

POSITIONING CLIENTS IN DYADIC DEPENDENCE STRUCTURES OF IS OUTSOURCING RELATIONSHIPS – CONCEPTUALIZATION AND EMPIRICAL FINDINGS

Completed Research Paper

Jasmin Kaiser

Technische Universität Darmstadt
Chair of Information Systems
Hochschulstraße 1, 64289 Darmstadt,
Germany
kaiser@is.tu-darmstadt.de

Thomas Widjaja

Technische Universität Darmstadt
Chair of Information Systems
Hochschulstraße 1, 64289 Darmstadt,
Germany
widjaja@is.tu-darmstadt.de

Peter Buxmann

Technische Universität Darmstadt
Chair of Information Systems
Hochschulstraße 1, 64289 Darmstadt,
Germany
buxmann@is.tu-darmstadt.de

Abstract

While dependence is a well-known concern in IS outsourcing, there is little literature dealing with this phenomenon as proposed by traditional dependence research in other disciplines. In particular, little efforts have been made to contrast a client's dependence with supplier's dependence in a single study. To bring forward the conceptualization in our field, we investigated five outsourcing relationships with respect to dependence structures in a dyad. Perceptual differences became apparent while comparing clients' perceived dependencies with suppliers' ones. As a second contribution we aimed to explain different client positions in the dependence structures. Therefore, the dependence construct was broken down into its constituting facets. Besides importance of the outsourcing relationship and a supplier's substitutability, spillover effects emerged as an unanticipated third category of dependence. Originating from other exchange relationships with the same partner, these effects can distort the dependence structure in the focal relationship. Implications for future research are discussed.

Keywords: Outsourcing relationships, information systems, dependence, power, dyadic, case study

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 Sych 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.

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.

Theoretical Background

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 Sych 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.

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 Kern 1998; Willcocks and Currie 1997), 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 Sych 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.

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). 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”. 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 specificity 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). Switching costs thus also address barriers to switching that create dependence on a current exchange partner.

Research Approach

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 2012).

Table 1. Overview of cases					
	<i>Case 1</i>	<i>Case 2</i>	<i>Case 3</i>	<i>Case 4</i>	<i>Case 5</i>
Short description	<i>"Sales Platform"</i>	<i>"Self-Service Platform"</i>	<i>"Core Service System"</i>	<i>"CRM Platform"</i>	<i>"GUI for Customer Service"</i>
Supplier description (app. 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 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.

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, six 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.

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 (cf. Section 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).

Table 2. Overview of interviewees across cases											
	<i>Client side</i>						<i>Supplier side</i>				
	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/*						
<i>Subtotal</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>Subtotal</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>Total: 19 interviewees in 16 interviews in first round and 10 questionnaires collected for second round (*participant)</i>											

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 2). This procedure was accompanied by an interviewer who recorded the feedback and the reasons for a specific ranking.

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.

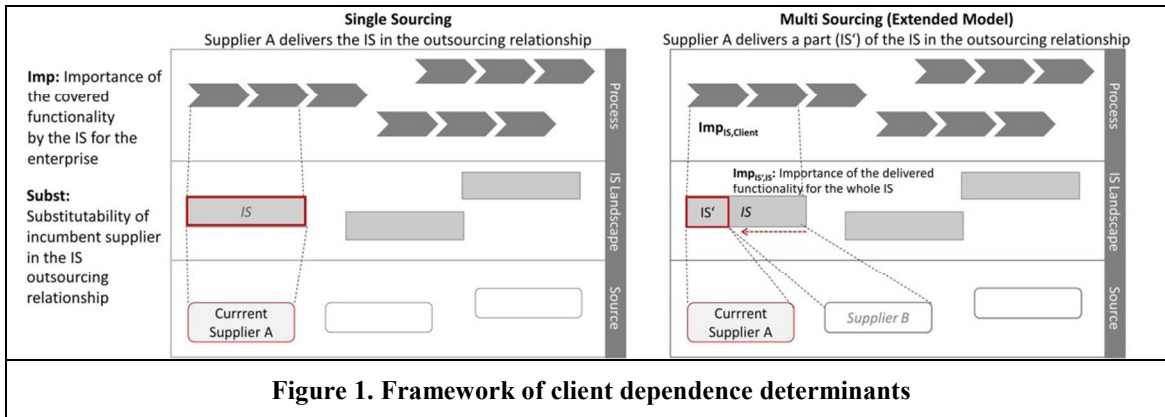
Reviewing literature in the field of dependence reveals that slightly differing perspectives on an organization's dependence evolved over time. Jacobs (1974), recalling Emerson's two-fold view, suggests differentiating between 'essentiality' of a resource and its 'availability' to assess dependence. 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):

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

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 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), back sourcing 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.



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:

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

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

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.

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 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).¹

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 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,

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

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.

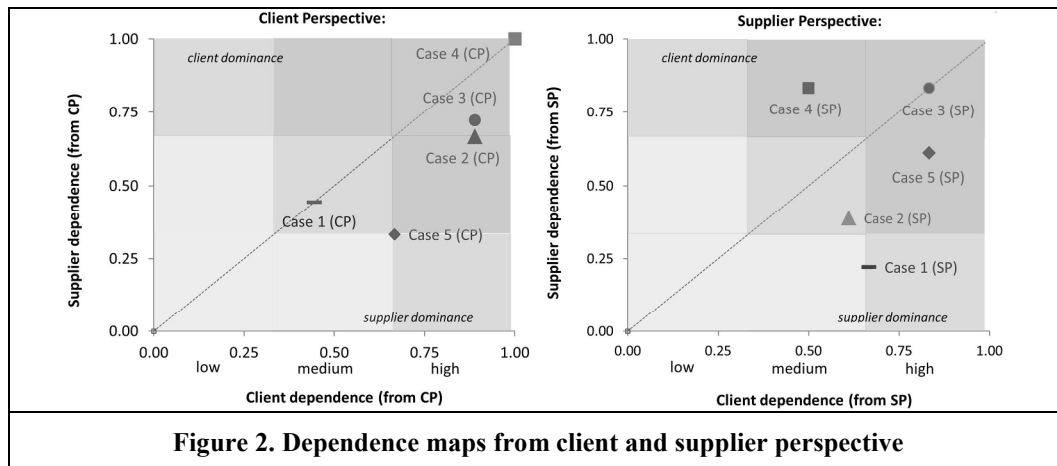


Figure 2. Dependence maps from client and supplier perspective

Comparing the client's perception of the outsourcing relationship with the suppliers' perceptions (Figure 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 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.

Table 3. Values of perceived client and supplier dependence, relative and joint dependence

	<i>Client perspective (CP)</i>				<i>Supplier perspective (SP)</i>			
	(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

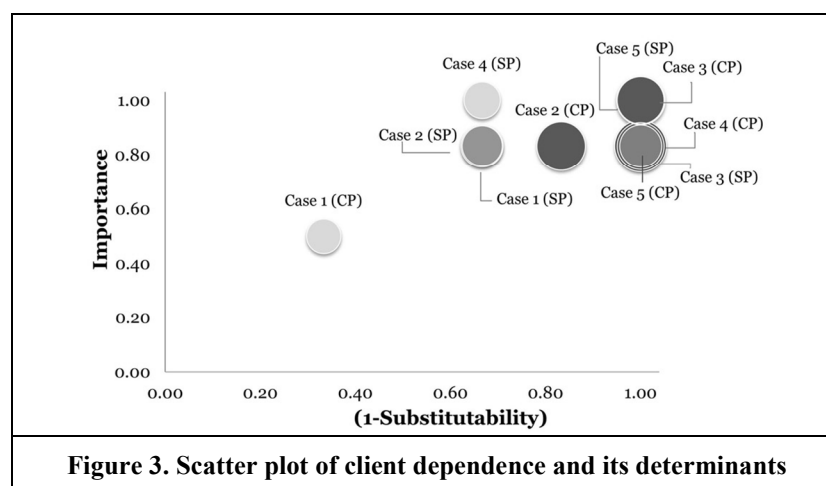
Assessment and Impact of Client Dependence Determinants

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 4 shows the values of the dependence determinants that were respectively assessed by representatives of the contractual relationships. 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 4, it is apparent that perceptual differences between client and supplier also occur on the level of determinants.

Table 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

To analyze the relations between importance, substitutability and client dependence in our cases, we use the scatterplot logic (Miles and Huberman 1994). Figure 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 shows that the expected logic, namely the multiplicative relationship between the dependence determinants (cf. section 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.



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.

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 Sych 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)

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 & 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)

Table 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.
Subst.	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').
Dep.	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

So far, we have encountered nine different underlying facets of importance and substitutability which are summarized in Table 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. 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)

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 4). In accordance to our framework, overall importance (see Table 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 ($Imp_{IS',IS}$). As Figure 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.

		Case 1	Case 2	Case 3	Case 4	Case 5	Average
Importance	$Imp_{PIS,Client}$	0.83	1.00	1.00	0.83	1.00	0.93
	$Imp_{PIS,IS}$ (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 4. Subfacets of client dependence determinants (client perspective)

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.

CONCLUSION

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 2012; Oshri et al. 2011; 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.

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 Sych 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.

Acknowledgements

An earlier version of this paper appeared in Julia Kotlarsky, Ilan Oshri and Leslie Willcocks (eds.): *The Dynamics of Global Sourcing: Perspectives and Practices*. Lecture Notes in Business Information Processing, Springer, 2012 (see Kaiser et al. 2012). The authors thank the anonymous ICIS reviewers as well the attendees of the 6th Global Sourcing Workshop for their valuable suggestions. Many thanks go to our interview partners, whose names cannot be mentioned here without violating the anonymity of the case companies, for their openness and time spent on this work.

References

- Anderson, J. C. and Narus, J. A. 1984. "A Model of the Distributor's Perspective of Distributor-Manufacturer Working Relationships," *Journal of Marketing* (48:4), pp. 62-74.
- Arkes, H. R. and Blumer, C. 1985. "The psychology of sunk cost," *Organizational Behavior and Human Decision Processes* (35:1), pp. 124-140.
- Aubert, B. A., Patry, M., and Rivard, S. 2005. "A Framework for Information Technology Outsourcing Risk Management," *Data Base For Advances In Information Systems* (36:4), pp. 9-28.
- Blumenberg, S., Beimborn, D., Martin, S. F., Brodnik, B., Gunne, C., and Wendt, S. 2009. "Determinants of Outsourcing Success in the Financial Industry: The Impact of Importance," in *Proceedings of the 42nd Hawaii International Conference on System Sciences*, R. H. Sprague Jr. (ed.), Los Alamitos, CA: IEEE Computer Society, pp. 1-10.
- Bourantas, D. 1989. "Avoiding dependence on suppliers and distributors," *Long Range Planning* (22:3), pp. 140-149.
- Caniëls, M. C. J. and Gelderman, C. J. 2005. "Purchasing strategies in the Kraljic matrix - A power and dependence perspective," *Journal of Purchasing and Supply Management* (11:2-3), pp. 141-155.
- Casciaro, T. and Piskorski, M. J. 2005. "Power imbalance, mutual dependence, and constraint absorption: A closer look at resource dependence theory," *Administrative Science Quarterly* (50:2), pp. 167-199.
- Chua, C. E. H., Lim, W.-K., Soh, C., and Sia, S. K. 2012. "Client strategies in vendor transition: A threat balancing perspective," *Journal of Strategic Information Systems* (21:1), pp. 72-83.
- Coase, R. H. 1937. "The nature of the firm," *Economica* (4:16), pp. 386-405.
- Corbin, J. and Strauss, A. 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory*, Thousand Oaks: SAGE Publications.
- Cox, A., Ireland, P., Lonsdale, C., Sanderson, J., and Watson, G. 2003. *Supply Chain Management: A Guide to Best Practice*, London: Financial Times/Prentice-Hall.
- Currie, W. L. and Willcocks, L. P. 1998. "Analysing four types of IT sourcing decisions in the context of scale, client/supplier interdependency and risk mitigation," *Information Systems Journal* (8:2), pp. 119-143.
- Dubé, L. and Paré, G. 2003. "Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations," *MIS Quarterly* (27:4), pp. 597-635.
- Eisenhardt, K. M. 1989. "Building Theories from Case Study Research," *The Academy of Management Review* (14:4), pp. 532-550.
- El-Ansary, A. I. and Stern, L. W. 1972. "Power Measurement in the Distribution Channel," *Journal of Marketing Research* (9:1), pp. 47-52.
- Emerson, R. M. 1962. "Power-Dependence Relations," *American Sociological Review* (27:1), pp. 31-41.
- Frazier, G. L. 1983. "On the Measurement of Interfirm Power in Channels of Distribution," *Journal of Marketing Research* (20:2), pp. 158-167.

- Ganesan, S. 1994. "Determinants of long-term orientation in buyer-seller relationships," *Journal of Marketing* (58:2), pp. 1-19.
- Geyskens, I., Steenkamp, J.-B., Scheer, L. K., and Kumar, N. 1996. "The effects of trust and interdependence on relationship commitment: A trans-Atlantic study," *International Journal of Research in Marketing* (13:4), pp. 303-317.
- Goles, T., Chin, W. W., and Todd, P. 2005. "Information Systems Outsourcing Relationship Factors: Detailed Conceptualization and Initial Evidence," *Data Base For Advances In Information Systems* (36:4), pp. 47-67.
- Gonzalez, R., Gasco, J., and Llopis, J. 2005. "Information systems outsourcing risks: a study of large firms," *Industrial Management & Data Systems* (105:1), pp. 45-62.
- Grover, V., Cheon, M. J., and Teng, J. T. C. 1996. "The Effect of Service Quality and Partnership on the Outsourcing of Information Systems Functions," *Journal of Management Information Systems* (12:4), pp. 89-116.
- Gulati, R. and Sytch, M. 2007. "Asymmetry and Joint Interorganizational Relationships: Effects of Embeddedness on a Manufacturer's Performance in Procurement Relationships," *Administrative Science Quarterly* (52:1), pp. 32-69.
- Heide, J. B. and John, G. 1988. "The role of dependence balancing in safeguarding transaction-specific assets in conventional channels," *The Journal of Marketing* (52:1), pp. 20-35.
- Hirschheim, R., Dibbern, J., and Heinzl, A. 2008. "Foreword to the special issue on IS sourcing," *Information Systems Frontiers* (10:2), pp. 125-127.
- Hu, Q., Saunders, C., and Gebelt, M. 1997. "Research Report: Diffusion of Information Systems Outsourcing: A Reevaluation of Influence Sources," *Information Systems Research* (8:3), pp. 288-301.
- Huang, R., Miranda, S., and Lee, J.-N. 2004. "How Many Vendors Does it Take to Change a Light Bulb? Mitigating the Risks of Resource Dependence in Information Technology Outsourcing," in *Proceedings of the 25th International Conference on Information Systems*, pp. 310-323.
- Jasperson, J. S., Carte, T. A., Saunders, C. S., Butler, B. S., Croes, H. J. P., and Zheng, W. 2002. "Review: Power and Information Technology Research: A Metatriangulation Review," *MIS Quarterly* (26:4), pp. 397-459.
- Jones, M. A., Mothersbaugh, D. L., and Beatty, S. E. 2002. "Why customers stay: measuring the underlying dimensions of services switching costs and managing their differential strategic outcomes," *Journal of Business Research* (55:6), pp. 441 - 450.
- Kaiser, J. and Buxmann, P. 2012. "Organizational design of IT supplier relationship management: a multiple case study of five client companies," *Journal of Information Technology* (27:1), pp. 57-73.
- Kaiser, J., Widjaja, T., and Buxmann, P. 2012. "Analyzing Client Dependence in Dyadic IS Outsourcing Relationships," in *The Dynamics of Global Sourcing: Perspectives and Practices*, J. Kotlarsky, I. Oshri, and L. Willcocks (eds.), Berlin, Heidelberg: Springer-Verlag LNBIP 130, pp. 1-19.
- Keil, M., Truex, D.P., I., and Mixon, R. 1995. "The effects of sunk cost and project completion on information technology project escalation," *IEEE Transactions on Engineering Management* (42:4), pp. 372-381.
- Kern, T. and Willcocks, L. 2000. "Exploring information technology outsourcing relationships: theory and practice," *The Journal of Strategic Information Systems* (9:4), pp. 321-350.
- Kumar, N., Scheer, L. K., and Steenkamp, J.-B. 1995. "The Effects of Perceived Interdependence on Dealer Attitudes," *Journal of Marketing Research* (32:3), pp. 348-356.
- Lacity, M. C., Khan, S. A., and Willcocks, L. P. 2009. "A review of the IT outsourcing literature: Insights for practice," *The Journal of Strategic Information Systems* (18:3), pp. 130-146.
- Lacity, M. C., Khan, S., Yan, A., and Willcocks, L. P. 2010. "A review of the IT outsourcing empirical literature and future research directions," *Journal of Information Technology* (25:4), pp. 395-433.
- Lee, J.-N. and Kim, Y.-G. 1999. "Effect of Partnership Quality on IS Outsourcing Success: Conceptual Framework and Empirical Validation," *Journal of Management Information Systems* (15:4), pp. 29-61.
- Lee, J.-N. and Kim, Y.-G. 2005. "Understanding Outsourcing Partnership: A Comparison of Three Theoretical Perspectives," *IEEE Transactions on Engineering Management* (52:1), pp. 43-58.
- Levina, N. and Su, N. 2008. "Global Multisourcing Strategy: The Emergence of a Supplier Portfolio in Services Offshoring," *Decision Sciences* (39:3), pp. 541-570.
- Lonsdale, C. 2001. "Locked-In to Supplier Dominance: On the Dangers of Asset Specificity for the Outsourcing Decision," *The Journal of Supply Chain Management* (37:2), pp. 22-27.

- Melville, N., Kraemer, K., and Gurbaxani, V. 2004. "Review: Information Technology and Organizational Performance: An Integrative Model of IT Business Value," *MIS Quarterly* (28:2), pp. 283-322.
- Miles, M. B. and Huberman, A. M. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*, Thousand Oaks: Sage Publications Ltd.
- Oshri, Ilan, Kotlarsky, J., and Gerbasi, A. 2011. "Can Client Firms Achieve Radical Innovation in IT Outsourcing?," in *Proceedings of the 32th International Conference on Information Systems*, D.F. Galletta and T.-P. Liang (eds.), Shanghai, China, Paper 4.
- Palmatier, R. W., Dant, R. P., and Grewal, D. 2007. "A Comparative Longitudinal Analysis of Theoretical Perspectives of Interorganizational Relationship Performance," *Journal of Marketing* (71:4), pp. 172-194.
- Pfeffer, J. and Salancik, G. 1978. *The External Control of Organizations - A Resource Dependence Perspective*, New York: Harper & Row.
- Reynolds, T. J. and Olson, J. C. 2001. *Understanding Consumer Decision Making: the means-end approach to marketing*, New Jersey: Lawrence Erlbaum Assoc Inc.
- Rottman, J. W. 2008. "Successful knowledge transfer within offshore supplier networks: a case study exploring social capital in strategic alliances," *Journal of Information Technology* (23:1), pp. 31-43.
- Scheer, L. K., Miao, C. F., and Garrett, J. 2010. "The effects of supplier capabilities on industrial customers' loyalty: the role of dependence," *Journal of the Academy of Marketing Science* (38:1), pp. 90-104.
- Shang, S. and Seddon, P. B. 2002. "Assessing and managing the benefits of enterprise systems: the business manager's perspective," *Information Systems Journal* (12:4), pp. 271-299.
- Sia, S. K., Koh, C., and Tan, C. X. 2008. "Strategic Maneuvers for Outsourcing Flexibility: An Empirical Assessment," *Decision Sciences* (39:3), pp. 407-443.
- Swinarski, M., Kishore, R., and Rao, H. R. 2004. "The Effects of Power and Partnership on Application Service Provider Commitment, Cooperation, and Compliance," in *Proceedings of the 37th Hawaii International Conference on System Sciences*, R.H. Sprague Jr. (ed.), Big Island, HI: IEEE Computer Society, pp. 1-10.
- Tallon, P. P., Kraemer, K. L., and Gurbaxani, V. 2000. "Executives' Perceptions of the Business Value of Information Technology: A Process-Oriented Approach," *Journal of Management Information Systems* (16:4), pp. 145-173.
- Thibaut, J. W. and Kelley, H. H. 1959. *The Social Psychology of Groups*, New York: John Wiley & Sons, Inc.
- Vetter, J., Benlian, A., and Hess, T. 2010. "Sunk Cost and Target Achievement Biases in Subsequent IS-Outsourcing Decisions," in *Proceedings of the 18th European Conference on Information Systems*, P. M. Alexander, M. Turpin, and J. P. van Deventer (eds.), Pretoria, South Africa, Paper 23.
- Weiss, A. M. and Anderson, E. 1992. "Converting From Independent to Employee Salesforces: The Role of Perceived Switching Costs," *Journal of Marketing* (29:1), pp. 101-115.
- Whitten, D. and Wakefield, R. L. 2006. "Measuring switching costs in IT outsourcing services," *Journal of Strategic Information Systems* (15:3), pp. 219-248.
- Whyte, G. 1994. "The role of asset specificity in the vertical integration decision," *Journal of Economic Behavior & Organization* (23:3), pp. 287-302.
- Willcocks, L. P. and Currie, W. L. 1997. "Information Technology in Public Services: Towards the Contractual Organization?," *British Journal of Management* (8), pp. 107-120.
- Willcocks, L. P. and Kern, T. 1998. "IT outsourcing as strategic partnering: the case of the UK Inland Revenue," *European Journal of Information Systems* (7:1), pp. 29-45.
- Willcocks, L. P. and Lacity, M. C. 1999. "IT outsourcing in insurance services: risk, creative contracting and business advantage," *Information Systems Journal* (9:3), pp. 163-180.
- Williamson, O. E. 1981. "The Economics of Organization: The Transaction Cost Approach," *American Journal of Sociology* (87:3), pp. 548-577.
- Yin, R. K. 2003. *Case study research: design and methods*, Thousand Oaks: Sage Publications Ltd.