non-normal (e.g., Reinartz et al. 2009), guidelines for PLS use nevertheless suggest that data distribution should be checked for extreme values of

non-normality (Hair et al. 2012; Ringle et al. 2012). West et al. (1995) proposed an absolute skew value of >2 and kurtosis value >7 as a reference of substantial departure from normality. Overall, only a small to moderate skew or kurtosis (up to skew 1.3 and kurtosis 5.5) was found. Thus, this moderate deviation from a normality distribution is not very likely to be a problem in the PLS analysis.

7.2 Results

7.2.1 Validation of the Measurement Model

Several tests ensured the reliability and validity of the reflective multi-item measures. For all constructs, Cronbach's alpha clearly exceeded the recommended minimum of 0.7 (Nunnally 1978, see Table A-5, appendix). Additionally, with values greater than or equal to 0.869, composite reliability (CR) for all constructs was very high and exceeded the threshold value of 0.6 (Bagozzi and Yi 1988). These results suggest a strong internal consistency and reliability of the included measures.

Table 7-2: Descriptive Statistics, Correlations, and Square Roots of AVEs

Variables	1 RDEP	2 JDEP	3 PUSE	4 TRU	5 COM	6 CON	7 COEF	8 INFS	9 DSAT	10 WSAT	11 RELD	12 CSIZ	13 CEXT	14 ISSP
1 RDEP	**n/a**													
2 JDEP	-0.179	**n/a**												
3 PUSE	0.008	-0.040	**0.937**											
4 TRU	-0.128	0.042	-0.462	**0.921**										
5 COM	0.000	0.211	-0.380	0.722	**0.743**									
6 CON	-0.023	0.161	0.462	-0.727	-0.613	**0.912**								
7 COEF	-0.150	0.186	-0.373	0.767	0.698	-0.667	**0.875**							
8 INFS	-0.235	0.178	-0.315	0.681	0.648	-0.614	0.773	**0.831**						
9 DSAT	-0.086	0.079	-0.328	0.639	0.654	-0.617	0.649	0.518	**0.898**					
10 WSAT	-0.140	0.118	-0.460	0.726	0.692	-0.719	0.769	0.658	0.622	**0.891**				
11 RELD	0.045	0.131	0.010	-0.012	-0.080	0.074	0.128	0.015	0.068	-0.056	**n/a**			
12 CSIZ	0.041	-0.058	0.050	0.061	0.077	-0.049	0.040	0.038	0.033	0.038	0.089	**n/a**		
13 CEXT	-0.095	-0.133	0.023	0.287	0.339	-0.323	0.410	0.412	0.224	0.384	-0.060	-0.121	**n/a**	
14 ISSP	-0.090	0.194	0.035	-0.074	-0.078	0.108	-0.012	0.006	-0.220	-0.044	0.190	-0.077	-0.010	**n/a**

Notes: Diagonal elements are square roots of AVEs and off-diagonal elements present correlations

RDEP = Relative Dependence; JDEP = Joint Dependence; PUSE = Power Use; TRU = Trust; COM = Commitment; CON = Conflict; COEF = Coordination Effectiveness; INFS = Information Sharing; DSAT = Dominant Party Satisfaction; WSAT = Weaker Party Satisfaction; RELD = Relationship Duration; CSIZ = Contract Size; CEXT = Contract Extensiveness; ISSP = IS Specificity

The convergent validity of the constructs was additionally assessed by calculating AVE. Table A-5 (see appendix) shows that AVE values range from 0.553 (commitment) to 0.878 (power use) and thus exceed the critical value of 0.5 (Fornell

and Larcker 1981). Furthermore, all factor loadings on posited latent variables were significant at the p<0.001 level, greater than 0.5 (Bagozzi and Yi 1988), and, except for COM3 (0.564), even greater than 0.6 (Chin 1998a). Altogether, these results suggest the convergent validity of the employed constructs.

As evidence of discriminant validity, loadings of indicators on intended constructs were always higher than loadings on any other construct (Chin 1998b). In addition, all constructs fulfilled Fornell and Larcker's criterion. As Table 7-2 shows, the diagonal elements representing the square roots of AVE of the indicators within a construct were always higher than that construct's correlation with any other construct (off-diagonal elements, Fornell and Larcker 1981).

7.2.2 Descriptive Analysis of Interdependence

The data collected within this study provide the opportunity to identify dependence structures 'typical' to IS outsourcing relationships and thus to scrutinize and discuss the picture that is conveyed by the body of prior IS outsourcing research. Therefore, several descriptive analyses were performed. Across all relationships, we notice that the mean of client dependence (4.390) is higher than the mean of supplier dependence (3.786; see Table 7-3). This suggests that on average the client party is slightly more dependent on its supplier than vice versa. However, the strong focus of prior IS outsourcing research on client dependence does not appear to be strongly justified, given that 39% of supplier firms also show moderate to high levels of dependence (>4 on a scale from 1 to 7).

Table 7-3: Interdependence Characteristics

Construct	N	Mean	Median	Std. dev.	Min.	Max.
Client Dependence (1–7)	100	4.390	4.400	1.118	1.8	7
Supplier Dependence (1–7)	100	3.786	3.600	1.380	1	7
Relative Dependence (0–6)	100	1.352	1.200	1.052	0	5
Joint Dependence (2–14)	100	8.176	8.000	1.930	4	14

Further analyses can be conducted using the binary variable created to classify the dominant party in the outsourcing relationship. Out of 100 outsourcing relationships, 34 (34%) showed a client dominance (client dependence < supplier dependence), 62 (62%) showed a supplier dominance (client dependence > supplier dependence), and in 4 relationships (4%), the dependencies were perfectly symmetric (client dependence = supplier dependence). To control for a possible bias, responses made by client and supplier respondents were compared. An approximate ratio of one-third to two-thirds

(client vs. supplier dominance) was found on both sides, pointing to similar assessments made by client and supplier companies regarding dependence structures in the outsourcing market. The findings indicate that in the majority of cases, suppliers are in a more powerful position in IS outsourcing relationships. But again, it must be noted that in 34% of the relationships investigated, the client is the dominant party.

Concerning the size of dependence advantages, degrees of relative dependence ranged from 0 to 5. The majority of relationships (74%) showed a dominant party with a relatively low advantage ($0 < RDEP \leq 2$). In 19% of the relationships, there was a moderate dependence advantage ($2 < RDEP < 4$). In only 3% of the relationships did the dominant party achieve a high dependence advantage of greater than or equal to 4.

Regarding joint dependence, 13% of the relationships showed a low joint dependence ($2 \leq JDEP \leq 6$). A moderate joint dependence ($6 < JDEP \leq 10$) was reported in 71% of the relationships. High joint dependence ($JDEP > 10$) was found in 16% of the outsourcing relationships.

7.2.3 Validation of the Structural Model

The next step involves validating the structural model by assessing path coefficients, R-squared (R^2) values, and effect sizes in PLS. A summary of the test results is shown in Table 7-4.

Table 7-4: Structural Model Results

Relationships	Research Model (w/o Marker Variable)	CMB Model (with Marker Variable)
Impact of Relative Dependence on Relational Facets		
Relative Dependence → Power Use	0.012 n.s.	0.001 n.s.
Relative Dependence → Commitment	0.087 n.s.	0.096 n.s.
Relative Dependence → Trust	-0.094 n.s.	-0.082 n.s.
Relative Dependence → Information Sharing	-0.162 *	-0.157 *
Relative Dependence → Coordination Effectiveness	-0.081 n.s.	-0.069 n.s.
Relative Dependence → Conflict	-0.031 n.s.	-0.023 n.s.
Impact of Joint Dependence on Relational Facets		
Joint Dependence → Commitment	0.303 ***	0.310 ****
Joint Dependence → Trust	0.068 n.s.	0.077 n.s.
Joint Dependence → Information Sharing	0.206 **	0.209 **
Joint Dependence → Coordination Effectiveness	0.218 ***	0.227 ***
Joint Dependence → Conflict	0.110 n.s.	0.116 n.s.

Table 7-4 (continued)

Impact of Dep. Advantage Used (PUSE) on Relational Facets		
Power Use → Commitment	-0.382 ****	-0.374 ****
Power Use → Trust	-0.470 ****	-0.460 ****
Power Use → Information Sharing	-0.322 ****	-0.318 ****
Power Use → Coordination Effectiveness	-0.379 ****	-0.370 ****
Power Use → Conflict	0.478 ****	0.485 ****
Impact of Dep. Advantage Used (PUSE) on Parties' Satisfaction		
Power Use → Dominant Party Satisfaction	0.044 n.s.	0.046 n.s.
Power Use → Weaker Party Satisfaction	-0.122 **	-0.120 **
Impact of Relational Facets on Dominant Party Satisfaction		
Commitment → Dominant Party Satisfaction	0.340 ***	0.342 ***
Trust → Dominant Party Satisfaction	0.096 n.s.	0.088 n.s.
Information Sharing → Dominant Party Satisfaction	-0.078 n.s.	-0.078 n.s.
Coordination Effectiveness → Dominant Party Satisfaction	0.270 *	0.266 *
Conflict → Dominant Party Satisfaction	-0.244 **	-0.252 **
Impact of Relational Facets on Weaker Party Satisfaction		
Commitment → Weaker Party Satisfaction	0.148 *	0.149 *
Trust → Weaker Party Satisfaction	0.078 n.s.	0.073 n.s.
Information Sharing → Weaker Party Satisfaction	-0.001 n.s.	-0.000 n.s.
Coordination Effectiveness → Weaker Party Satisfaction	0.384 ****	0.382 ****
Conflict → Weaker Party Satisfaction	-0.228 **	-0.234 ***
Control Variables (only significant paths reported here)		
Relationship Duration → Coordination Effectiveness	0.136 *	0.128 *
Relationship Duration → Dominant Party Satisfaction	0.115 *	0.114 *
Contract Extensiveness → Trust	0.313 ***	0.298 ***
Contract Extensiveness→ Information Sharing	0.447 ****	0.441 ****
Contract Extensiveness → Coordination Effectiveness	0.462 ****	0.448 ****
Contract Extensiveness → Commitment	0.410 ****	0.399 ****
Contract Extensiveness → Conflict	-0.333 ****	-0.343 ****
Contract Size (lg) → Commitment	0.162 *	0.160 *
IS Specificity → Dominant Party Satisfaction	-0.185 **	-0.182 **
Effects of Marker Variable		
Marker → Power Use		-0.107 n.s.
Marker → Commitment		0.067 n.s.
Marker → Trust		0.092 n.s.
Marker → Information Sharing		0.037 n.s.

Table 7-4 (continued)

Marker → Coordination Effectiveness	0.082 n.s.
Marker → Conflict	0.064 n.s.
Marker → Dominant Party Satisfaction	0.031 n.s.
Marker → Weaker Party Satisfaction	0.021 n.s.

* p<0.1; ** p<0.05; *** p<0.01; **** p<0.001; n.s. not significant; two-tailed tests

R^2 (R^2 adj.): PUSE 0.005; TRU 0.334 (0.283); INFS 0.365 (0.317); COM 0.374 (0.326); CON 0.360 (0.311); COEF 0.406 (0.361); DSAT 0.584 (0.537); WSAT 0.710 (0.677)

As expected, joint dependence had a positive impact on trust, commitment, coordination effectiveness, and information sharing in the relationship. In particular, its effects on commitment, coordination effectiveness, and information sharing ($\beta = 0.303$, p<0.01; $\beta = 0.218$, p<0.01; $\beta = 0.206$, p<0.05) were statistically significant, supporting hypotheses H1b, H1d, and H1e respectively. However, the hypothesized relationships between joint dependence and trust (H1a) and conflict (H1c) were not supported.

Effects of relative dependence on relational facets were in most cases not significantly different from zero (H3a–H3d). An exception is the slightly significant negative effect on information sharing between the parties ($\beta = -0.162$, p<0.1), in support of H3e. Hypothesis H2, predicting a positive relationship between the levels of dependence advantage and its use, could not be supported. While a positive relationship between the two variables was postulated, no effect significantly different from zero was found. The next section will discuss this finding and provide potential reasons. All hypotheses concerning the negative impact of a party's actual use of power on the relationship quality were supported, and relatively large effects were found (H4a–e). Increased exploitation decreases trust ($\beta = -0.470$, p<0.001), commitment ($\beta = -0.382$, p<0.001), coordination effectiveness ($\beta = -0.379$, p<0.001), and information sharing ($\beta = -0.322$, p<0.001) while increasing conflict ($\beta = 0.478$, p<0.001).

Consistent with the expectations, commitment and coordination effectiveness had a positive and significant impact on the dominant party's satisfaction with the exchange performance ($\beta = 0.340$, p<0.01; $\beta = 0.270$, p<0.1). Thus, hypotheses H7b and H7d were supported. Hypothesis H7c, predicting a negative relationship between conflict and dominant party satisfaction, was also supported ($\beta = -0.244$, p<0.05). However, trust and information sharing showed no significant positive effect on the dominant party's satisfaction, rejecting hypotheses H7a and H7e.

The findings are similar for the weaker party's satisfaction with the exchange performance. Statistically significant positive impacts of commitment and coordination effectiveness ($\beta = 0.148$, p<0.1; $\beta = 0.384$, p<0.001) were found, supporting hypotheses H8b and H8d. As predicted by hypothesis H8c, level of conflict had a significant negative impact on the weaker party's satisfaction ($\beta = -0.228$, p<0.05). However, hypotheses H8a and H8e, involving trust and information sharing, were not supported.

Further tests explored whether true mediating relationships exist in the case of the relational facets. According to Baron and Kenny (1986), the first step in testing for mediation requires establishing a significant relationship between the independent and dependent variable when excluding mediators. Model tests showed significant positive relationships between joint dependence and dominant party satisfaction ($\beta = 0.146$, p<0.1), as well as between joint dependence and weaker party satisfaction ($\beta = 0.175$, p<0.05). The next steps require confirming that 1) the independent variable is a significant predictor of the mediator and 2) the mediator is a significant predictor of the dependent variable. The relational mediators, commitment and coordination effectiveness, fulfilled these two conditions. Additionally, the previously significant paths between joint dependence and satisfaction scores were greatly reduced and became insignificant after each of the two relational mediators was included, suggesting full mediation. This is underlined by Sobel's test (Sobel 1982), which is able to determine whether the reduction in the effect of the independent variable on the dependent variable is significant after including a mediator variable, and therefore whether the mediation effect is statistically significant. Mediating effects of commitment and coordination effects between joint dependence and satisfaction scores were all found to be significant at $p \leq 0.01$ (one-tailed). Taken together, the findings suggest that the impact of joint dependence on satisfaction is fully mediated by the two relational facets commitment and coordination effectiveness.

Continuing with hypothesis testing, the posited direct effect of power use on the dominant party's satisfaction was slightly positive but insignificant ($\beta = 0.044$, n.s.), rejecting H5. However, as expected, a direct negative effect of power use on the weaker party's satisfaction was found ($\beta = -0.122$, p<0.05), supporting H6. Again, we analyze this direct effect in its interplay with the postulated negative 'side effect' of power use on the relational facets. Based on Baron and Kenny (1986), the mediators coordination effectiveness, commitment and conflict come into question since these are 1) significantly affected by power use and 2) themselves significant predictors of

the dependent variable, weaker party satisfaction. In all three cases, the absolute path value between power use and weaker party satisfaction was reduced but remained significant in the corresponding mediation model (β = -0.220, p<0.001; β = -0.273, p<0.001; β = -0.216, p<0.01), in comparison to a regression model without a mediator variable (β = -0.474, p<0.001). Sobel's test indicates that the reduction in the path coefficient is significant in each case at p<0.001 (one-tailed). Thus, the partial mediation effects of commitment, coordination effectiveness, and conflict are found to be significant.

Among the control variables investigated, coordination effectiveness appeared to increase with relationship duration (β = 0.136, p<0.1). Relationship duration further increased dominant party satisfaction (β = 0.115, p<0.1). Contract size had a positive effect on the parties' commitment to the outsourcing relationship (β = 0.162, p<0.1). Furthermore, detailed contract drafting had strong effects on all relational mediators. While conflicts appeared to decrease with increasing contract extensiveness (β = -0.333, p<0.001), there was an increase in trust (β = 0.313, p<0.01), commitment (β = 0.410, p<0.001), information sharing (β = 0.447, p<0.001), and coordination effectiveness (β = 0.462, p<0.001). Furthermore, degree of IS specificity was found to decrease satisfaction of the dominant party (β = -0.185, p<0.01).

With R^2 values ranging from 0.334 to 0.406 (see Table 7-4), variances of relational mediators are moderately explained by the model (Chin 1998b). However, since the aim was not to fully explain these relational facets, this result can be considered satisfactory. Relative dependence accounted for only 0.5% of the variance of power use, which is not surprising given the insignificant path between the two constructs. The squared multiple correlations for the outcomes variables 'weaker party's satisfaction' (R^2 = 0.584) and 'dominant party's satisfaction' (R^2 = 0.710) point to the model's strong explanatory power.

An additional analysis of the effect sizes (f^2) of exogenous variables on endogenous variables revealed that all those with a significant influence also showed at least weak effects greater than 0.02 (Chin 1998b; Chin 2010). The effect sizes of joint dependence on relational facets (information sharing, coordination effectiveness, and commitment) ranged between 0.057 and 0.126. The highest f^2 values were reached by power use, with its moderate to large effects on the relational mediators (ranging from 0.162 for information sharing to 0.355 for conflict). A critical look at path coefficients

(β-values) further revealed that for a large portion of the supported hypotheses, substantial influences of at least 0.2 could be found (Chin 1998a).

7.3   Discussion and Implications

When a closer look at interdependence is taken, the study findings demonstrate that this critical facet of exchange arrangements impacts performance in IS outsourcing relationships to a substantial degree. Following prior research (Gulati and Sytch 2007; Kumar et al. 1995; Palmatier et al. 2007), interdependence was considered as encompassing two variables: joint dependence and relative dependence. The latter indicates a dependence asymmetry that provides a power advantage to the dominant party. To additionally account for a difference between a mere power (or dependence) advantage and its actual use, the latent variable 'party's use of dependence advantage' (power use, for short) was included in the research model. While dependence asymmetry and an actor's power use are mainly associated with value appropriation in relationships, joint dependence was introduced as increasing the relationship's value-generating potential. Using a sample of diverse IS outsourcing relationships, the role of interdependence as well as the concurrent value-related mechanisms were carefully examined.

First, we found evidence for the value-enhancing character of joint dependence. The study findings indicate that, in particular, three key relational facets – commitment, coordination effectiveness, and information sharing – increase under high levels of joint dependence. Commitment and coordination effectiveness, in turn, were found to lead to higher degrees of satisfaction with exchange performance for both the dominant party and the weaker party. These findings underscore and extend the results of Gulati and Sytch (2007), who found that relational facets – joint action and quality of information exchange – acted as significant mediators of joint dependence on manufacturer (that is, client) satisfaction in the automotive supply industry. While their study solely focused on performance outcomes for the client party of a dyad, this study confirmed that joint dependence – through the three relational mediators – has a significant impact on both dominant and weaker party satisfaction.

In this regard, it should be noted that no support could be provided for the expected mediating role of trust and information sharing. Although joint dependence showed a positive significant effect on information sharing, neither relational facet had a significant impact on the parties' satisfaction scores. While Kumar et al.'s findings suggested a positive impact of joint dependence on the level of trust (Kumar et al.

1995), Gulati and Sytch (2007) also failed to repeat this result for the automotive industry. Likewise, Palmatier et al. (2007) found no support for joint dependence being significantly related to (customer) trust in seller-distributor relationships. The results presented here also leave doubt about a significant influence of joint dependence on the level of trust in IS outsourcing relationships.

The interplay of joint dependence with conflict merits further discussion. We were not able to support hypothesis H1c, which predicted that in a high joint dependence setting parties experience fewer conflicts (Kumar et al. 1995). In line with bilateral deterrence theory (Lawler et al. 1988; Lawler and Bacharach 1987), both parties in a high joint dependence setting should have an increased fear of severe retaliation and be motivated to resolve conflicts cooperatively and quickly (Dwyer et al. 1987; Gundlach and Cadotte 1994; Kumar et al. 1995). However, we found a positive but not significant influence. This unexpected finding might be simply due to measurement differences across studies. Another possible explanation is that the environment of IS outsourcing relationships differs from the business relationships in other studies. Typical IS outsourcing endeavors are characterized, for example, by technology complexity and dynamic requirements (e.g., Goo et al. 2009), and projects of highly jointly dependent parties probably even more so. These characteristics might hinder the firms from resolving problems quickly, leading to an impression of many unresolved and longer-lasting conflicts. Since we were not able to provide sufficient empirical support, future IS research is encouraged to repeat and advance investigations in this regard, and to even consider alternative theoretical models of conflict development, such as conflict spiral theory (Lawler et al. 1988).

Turning to the role of power potentials and their active exploitation, different effects could be found in this study. The discussion of model development (section 6.3.2) debated whether it is the mere *presence* of a dependence advantage, or rather the *exercise* of such a potential, that produces behaviors that are damaging to the relationship quality. The results clearly suggest that mere dependence advantages are not significantly related to relational facets, or are at least related to a lower degree, as in the case of information sharing ($\beta_{RDEP \rightarrow INFS}$ = -0.162 vs. $\beta_{PUSE \rightarrow INFS}$ = -0.322). In contrast, the exercise of power advantages showed strong negatives effects on all relational facets considered, interfering with the value-enhancing effects of joint dependence. These findings suggest that (potential) dependence asymmetries as such are of less concern for relationships, because the damaging effects on relational facets seem to occur mainly under the actual use of a power advantage. This is good news for

dominant parties since this would entail that attaining a position of power does not necessarily substantially damage the relationship's quality. For the weaker party, however, these results are not completely reassuring, since dependence asymmetries still provide the basis for power advantages, which can easily switch from being unexercised to being exercised. While the results allow us to draw such conclusions, further research is urged to substantiate them.

Two relationships in particular remain puzzling. The first is the relationship between the levels of power potential and power use. The view that greater power potentials will lead to enhanced exploitation (Gaski and Nevin 1985) could not be supported. This suggests that the relationship between the variables is more complex and that additional variables which need to be controlled for must be included. As discussed in section 6.3.2, there might be further moderators that regulate the exercise of a power advantage, such as contractual safeguards (Wuyts and Geyskens 2005) or a party's fear of damaging its own market reputation (Wang 2008). Furthermore, it may be worth the effort to account for characteristics of the dominant firm, such as its size, and to check whether there are even fundamental differences between the ways that clients and suppliers handle power potentials. For example, Gulati and Sytch (2007) argued that small automotive suppliers tend to rarely use eventual dependence advantages against large manufacturer firms. Future research might also investigate a possible non-linear relationship between the two variables.

The second relationship that produced mixed results concerns the proposed value-appropriation mechanism. Besides an indirect negative effect through relational mediators, the theoretical model suggested a (direct) positive effect of an exercised power advantage on the dominant party's outcomes (so-called 'inconsistent mediation,' where the direct path was argued to be opposite in sign (+) than the indirect path (-); Davis 1985). Postulation of a positive effect was based on the idea that the dominant party is able to structure the exchange to its own benefit. Consequently, a negative relationship between power use and the weaker party's satisfaction was posited as the complement effect of value-appropriation. While we found support for the negative influence of power exercise on the weaker party's outcomes, the simultaneous positive outcome for the dominant party was not in evidence. An insignificant direct path from power usage to dominant party satisfaction was found in the sample when controlling for the relational mediators. The results suggest not only that the weaker party suffers from high power usage by the dominant party (a significant direct and indirect effect was found), but also that the dominant

party is frequently unable to realize benefits from power use. As an independent t-test underlines, in the case of low power usage (<3.5) the average dominant party's satisfaction level is 5.351, whereas under high power usage (≥3.5) the mean decreases to 4.720. The difference in means between the two groups is statistically significant (t(98)=3.148, p<0.01; given equality of variances according to Levene's test). A possible interpretation might be that dominant parties fare better when they refrain from exploiting (at least high) power positions. However, before clear recommendations for practice can be derived, further in-depth research is needed on the role of power use.

Another recommendation can be made for parties who have a high asymmetric dependence on their partner and are confronted with or afraid of exploitation. If it seems impossible to satisfactorily decrease their own dependence, an alternative might be to attempt to increase the partner's dependence (Emerson 1962; Kumar et al. 1995). In this way, a more balanced but highly joint dependence structure would be reached, allowing the weaker party to profit from the relationship's value-enhancing structure.

As another outcome, this study revealed interdependence constellations that appear to be characteristic for IS outsourcing relationships. It was confirmed that clients frequently face very powerful suppliers. However, in about one-third of the outsourcing arrangements, the client was the dominant party. Such an overview of market characteristics should not only be helpful for companies involved in outsourcing, market researchers, and consulting firms, but also informs research about client-supplier constellations which frequently occur but have been less studied, such as relationships dominated by clients.

In summary, many posited causal relations were supported with the data obtained, and some findings even raised new follow-up questions that open up valuable avenues for future research. First, the model offers high explanatory power for parties' satisfaction with exchange performance, which is a central outcome variable in IS outsourcing arrangements. Since prior IS outsourcing research has largely emphasized the client side and its outcomes, this study equally serves the interest of both parties. Second, relative and joint dependence were transferred to the IS outsourcing domain and proved to be antecedents of relational facets. Third, the construct 'use of a dependence advantage' was developed to separate the effects of potential and exercised power by the dominant party. The construct is an advancement of the construct 'restraint of power' offered by Heide and Miner (1992). With the inclusion

of this variable, the reference models developed by Kumar et al. (1995) and Gulati and Sytch (2007) were advanced. Using the distinction afforded by the variable, some inconsistent and contradictory findings in prior research might be reconciled in the future. Finally, this study substantiated the value-generation mechanism of joint dependence as well as interference with that mechanism arising from power use, and provided partial support for the concept of value appropriation. Given that we have entered a rather uncharted territory in IS research, the recommendations for practice have to be considered carefully, and further research is needed to confirm, argue, and discuss the study's findings.

7.4   Limitations and Directions for Future Research

In addition to major directions for future research, the study's limitations should be noted. One limitation arises from the use of the key-informant technique instead of simultaneously considering responses from different people involved in an outsourcing relationship. In addition, future research that overcomes the logistical and financial challenges of collecting full dyadic data (so that an outsourcing relationship is concurrently assessed by both the client and the supplier) would certainly yield valuable insights. For example, such data could be used to investigate whether there are significant perceptual incongruences between the parties regarding the dependence structure (see the discussion in section 3.5.1).

Another limitation is the sample size, which constrained the options during data analysis. Future plans include extending the sample to capture approximately 400 IS outsourcing relationships to pursue several objectives. The research model will be analyzed for different cases (see section 6.4.1): 1) when the client possesses a dependence advantage, 2) when the supplier possesses a dependence advantage, and 3) using aggregated data, when a party possesses a dependence advantage (as has been done here). A larger sample size will also enable us to study in detail the unexplained relationship between levels of dependence asymmetry and power use. The sample so far is not large enough to build subgroups of sufficient sizes to test for various moderation effects. As a side note, given a sample size of 400, covariance-based SEM will probably be a more appropriate technique than PLS for hypothesis testing (Reinartz et al. 2009).

Further research is needed to explain value appropriation under power use and to clarify under which circumstances or to what degree a dominant party might be able to benefit from exploiting its exchange partner. For this purpose, it may be advantageous

to include a more fine-grained construct of satisfaction rather than relying only on a high-level measure as was done in this study. This would allow exploring whether power use has different effects on various satisfaction facets. Interestingly, joint dependence was found to promote commitment, coordination effectiveness, and information sharing. Unlike trust and conflict, these facets capture 'more than sentiments' and present more active forms of collaboration. The findings suggest that under conditions of joint dependence, parties align their activities, but such configurations do not necessarily guarantee conflict-free and trusting relationships. As discussed earlier, further research might study whether this is unique to IS outsourcing relationships or whether it is generalizable to other kinds of exchange relationships.

Overall, future IS outsourcing research is encouraged to pay more attention to interdependence and power use. Besides additional surveys, case studies especially might significantly advance our knowledge in this field and help explain some outstanding issues evolving from this and related research.

8   Conclusion and Summary of Key Findings

The purpose of this thesis was to enhance our understanding of the management of client-supplier relationships, which is critical to exchange performance and overall outsourcing success. More precisely, this thesis aimed at achieving the following three goals using both qualitative and quantitative studies in a mixed-method approach (as described in section 1.2):

- Increase our understanding of firm-level management of IS outsourcing relationships

- Develop a conceptualization and operationalization of client and supplier dependence in IS outsourcing relationships

- Analyze the impact of interdependence (i.e., combined client and supplier dependence) on relationship quality and exchange performance

The studies presented in this thesis provided several theoretical and managerial-related insights about IS outsourcing relationships. Section 8.1 briefly summarizes the theoretical contributions of these studies, while section 8.2 is devoted to the practical contributions and recommended actions.

8.1   Theoretical Contributions

This thesis started with a detailed study on the implementation of IT SRM in client firms (chapter 2), which was introduced as a critical success factor for clients in outsourcing arrangements. The firms that participated in the case study showed increased management attention to IT SRM that led to changes in the firms' organizational design at the 'client-supplier interface.' The study therefore aimed at enhancing our knowledge about developments in IT SRM and its current shape in practice. We investigated IT SRM using a conceptual framework of organizational design – covering strategy, structure, and processes. In the strategy category, one key finding was that the case study organizations have in part significantly and abruptly reduced the number of their suppliers in recent years. We recalled Clemons et al.'s 'move to the middle' hypothesis, which predicted a move to increased outsourcing but with fewer suppliers (Clemons et al. 1993). However, the two parts of this move –

increased outsourcing and a reduction in the number of suppliers – did not seem to occur concurrently. The study findings show that the investigated companies had increased their degrees of outsourcing more than five years ago and kept them at a high and rather constant level. In contrast, significant reductions in the IT supplier bases appear to have taken place only recently, with some still planned for upcoming years. Thus, the case study companies seem to have adjusted their sourcing strategies, striving for potential cost savings through supplier base reductions, rather than relying solely on an 'optimal' degree of outsourcing. With regard to structure, we found different organizational models for IT SRM, varying in the degrees of centralization and modes of sourcing. The predominant in-house model was a hybrid (centralized-decentralized) structure in which IT organizations have established one or more centralized units for at least some of their IT SRM activities. With regard to process, the investigation identified IT SRM activities and formalization as well as lateral connections were presented as means to bridge barriers between different organizational entities (e.g., the purchasing and IT departments). Overall, this initial study pointed to important but barely researched issues in the field of outsourcing relationship management and formulated several directions for future research.

The thesis then turned its focus to the *client-supplier relationship* in IS outsourcing arrangements and studied the role of interdependence in depth. It was argued that in good relationship management, interdependence between the parties should not be neglected but should instead be actively managed. Otherwise, companies are prone to be exploited or to remain in less favorable dependence structures. Despite its practical relevance, dependence was found to be understudied in IS outsourcing research. Therefore, qualitative and quantitative studies were conducted to fill important research gaps.

First, as a major theoretical contribution, we drew on dependence research from reference disciplines and extended the prevailing simplistic view of dependence in our domain. Case studies were conducted to investigate dependencies *on both sides* of an outsourcing dyad (chapters 3 and 4). Given that most prior IS outsourcing research has focused on only one side (the client), this dyadic approach was able to draw a complete picture as suggested by traditional dependence research (Emerson 1962). The research efforts resulted in a dyadic conceptualization of client and supplier dependence and the identification of salient determinants (importance, substitutability, and spillover effects), as well as their influencing facets. In particular, spillover effects, which occur in settings with multiple exchange relationships between the same parties,

emerged as an unanticipated determinant that seemed to influence perceived dependence. Largely unnoticed in prior dependence research, this concept has the potential to advance the current state of dependence research and to contribute back to the reference disciplines.

Second, given the lack of prior efforts to thoroughly conceptualize and operationalize 'dependence' in IS outsourcing arrangements, the case study findings were used as the foundation for the succeeding construct development process (chapter 5). Two multidimensional second-order constructs, capturing client and supplier dependence, were developed and pre-validated through interviews, Q-sorting and a two-sided survey. For the future, a large-scale survey is planned that aims to provide final and conclusive validation for the developed constructs. These research efforts close an important research gap and should prove useful for future IS studies that require conceptualizations or measures of organizational dependencies.

Third, relative and joint dependence, combinations of the individual firm-level dependencies, were investigated. These two constructs allowed us to study the consequences of inter-organizational dependence and to extend the current scope of IS outsourcing research. An initial descriptive analysis of 100 IS outsourcing relationships offered insights into 'typical' dependence structures from client *and* supplier perspectives. A research model encompassing effects of relative and joint dependence on relational facets and satisfaction with the exchange performance was then developed (chapter 6) and tested with structural equation modeling (chapter 7), extending prior related models in marketing channels (Kumar et al. 1995) and the automotive industry (Gulati and Sytch 2007). One unusual characteristic of this study is that we did not focus solely on client outcomes; rather, we considered the interests of both parties in outsourcing dyads. Furthermore, with the development of the 'PUSE' (power use) construct, we were able to distinguish between mere power potentials and their actual use, and this newly developed scale opens up various opportunities for dependence and power research across disciplines.

The survey results also provided theoretical contributions. The findings showed a positive effect of joint dependence on the relational facets of commitment, coordination effectiveness, and information sharing, thus supporting its posited value-enhancing character. In contrast, exploitation of a dependence advantage was shown to diminish the dyadic relationship's value-generating potential and decrease performance outcomes for both the weak and the dominant party. In addition, partial

support was found for a 'value appropriation' mechanism. While we were not able to provide evidence for a direct, positive effect of power use on the dominant party's satisfaction, a significant negative effect on the weaker party's satisfaction was evident, as expected. To summarize, this study explored the consequences of dependence asymmetry, power use, and joint dependence for outsourcing relationships and was largely able to provide evidence for their expected rival effects.

There are many valuable opportunities for future IS research in the field of inter-organizational relationships where the use of single or combined dependencies could provide a significant contribution. Promising research topics include, for example, dependence and innovation generation (Jean et al. 2012), as well as its impact on influence strategies, adoption, and compliance (Hart and Saunders 1998; Payan and McFarland 2005). Current research has not yet exploited the full potential of dependence research in the IS domain, and it is hoped that the findings and foundations laid by this thesis will inspire future work.

8.2   Practical Contributions and Recommended Actions

This thesis also provides practical contributions concerning the management of outsourcing relationships. The study on organizational design decisions in IT organizations provides a number of helpful insights for practitioners, especially for decision makers in client companies. With a detailed look at five large-scale organizations, recent advancements in IT SRM were presented, providing insights into effective ways to manage IT supplier relationships. The case study elaborated fundamental models and sourcing strategies which should benefit companies currently involved in organizing or improving their IT SRM activities.

Equally, the thorough investigation of interdependence in IS outsourcing relationships produced findings of practical relevance. First, the conceptualization of client and supplier dependence offers insights for client and supplier firms into how to influence dependence positions. A list of dependence determinants and influencing facets was provided based on a comprehensive literature review and interviews with experts. The identified factors provide a basis that can be used by a firm to extensively assess its own dependence *as well as* its partner's dependence in an outsourcing relationship. They can, in particular, serve as a checklist for the parties during all phases of the outsourcing lifecycle. For example, for client firms engaged in IS outsourcing, monitoring dependence and their own influencing factors is a relevant activity for all phases, from supplier selection to renewing/terminating a contract (see

IT SRM process, section 2.2.3). Even changes in sourcing strategies will frequently have an impact on the firm's dependence position. Given the potential detrimental effects of a strong dependence (disadvantage), it appears to be important to regularly monitor changes in dependence positions and review all major management decisions (e.g., expansion of the contract volume and initiating or terminating other joint relationships with the exchange partner) with respect to their impact on the dependence structure. With relative and joint dependence, two facets that are critical to outsourcing success were presented, and practitioners are encouraged to pay more attention to those.

As previously outlined, the dependence map used in this thesis might serve practitioners as a powerful visualization tool for portraying their own and their partner's dependence positions, as well as for assessing relative and joint dependence. Further, a chart using the determinants 'importance' and 'substitutability' as dimensions might be useful for analyzing a firm's own dependence in detail (see Figure 3-3 in section 3.5.2). Spillover effects might be added as a third dimension, if multiple relationships with the same exchange partner exist. Moreover, since a dependence on an exchange partner can change, capturing different data points and displaying the development of dependence over time might be useful for discovering unwanted developments at an early stage (see Kaiser and Buxmann 2012b for an example).

The case studies also indicated that differences can potentially occur between the client and supplier firms' perceptions of dependencies (see section 3.5.1), and therefore it might be crucial for firms to involve their exchange partners in the assessment of dependencies as well. Even though this will not be possible in every relationship, as it depends on the transparency and openness between the parties, it might safeguard parties from severely miscalculating the other's behavior or acting on suboptimal decisions.

It must be noted that dependence is only one of several crucial aspects in the management of outsourcing relationships. Successful relationship management must also keep an eye on many other outsourcing risks, such as hidden costs, security issues, and a loss of control over data (Lacity et al. 2009). Prior findings and the results of this thesis underline, however, the relevance of dependencies in outsourcing relationships. Among other effects, dependence 1) determines a company's need to remain in a (possibly suboptimal) business relationship, 2) determines a firm's

bargaining power in day-to-day operations and contract negotiations, 3) influences the evolution of the relationship's quality, and 4) impacts the company's exchange ratio and thus its satisfaction with the business relationship.

Therefore, this study's findings suggest that a *dependence disadvantage* should generally be either avoided or minimized, since it provides the potential for the dominant party to exploit its power in the situation. However, three points must be noted. First, avoiding a relative dependence disadvantage does *not* necessarily imply eschewing a medium or high dependence on an exchange partner. It has been argued in particular that balanced but high joint dependence relationships can lead to positive outcomes for both parties ('enhancing the value pie'). Second, a party's reducing of a dependence disadvantage by decreasing its own dependence might be cost-intensive and economically disadvantageous. An alternative strategy might therefore be to increase the partner's dependence instead, in order to balance dependencies and increase joint dependence (see also Kumar et al. 1995). Third, another strategy might be to take countermeasures that hinder the powerful party from making use of its advantage. Actions that come to mind include, for example, implementing early contractual safeguards against various forms of exploitation (e.g., contractually securing favorable terms and conditions in case of contract extensions) or selecting an exchange partner known to act fairly or to be interested in a long-term relationship.

The survey findings further suggest that on average dominant parties do not benefit from extensively exploiting a power position. Indeed, we found the opposite: their satisfaction with the exchange performance decreased significantly in such relationships. Dominant firms should therefore carefully weigh whether the use of power really serves their interest, or whether, if they attempt to obtain a bigger piece of the pie, detrimental side effects will occur and cause the firm's exchange ratio to deteriorate.

Appendix

Appendix to chapter 2

Table A-1: Framework to Assess Descriptive Case Studies (adapted from Dubé and Paré 2003)

Research Design	
Clear research questions	Yes, 'how'
Multiple-case design	Yes, five cases
Nature of single-case design	Not relevant, due to multiple-case design
Replication logic in multiple-case design	Both theoretical and literal replication logic
Unit of analysis	Companies' IT organizations with special focus on IT supplier relationship management
Pilot case	Not conducted, since it is recommended for studies with highly exploratory nature
Context of the case study	Research was conducted both off-site (questionnaire) and on-site (face-to-face interviews). The two data collection periods were well-described and the period of investigation was reported (January to March 2011). Nature of data was retrospective and ongoing.
Team-based research	Yes
Different roles for multiple investigators	Author 1 and two research assistants in data collection Author 1, 2 and two research assistants in data analysis
Data Collection	
Elucidation of the data collection process	Yes
Multiple data collection methods	Yes, questionnaires, interviews and documents
Mix of qualitative and quantitative data	Yes, both qualitative and quantitative data
Data triangulation	Yes, for different sources
Case study protocol	Yes
Case study database	Yes
Data Analysis	
Elucidation of the data analysis process	Yes, see section 'Data Analysis'
Field notes	Yes

Table A-1 (continued)

Coding and reliability check	Reliability of study findings was tried to reach in several ways. First, evaluation of questionnaires and interview data were checked by research assistants to minimize errors and biases. Furthermore, interpretations were discussed in case analysis meetings. The use of a case study protocol and database present herein important prerequisites for ensuring reliability (Yin 2003).
Data displays	Yes
Flexible & opportunistic process	Yes. Since our data collection process overlapped with an initial data analysis, process flexibility was guaranteed. An initial analysis of the completed questionnaire data helped to make adjustments in the interview guide and to ask supplementary questions.
Logical chain of evidence	Yes. Our research questions lead to the conceptual framework of organizational design. Then the framework guided data collection and analysis that provided finally evidence to our initial research questions.
Searching for cross-case patterns	Yes
Quotes (evidence)	Yes
Project reviews	Yes, in form of case analysis meetings

Appendix to chapter 5

Table A-2: Reflective Client-Side Items

Construct and Source	Items
Importance[a] (based on Kumar et al. 1998)	
CIMP1	The IT service delivered by this supplier in this contractual relationship belongs to the top [1–5% (highest importance), 6–10%, 11–20%, 21–40%, 41–60%, 61–80%, 81–100% (lowest importance)] with regard to importance for our business.
CIMP2	The IT service that is delivered by this supplier is very essential to our business.
CIMP3	The supplier's IT service has a high value contribution to our business.
CIMP4	There are only a few IT services that make a higher contribution to our business processes than this supplier's IT service.
CIMP5	The IT service delivered is very important to our company.
Substitutability[a] (based on El-Ansary and Stern 1972; Kumar et al. 1998)	
CSUBST1	It would require great effort to replace this supplier in our contractual relationship with an alternative supplier.
CSUBST2	Switching to an alternative supplier for such an IT service would hardly be possible.
CSUBST3	It would be very difficult for our company to obtain this IT service from a different supplier.
CSUBST4	Switching barriers to alternative suppliers are very high for this particular IT service.
Spillovers[a] (newly developed)	
CSPILL1	If we terminated this particular contractual relationship to the supplier prematurely, we would have to expect adverse reactions (e.g., price increases) in other business relationships with this supplier.
CSPILL2	The supplier would react to our disadvantage in other joint business relationships, as soon as we would switch here to another supplier.
CSPILL3	In case we would dissolve this contract, the supplier could damage us a lot with negative reactions in other joint business relationships.
CSPILL4	If we did not extend this contract, we would face high sanctions in other business relationships with this supplier.
Client Dependence[a] (based on Frazier 1983; Hibbard et al. 2001; Kumar et al. 1998)	
CDEP1	In this contractual relationship, our company is very dependent on this supplier.
CDEP2	To achieve our business goals, our company has to maintain this relationship to the supplier.
CDEP3	A cancellation of this contractual relationship to the supplier could be very easily compensated by our company. [R]
CDEP4	Our company would face great challenges if the supplier did not continue the contractual relationship.

Notes:

[a] except for CIMP1, a seven-point scale (completely disagree – completely agree) was used

[R] reverse coded

Table A-3: Reflective Supplier-Side Items

Construct and Source	Items
Importance[a] (based on Kumar et al. 1998)	
SIMP1	This contractual relationship belongs to the top [1–5% (highest importance), 6–10%, 11–20%, 21–40%, 41–60%, 61–80%, 81–100% (lowest importance)] with regard to importance for our business.
SIMP2	This contractual relationship with this client makes a significant contribution to our business success.
SIMP3	This business relationship is very important to us.
SIMP4	There are only a few other business relationships that contribute significantly more to our company's success than this relationship.
SIMP5	A termination of this contractual relationship would be a significant loss for our company.
Substitutability[a] (based on El-Ansary and Stern 1972; Kumar et al. 1998)	
SSUBST1	We would face great difficulties in replacing the client in this business relationship with another client.
SSUBST2	It would be very difficult for our firm to achieve financial and strategic goals associated with this relationship with alternative clients.
SSUBST3	It would incur high costs to gain an alternative client that would purchase this IT service to the same extent as our current client.
SSUBST4	Switching barriers to alternative clients are very high.
Spillovers[a] (newly developed)	
SSPILL1	If we terminated this particular contractual relationship with the supplier prematurely, we would have to expect adverse reactions in other business relationships with this supplier.
SSPILL2	The client would react to our disadvantage in other joint business relationships, as soon as we were to switch to another client in this relationship.
SSPILL3	If we were to dissolve this contract, the client could damage us a lot with negative reactions in other joint business relationships.
SSPILL4	If we did not extend this contract, we would face high sanctions in other joint business relationships.
Supplier Dependence[a] (based on Frazier 1983; Hibbard et al. 2001; Kumar et al. 1998)	
SDEP1	Overall, maintaining the contractual relationship with this client is critical to the achievement of our firm's organizational goals.
SDEP2	With regard to this contractual relationship, our firm is very dependent on this client.
SDEP3	Cancellation of this contractual relationship with our supplier could be very easily compensated by our company. [R]
SDEP4	Our firm would face great challenges if the client did not continue the contract.

Notes:
[a] except for SIMP1, a seven-point scale (completely disagree – completely agree) was used
[R] reverse coded

Table A-4: Correlation Statistics for Client and Supplier Dependence Constructs (Pre-study Data)

Client					**Supplier**				
Variables	1 CIMP	2 CSUBST	3 CDEP	4 CSPILL	Variables	1 SIMP	2 SSUBST	3 SDEP	4 SSPILL
1 CIMP	**0.669**				1 SIMP	**0.894**			
2 CSUBST	0.346	**0.913**			2 SSUBST	0.718	**0.834**		
3 CDEP	0.515	0.806	**0.868**		3 SDEP	0.876	0.756	**0.884**	
4 CSPILL	0.033	0.333	0.252	**0.872**	4 SSPILL	0.482	0.190	0.383	**0.824**

Notes: Square roots of AVE (diagonal elements) and correlations between reflectively measured constructs (off-diagonal elements)

Appendix to chapter 7

Table A-5: Survey Items			
Construct and Source	**Items**	**Factor loadings**	**α/CR/AVE**
Client Dependence[a] (based on Frazier 1983; Hibbard et al. 2001; Kumar et al. 1998)			0.818 / - / -
CDEP1	In this contractual relationship, our company/the client[‡] is very dependent on this supplier/our company.	n/a	Mean: 4.390 Std. dev.: 1.118
CDEP 2	To achieve our/its business goals, our company/the client has to maintain this relationship to the supplier/our company.	n/a	
CDEP 3	A cancellation of this contractual relationship with the supplier/our company could be very easily compensated by our company/the client.[R]	n/a	
CDEP 4	If the relationship were to end earlier than contracted, our/the client's business goals would be negatively affected.	n/a	
CDEP 5	Our company/the client company would face great challenges if the supplier/our company did not continue the contractual relationship.	n/a	
Supplier Dependence[a] (based on Frazier 1983; Hibbard et al. 2001; Kumar et al. 1998)			0.904 / - / -
SDEP1	With regard to this contractual relationship, the supplier/our firm is very dependent on our company/this client.	n/a	Mean: 3.786 Std. dev.: 1.380
SDEP2	Overall, maintaining the contractual relationship with our company/this client is critical to the achievement of the supplier's/our firm's organizational goals.	n/a	
SDEP3	Cancellation of this contractual relationship with our company/this client could be very easily compensated by the supplier/our company.[R]	n/a	
SDEP4	If the relationship were to end earlier than contracted, the supplier's/our business goals would be negatively affected.	n/a	
SDEP5	The supplier/our firm would face great challenges if our company/the client did not continue the contract.	n/a	
Relative Dependence (based on Casciaro and Piskorski 2005; Gulati and Sytch 2007; Kumar et al. 1995)			- / - / -
RDEP	Calculated as absolute difference between mean (CDEP) and mean (SDEP)	n/a	Mean: 1.352 Std. dev.:1.052

Table A-5 (continued)

Joint Dependence (based on Casciaro and Piskorski 2005; Gulati and Sytch 2007; Kumar et al. 1995)			- / - / -
JDEP	Calculated as sum of mean(CDEP) and mean(SDEP)	n/a	Mean: 8.176 Std. dev.:1.930
Power Use[b] (newly developed, inspired by Heide and Miner 1992; Cook 1977; Emerson 1962)			0.931/0.956 /0.878
PUSE1	In this business relationship, the dominant party uses its power advantage to influence the relationship to its own benefit.	0.909	Mean: 2.990 Std. dev.: 1.426
PUSE2	The dominant contractual party uses the unequal balance of power to the detriment of the weaker party.	0.941	
PUSE3	The more powerful party uses the relation of dependence to extract a greater benefit from the business relationship.	0.960	
PUSE4	The less dependent contractual party can push through its own interests. [R] *	n/a	
Commitment[a] (adapted from Goo et al. 2009; Kumar et al. 1995)			0.839/0.879/0.553
COM1	Both parties are willing to commit resources to sustain the business relationship.	0.776	Mean: 5.321 Std. dev: 0.917
COM2	If we/the client requested it, our supplier/we would be willing to make a further investment to support our/its needs.	0.631	
COM3	We/the client are/is willing to put more effort and investment into building this business relationship.	0.564	
COM4	Even if they could, the client/ supplier would not drop our organization as a supplier/client because they like being associated with us.*	n/a	
COM5	We want to remain a customer/supplier for the supplier/client because we genuinely enjoy our relationship with them.	0.832	
COM6	The continuation of this relationship with the supplier/client is very important to us.	0.844	
COM7	The supplier/client expects the relationship with us to continue for a long time.	0.770	
Trust[a] (adapted from Fang et al. 2008a)			0.910/0.943/0.848
TRU1	Both parties trust each other.	0.936	Mean: 5.333 Std. dev.: 1.062
TRU2	Both parties are always frank and truthful in dealing with each other.	0.909	
TRU3	Both parties believe that the other party would go out of its way to make sure the relationship is not damaged or harmed.	0.916	

Table A-5 (continued)

Conflict[a] (adapted from Kumar et al. 1992)			0.899/0.937/0.832
CON1	The relationship between us and the supplier/client can be best described as tense.	0.925	Mean: 2.519 Std. dev.: 1.367
CON2	The client and the supplier have significant disagreements in their working relationship.	0.925	
CON3	The supplier and the client frequently clash on issues relating to how the supplier should provide the IT service.	0.886	
Coordination Effectiveness[a] (adapted from Fang et al. 2008b; Jap 1999)			0.847/0.907/0.765
COEF1	This supplier/client and my company work together very effectively to exploit unique opportunities.	0.898	Mean: 4.602 Std. dev.: 1.127
COEF2	Both companies are always looking for synergistic ways to do business together.	0.830	
COEF3	We work effectively on joint projects tailored to our joint needs.	0.895	
Information Sharing[a] (adapted from Goles et al. 2005; Lee and Kim 1999; Wüllenweber et al. 2008)			0.777/0.869/0.691
INFS1	We and our supplier/client provide each other with sufficient information to perform the IT service.*	n/a	Mean: 4.789 Std. dev.: 1.085
INFS2	We and our supplier/client effectively exchange information with each other.	0.886	
INFS3	We and our supplier/client each share environmental information that affects the other's business.	0.690	
INFS4	We and our supplier/client share information that helps establish business planning.	0.901	
Client Satisfaction[a] (adapted from Kumar et al. 1992)			0.891/ - / -
CSat1	The association with this supplier/our company has been very successful for our company/the client.	n/a	
CSat2	Taking all the different factors into account, the supplier's/our company's performance is excellent.	n/a	
CSat3	Overall, the supplier's/our company's performance has fallen far short of expectations.[R]	n/a	
Supplier Satisfaction[a] (adapted from Kumar et al. 1992)			0.871/ - / -
SSat1	The association with us/this client has been very successful for the supplier/us.	n/a	
SSat 2	Taking all the different factors into account, this contractual relationship has gone extremely well for the supplier/our company.	n/a	
SSat 3	The supplier's/our company's expectations for this relationship have been fully met.	n/a	

Table A-5 (continued)

Dominant Party Satisfaction			0.880/0.926/0.807
DSAT1		0.921	Mean: 5.067
DSAT2	If (client=dominant party) then DSAT=CSAT else DSAT=SSAT	0.926	Std. dev.: 1.031
DSAT3		0.846	
Weaker Party Satisfaction			0.870/0.920/0.793
WSAT1		0.909	Mean: 5.105
WSAT2	If (client=weaker party) then WSAT=CSAT else WSAT=SSAT	0.908	Std. dev.: 1.064
WSAT3		0.854	
Relationship Duration (adapted from Goo et al. 2007)			- / - / -
RelDur	How many years has this contractual relationship lasted (including contract extensions where appropriate)?	n/a	Mean: 6.890 Std. dev.: 5.223
Contract Extensiveness[a] (adapted from Lusch and Brown 1996; Wuyts and Geyskens 2005)			- / - / -
CEXT	The relationship's underlying contract clearly defines the roles and responsibilities of each partner.	n/a	Mean: 5.420 Std. dev.: 1.350
Contract Size (adapted from Lacity et al. 2010)			- / - / -
CSIZ	What is the total contract size in Euro? (logarithm)	n/a	Mean: 3.244 Std. dev.: 1.054
IS Specificity[c] (adapted from Alvarez-Suescun 2010; Saarinen and Vepsäläinen 1994)			- / - / -
ISSP	To what degree has the system been adapted to the client firm's specific requirements?	n/a	Mean: 3.440 Std. dev.: 1.157

Notes:

[*] dropped items

[‡] questionnaire version for clients / questionnaire version for suppliers

[a] seven-point scale (completely disagree – completely agree)

[b] seven-point scale (to a very small extent – to a very great extent)

[c] five-point scale (1 - standard solution (no modification), 2 - somewhat modified, 3 - moderately modified, 4 - strongly modified, 5 - individual solution)

[R] reverse coded

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